REG NO: 2006/021122/07

Welgelegen Colliery

Draft

Environmental Impact Report (EIR) and Environmental Management Programme (EMPr)

Compiled in terms of Appendix 3 and Appendix 4 of the Environmental Impact Assessment Regulations, 2014 (Government Notice No. R 326) of the National Environmental Management Act, 1998 (Act 107 Of 1998)
For
The application for a Waste Management Licence in terms of Section 45 and section 20(b) of the National Environmental Management: Waste Act (Act No. 59 of 1998)

In-Pit Discard Disposal Project

DMRE Reference No.: MP 30/5/1/2/2/443 MR

June 2021

Document No: 3773/2021

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EXECUTIVE SUMMARY

Iyanga Mining (Pty) Limited: Welgelegen Colliery is an operational opencast mine situated on certain portions of the farms Welgelegen 221 IR and Vanggatfontein 250 IR within the Magisterial District of Delmas, Mpumalanga Province. Welgelegen Colliery is operated under a mining right issued in terms of Section 23 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) and an EMPR approved in terms of now repealed Section 39 (6) of the MPRDA.

The mining right area under Welgelegen Colliery is subdivided into three mining areas, the Southern mining section (not commenced yet), Northern mining section (operational) and the Eastern mining section (decommissioned). Currently the Welgelegen Colliery is operational, extracting coal from the Northern mining section, through an opencast mining method using the rollover technique.

The mine surface infrastructures at the Northern section include access/haul roads, a box-cut, topsoil stockpile, overburden stockpiles, topsoil and subsoil stockpiles, ROM stockpile with a coal beneficiation plant, discard dump (planned), slurry ponds, waste management facilities, weighbridge, power supply facilities, workshop, offices with ablution facilities, change rooms and water management structures.

During the processing of the run off mine coal at the coal washing plant, discards in the form of slurry and coarse discards are generated. Currently the mine uses a slurry ponds for the disposal of slurry and all their coarse discards are sold as low quality coal. In relation to the above, Iyanga Mining (Pty) Limited intends on disposing the discard material from the coal washing plant into their mined out opencast pits at the Northern mining section of Welgelegen Colliery. The above will assist the mine to minimise the dirty footprint of the planned discard dump. The proposed in-pit discard disposal will be undertaken on portions of portions 12 and 13 of the farm Welgelegen 221 IR. Refer to Figure 1 for the layout plan of the proposed in-pit discard disposal.

In view of the above and since the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEMWA) requires that any person or entity that intends on undertaking activities listed under government notice 921 as waste management activities must obtain a waste management licence in terms section 45 with section 20(b) of the NEMWA before undertaking such activities, Iyanga Mining (Pty) Limited is applying for a waste management licence for the proposed in-pit coal discard disposal.

Iyanga Mining (Pty) Limited appointed Geovicon Environmental (Pty) Limited, an independent environmental consulting company, to undertake and manage the waste management licence application together with the associated environmental impact assessment process for the in-pit coal discard disposal project. An application for a waste management licence for the proposed in-pit discard disposal project was submitted to the Department of Mineral Resources and Energy (eMalahleni Regional Office) (DMRE). Subsequent to the submission of the waste management licence application, a Scoping Report (after being subjected to a public participation process) was submitted to the DMRE, which report has to date (14 April 2021) been accepted in terms of Regulation 22 of the NEMA EIA Regulations 2014 as amended. In line with the requirements of the NEMA EIA Regulations, 2014, an Environmental Impact Report and Environmental Management Programme (EIR and EMPr) (this document) for the proposed project is thereby submitted for comments.

This document (Draft EIR and EMPr, inclusive of the specialist reports), which concerns assessment of environmental impacts and a programme for management of the impacts for the proposed activity, was compiled and is submitted in terms of the amended NEMA EIA Regulations, 2014 for review and

commenting by interested and affected parties including the competent authority. The environmental impact assessment, which result thereof is detailed in this report, was undertaken in compliance with the accepted plan of study described in the Scoping Report.

Environmental baseline data used in this report has been obtained through various agencies, pertaining to surface water quantities and qualities, geohydrological data and modelling, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions, visual impact assessment, noise impact assessment, heritage surveys and the socio-economic impact assessments. Weather data was acquired from the Welgelegen Colliery rainfall station as well as from the South African Weather Service. Historic land use was determined through available data and by visual observations made during various field studies. The data accumulated and analysed is therefore deemed sufficiently to gain a baseline indication of the present state of the environment. The use of this baseline data for impact assessments is thus justified, and reliable conclusions could be made. The impacts that could arise during and after the proposed activities at the proposed project were determined and ranked according to their significance. Based on the impact assessment, recommendations were made for the mitigation of significant negative environmental impacts that will result from the proposed project.

SECTION ONE

Introduction

1. INTRODUCTION

1.1 WHO IS DEVELOPING THE EIR AND EMPR?

1.1.1 Name and contact details of the EAP who prepared the EIR and EMPr

EAP: Miss M. B Mabogoane (B-Tech)

IAIA Membership No.: 6235

Reviewer: Mr. Ornassis Tshepo Shakwane (Pr. Nat. Sc.)

Professional Registration Numbers:

SACNASP Registration: 117080

EAPASA Registration: 2019/1763

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1.2 EXPERTISE OF THE EAP WHO PREPARED THE EIR AND EMPR

Geovicon Environmental (Pty) Limited is a geological and environmental consulting company. The company was formed during 1996, and currently has twenty four years' experience in the geological and environmental consulting field. Geovicon Environmental (Pty) Limited has successfully completed consulting projects in the Mining sector (coal, gold, base metal and diamond), Quarrying sector (sand, aggregate and dimension stone), Industrial sector and housing sector. Geovicon Environmental (Pty) Limited has undertaken contracts within all the provinces of South Africa, Swaziland, Botswana and Zambia. During 2001 Geovicon Environmental (Pty) Limited entered the field of mine environmental management and water monitoring.

Geovicon Environmental (Pty) Limited is a Black Economically Empowered Company with the BEE component owning 60% of the company. Geovicon Environmental (Pty) Limited has three directors i.e. O.T Shakwane, J.M. Bate and T.G Tefu. The following include the CV's of the EAP's who prepared the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMP) for the proposed project.

Ms. Bathabile Mabogoane obtained her Baccalaureus Technologiae (B-Tech) in Environmental Sciences at the Tshwane University of Technology in 2020. She started working as an intern at Shangoni Management Services, year 2017 specializing in conducting Waste Management Licence

Audits, waste management related reports and Health, Safety and Environmental related aspects and Environmental related reports. She joined Geovicon Environmental (Pty) Ltd as a Junior Environmental Consultant in August 2018. Her responsibilities include but will be limited to: compilation of all documentation for mining rights, mining permits and prospecting right applications, compilation of Environmental Impact Assessment and Environmental Management Programs, compilation of Water Use Licence applications with Integrated Water and Waste Management Plans, conducting of Environmental audits, Integrated Water Use Licence Audits, conducting of Environmental inspections, compilation of environmental reports (EMPr, Scoping Reports, BARs, EIAs, Public Participation Reports), arrangement and attendance of Public Participation meetings with Interested and Affected Parties, conducting environmental audits and inspections at mining companies, compilation of Water Quality Reports and Environmental Audit Reports (EAR).

Mr. O.T Shakwane obtained his BSc (Microbiology and Biochemistry) from the University of Durban Westville in 1994, and completed his honours degree in Microbiology in 1995. Mr O.T Shakwane has also completed short courses on environmental law, environmental impact assessment, environmental risk assessment and environmental management system with a number tertiary institutions. He has worked with the three state departments tasked with mining and environmental management i.e. Department of Water and Sanitation (Gauteng and Mpumalanga Region), Department of Mineral Resources (Mpumalanga Region) and Department of Agriculture, Conservation and Environment (Gauteng Region). Mr. Shakwane has been in the consulting field since 2004 and has completed various projects similar to the proposed in-pit discard disposal as an environmental assessment practitioner. Mr Shakwane, a registered environmental assessment practitioner, is the reviewer for the environmental impact assessment for the proposed in-pit discard disposal project. He is registered with the Environmental Assessment Practitioners Association of South Africa and South African Council for Natural Scientific Professions as an Environmental Assessment Practitioner and a Professional Natural Scientist, respectively in terms of the section 20(3) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003). He is also a member of the International Association for Impact Assessment, South Africa.

Over the past years Geovicon Environmental (Pty) Limited has formalised working relationships with companies that offer expertise in the following fields i.e. Geohydrology, Civil and Geotechnical Engineering, Geotechnical Consultancy, Survey and Mine Planning and Soil & Land Use Consultancy.

Geovicon Environmental (Pty) Limited is an independent consulting company, which has no interest in the outcome of the decision regarding Welgelegen Colliery's proposed project.

1.3 WHO WILL EVALUATE AND APPROVE THE EIR AND EMPR?

Before the proposed project can proceed, an Environmental Assessment Practitioner (EAP) must compile an application for a waste management application for the proposed project. An environmental impact assessment must be undertaken in support of the application for a waste management licence. The environmental impact assessment will determine the potential environmental impacts that may result from the proposed project and an environmental management programme will be compiled to provide measures for mitigation against the identified impacts. The above-mentioned application must be made to the competent authority. The Minister responsible for mineral resources and energy is the responsible competent authority for this application. In view of the above, the application for the waste management licence for the proposed Welgelegen Colliery's in-pit coal discard disposal project was submitted to the Department of Mineral Resources and Energy (DMRE), eMalahleni Regional Office for their consideration and decision making.

In the spirit of co-operative governance and in compliance with the requirements of NEMA and the MPRDA, the competent authority will, during the processing of the waste management licence application, consult with other organs of state that administers laws that relate to matters affecting the environment relevant to this application.

The organs of state that are to be consulted may include the following:

(i) Mpumalanga Tourism and Parks Agency

(ii) Department of Mineral Resources and Energy

(iii) Department of Water and Sanitation

(iv) National Department of Agriculture, Forestry and Fisheries

(v) South African Heritage Resources Agency

(vi) SANRAL

(vii) Victor Khanye Local Municipality

(viii) Relevant Ward Councillor

Note however that this list is not exhaustive as more organs of state may be identified by the competent authority.

1.4 DETAILS OF THE APPLICANT

1.4.1 Name of the Applicant

Iyanga Mining (Pty) Limited

1.4.2 Name of the Mining Project

Welgelegen Colliery In-Pit Discard Disposal

1.4.3 Postal Address of Mine

P. O. Box 439

Witbank

1035

1.4.4 Physical Address:

P. O. Box 439

Witbank

1035

Tel: 087 654 1541

1.4.5 Mine General Manager

Mr. Craig Zietsman

1.4.6 Contact Person

Ms. Ninette Barnard

1.5 LOCATION OF THE PROJECT

1.5.1 Regional Setting

Welgelegen Colliery's proposed in-pit discard disposal is situated approximately 25 km northwest of Leandra, 15 km east of Delmas and 12 km south of Kendal within Victor Khanye Local Municipality, Mpumalanga province. Access to the mine is via the Kendal – Leandra road. See Figure 2 for the regional location of Welgelegen Colliery.

Table 1: Surveyor General Code for the project area

Farm name	Surveyor General Code
Portion 12 of the farm Welgelegen 221 IR	T0IR00000000022100012
Portion 13 of the farm Welgelegen 221 IR	T0IR00000000022100013

1.5.2 Physical Address and Farm Name of the Mine

Welgelegen Colliery: Portion 13 of the farm Welgelegen 221 IR.

1.5.3 Magisterial District & Regional Services Council

Magisterial District: Delmas Magisterial District

District Municipality: Nkangala District Municipality

Local Municipality: Victor Khanye Local Municipality

1.5.4 Direction and Distance to Nearest Towns

Table 2: Direction and Distance to Nearest Towns.

TOWN	DIRECTION	DISTANCE (KM)
Leandra	Northwest	25 km
Delmas	East	15 km
Kendal	South	12 km

1.5.5 Land Tenure of Immediate and Adjacent Land

Land tenure for the properties covered by Welgelegen Colliery is indicated on Figure 3 and described in Table 3.

Table 3: Details of the proposed project's immediate and adjacent property owners

FARM	PORTION	SURFACE RIGHT OWNERS
Welgelegen 221 IR	6	Farm House Holdings Pty Ltd
Welgelegen 221 IR	8	Farm House Holdings Pty Ltd
Welgelegen 221 IR	12*	Truter Boerdery Trust
Welgelegen 221 IR	13*	Burgh Plant Hire Pty Ltd
Welgelegen 221 IR	14	T B T Boerdery Pty Ltd

Welgelegen 221 IR	15	T B T Boerdery Pty Ltd
Welgelegen 221 IR	16	Truter Boerdery Trust
Vanggatfontein 250 IR	RE	Stuart Coal (Pty) Limited
Schoongezicht 225 IR	19	Truter Boerdery Trust
Schoongezicht 225 IR	10	Truter Boerdery Trust

*Indicates farm portion on which Welgelegen Colliery's in-pit discard disposal will be undertaken.

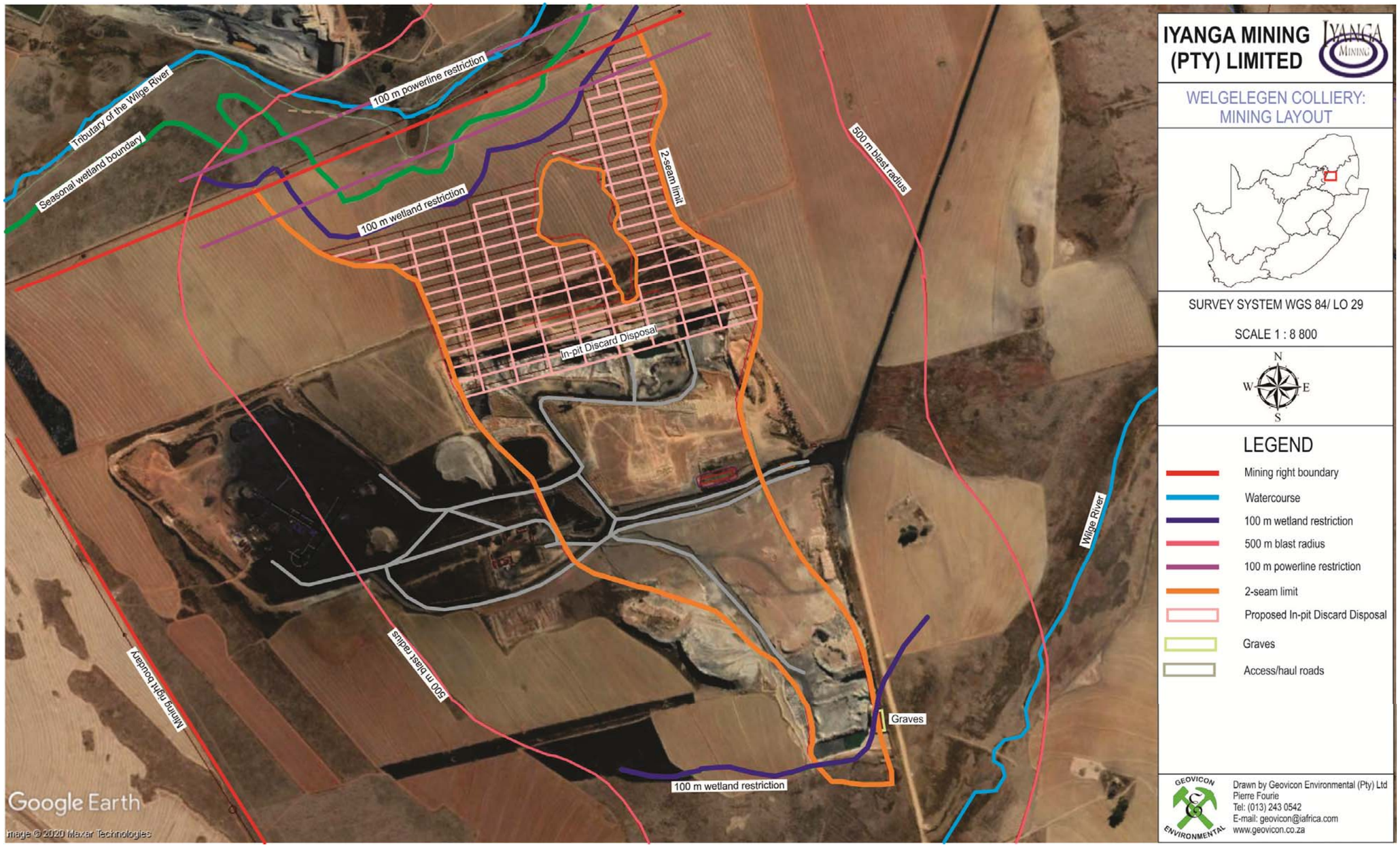

Figure 1: Layout plan for the proposed In-pit Discard Disposal

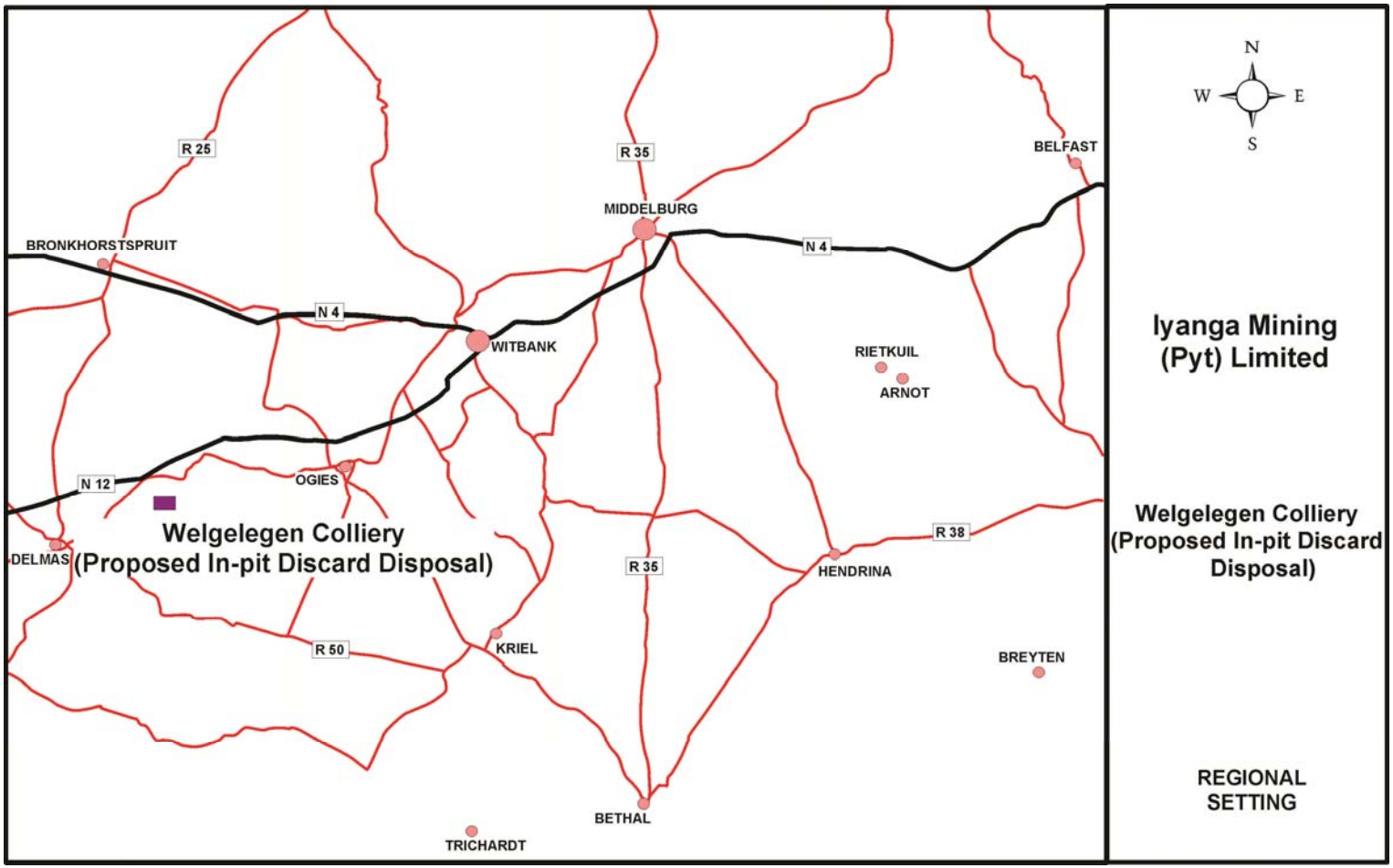

Figure 2: Regional Setting for Welgelegen Colliery's In-pit Discard Disposal

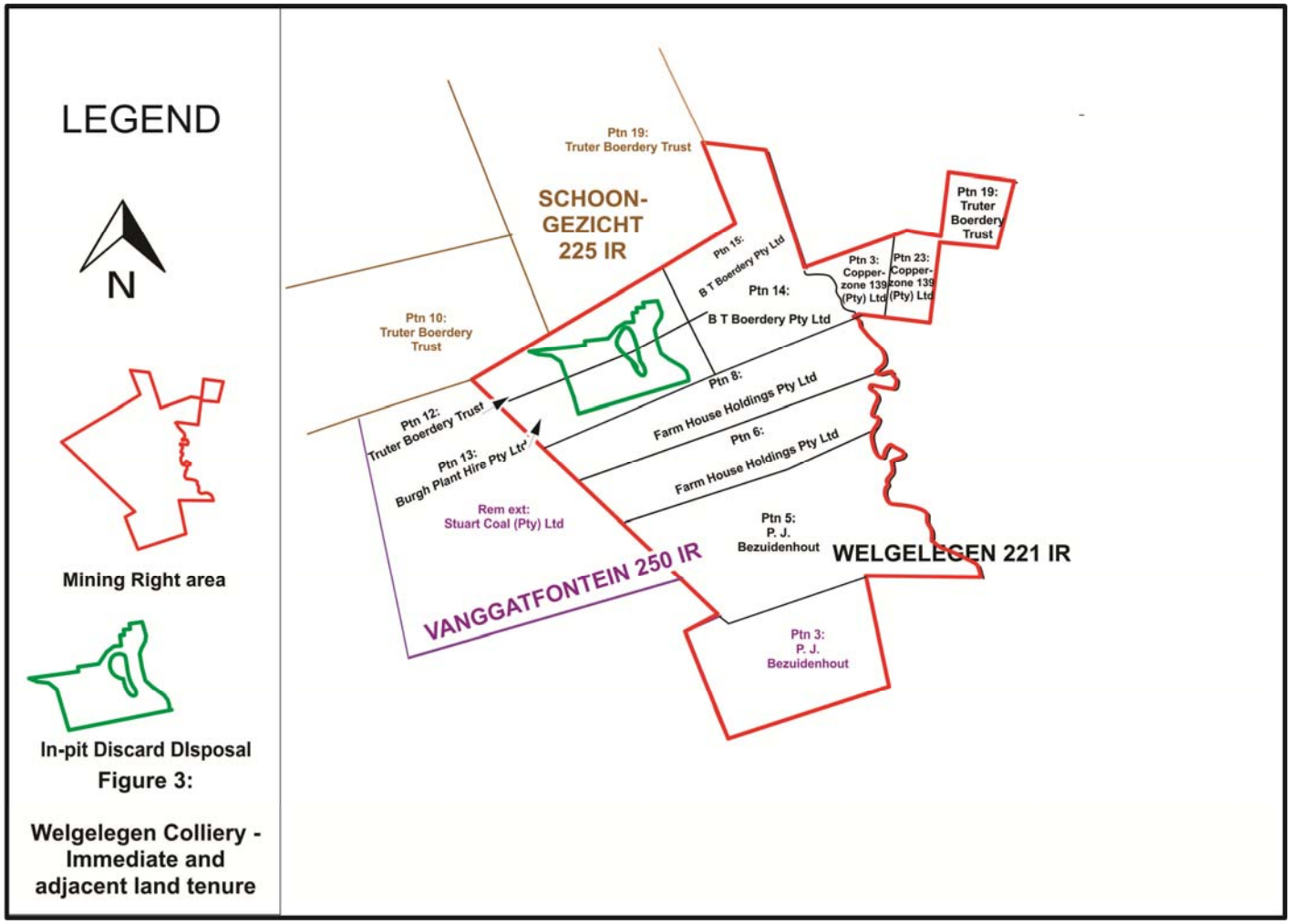

Figure 3: Land Tenure Plan for the proposed in-pit discard disposal

SECTION TWO

Description of the Scope of the proposed Project

2. DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT

2.1 DESCRIPTION OF THE PROPOSED ACTIVITY

Iyanga Mining (Pty) Limited: Welgelegen Colliery is an operational opencast mining situated on certain portions of the farms Welgelegen 221 IR, Schoongezicht 225 IR and Vanggatfontein 250 IR within the Magisterial District of Delmas, Mpumalanga Province. Welgelegen Colliery is operated under a mining right issued in terms of Section 23 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) and an EMPR approved in terms of Section 39 (6) of the MPRDA.

Iyanga Mining (Pty) Limited intends on disposing the coarse discard material from their coal washing plant into mined out opencast pits at Welgelegen Colliery's Northern mining section. The proposed in-pit discard disposal will be undertaken on portions 12 and 13 of the farm Welgelegen 221 IR. This document (Draft EIR/EMPR) concerns the Welgelegen Colliery's proposed in-pit discard disposal.

2.2 LISTED ACTIVITIES AND SPECIFIED ACTIVITIES

The proposed in-pit discard disposal will trigger waste management activities in terms of the NEMWA and its regulations. According to NEMWA and its regulations, none of the below-mentioned listed activities can be commenced without a waste management licence. In view of the above, Iyanga Mining (Pty) Limited has submitted an application for a waste management licence for all listed waste management activities triggered by the proposed activity, to the competent authority (DMRE). This section of the report will give a description of the waste management activities that were included in the waste management licence application. Table 4 is compiled as prescribed by the DMRE's EIR/EMPr template and reflects all activities applied for the proposed project.

Table 4: Proposed Welgelegen Colliery' proposed in-pit discard disposal listed Activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
LISTED ACTIVITIES			
NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT			
The disposal of a discard material to the mined out opencast pits.	The proposed disposal of a discard will cover an area of approximately 73 hectares.	Activity 7 under category B: Disposal of any quantity of hazardous waste on land.	GNR 921
The establishment of a residue deposit (in-pit coal discard disposal facility) for the disposal of coal residue from the Welgelegen Colliery's coal washing plant into the mined out pits.	The proposed disposal of a discard will cover an area of approximately 73 hectares.	Activity 11 under category B: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	GNR 921

2.3 SURFACE INFRASTRUCTURE DESCRIPTION

Below include the description of the surface infrastructures within Welgelegen Colliery. Note that the in-pit discard disposal will only occur within the mined out opencast pits (not yet mined) and this excludes the currently rehabilitated areas and areas that would have been rehabilitated when a decision is taken on this application.

2.3.1 Workshops and Buildings

No workshops and office buildings will be required for the proposed in-pit discard disposal. The existing workshops, change houses, main office and others will be used. These buildings are equipped with the necessary septic tanks, electricity and telecommunication facilities.

2.3.2 Road Infrastructure

The transportation of the coal discard to the mined out opencast pits will be through an existing haul road within the Welgelegen Colliery opencast workings.

2.3.3 Power Supply

Diesel powered mine machinery will be used for the proposed project.

2.3.4 Water Supply

2.3.4.1 Potable Water Supply

The proposed project will not require any potable water supply. However, there is no potable water treatment plant at Welgelegen Colliery. Drinking water is to be obtained from boreholes or supplied from the municipality.

2.3.4.2 Process Water Supply

Welgelegen Colliery uses water from the mined out opencast pits to source water for the processing plant. Water from the pit is used as a source of makeup water/for dust suppression.

2.3.5 Waste Management

The only activities that will generate waste will be the day-to-day movement of trucks where possible emergency repairs will be required along the transportation routes and the disposal site. The waste will include general waste/domestic waste. All waste that may be generated from the above will be managed through the existing waste management facilities.

2.3.5.1 Non-Mineral Waste Management

Only general waste will be generated from the proposed activity and such waste will be minimal due to the type of the activity.

General Waste Management

General waste to be generated from the proposed activity will include domestic waste, paper waste.

The collected/generated waste will then be removed to a waste disposal facility or any registered waste disposal site by an appointed waste disposal contractor.

2.3.6 Polluted Water Management Facilities

2.3.6.1 Sewage Handling

No septic tank will be required for the proposed activity. However, Welgelegen Colliery uses septic tanks for the management of sewage at the mine's ablution facilities. Sewage from the mine's ablution facilities is disposed into the septic /conservancy tanks onsite. The septic/conservancy tanks

were constructed such that there is enough capacity to cater for approximately 10 m³ of sewage from the mine, which is disposed of into the septic/conservancy facility.

The septic/conservancy tank is emptied twice a week by a suitable and qualified contractor for the disposal to a nearest local municipality sewage treatment facility.

2.3.6.2 Pollution Control Dam

Welgelegen Colliery operates on the strategy of maximising the utilisation of "dirty water" in the mining area and have a policy of zero discharge of contaminated water. Dirty water from the in-pit discard will be pumped directly to a pollution control dam via drains, pipes and trenches. Water from the pollution control dam will be utilised to suppress dust on the haul roads and for other purposes. Since dirty runoff water is currently stored in a mined-out pit, dirty water from the proposed project will, until a new pollution control dam is constructed, also be stored in one of the mined out opencast pits. The mine is in a process of constructing a pollution control dam (PCD) designed by a qualified engineer as per requirements contemplated in GN704 regulations. The PCD is designed to have enough capacity to contain a 1:50 year flood event. The PCD will be operated with a 0.8m free board above operational water levels and will be lined with 2mm HDPE plastic liner.

2.3.7 Storm Water Management Facilities

Clean and dirty water from Welgelegen Colliery is separated. Storm water is diverted by means of a diversion drain, in a form of diversion berms/trenches, situated around the entire mining areas. Dirty water from the in-pit discard disposal will be disposed of at the mined out opencast pits via diversion berms/trenches and clean water will be diverted back to the clean environment.

A conceptual storm water management plan has been drafted for Welgelegen Colliery. This storm water management plan is designed to separate clean and polluted water around the mining area. The storm water management plan is designed such that the separated dirty water is diverted to the dirty catchment facilities (pollution control dam for reuse in the mining operation). The current storm water management plan is sufficient to manage storm water within the in pits discard disposal facility. The Welgelegen Colliery understands the importance of this programme and is committed to comply with it.

2.3.8 Project Method Statement

In terms of the DMRE, EIR and EMPr template, Iyanga Mining (Pty) Limited must describe the methods and the technology to be employed for the proposed project. In view of the above, a method statement for each phase of the proposed project has been provided. This identifies all actions, activities or processes associated with the proposed in-pit discard disposal.

The identified actions, activities and processes are supported by a Mining Layout Plan showing the location of the proposed project.

2.3.8.1 Construction Phase

No construction activities will be undertaken for the proposed in-pit discard disposal since it will be situated on a mined out opencast pits which have already been disturbed.

2.3.8.2 Operational Phase

The following activities, which may impact on the health of people and the environment, will occur at the proposed in-pit discard disposal during the operational phase:

- Transportation of discard material from the coal washing plant to the mined out opencast pits.

- Disposing of the coal discards at mined out opencast pit i.e., in-pit discard disposal

2.3.8.3 Decommissioning and Closure Phase

During the decommissioning phase, the following activity, which will likely have a detrimental impact on the environmental, social and cultural aspects, will be conducted:

- Rehabilitation of the opencast workings where in-pit discard disposal was undertaken. This forms part of the rehabilitation that is already outlined in the existing EIR/EMPr for the rehabilitation of the mined out opencast pits. Therefore, no decommissioning and closure phase activities will be included in this EIR/EMPr.

SECTION THREE

Policy and legislative context

3. POLICY AND LEGISLATIVE CONTEXT

3.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT NO. 108 OF 1996)

Section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996) states that everyone has the right:

a) to an environment that is not harmful to their health or well-being; and

b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In terms of Section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being. In addition, people have the right to have the environment protected, for the benefit of present and future generations, through applicable legislations and other measures that prevent pollution, ecological degradation and promote conservation and secure ecological sustainable development through the use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into the overall project in order to fulfil the requirements of Section 24 of the Constitution. In view of the above, a number of laws pertaining to environmental management were promulgated to give guidance on how the principles set out in section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996) would be met. Below are laws applicable to the proposed project that were promulgated to ensure that section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996) is complied with.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) AND THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT 59 OF 2008)

Section 24(1) of the NEMA states:

"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter [Chapter 5], the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of the Department of Mineral Resources and Energy, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act."

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) requires that any person or entity that intends to undertake waste management activities listed under government notice 921 must obtain a waste management licence in terms of part 4 of chapter 4 of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) before undertaking such activities. The proposed in-pit discard disposal is identified as a waste management activity listed under government notice 921, Category B. Furthermore, Category B of government notice 921 requires that a person who wishes to

commence, undertake or conduct a waste management activity listed under Category B, must conduct a scoping and environmental impact reporting process in accordance with the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of the waste management licence application contemplated in section 45 read together section 20(b) of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008).

In relation to the above, the waste management licence application (this report) for the proposed in-pit discard disposal is undertaken in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998).

3.3 THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT NO 25 OF 1999)

The National Heritage Resources Act (Act No. 25 of 1999) (NHRA) focuses on the protection and management of South Africa's heritage resources. The governing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected as well as culturally significant symbols, spaces and landscapes. Section 38 of the NHRA stipulates the requirements a developer must undertake prior to development. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed.

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon.

The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. A Heritage Impact Assessment has been undertaken for the entire Welgelegen Colliery. Therefore the existing heritage assessment will be used for this project.

3.4 NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT, 2004 (ACT 39 OF 2004)

The National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA) focuses on reforming the law regulating air quality in South Africa in order to protect the environment through the provision of reasonable measures protecting the environment against air pollution and ecological degradation and securing ecological sustainable development while promoting justifiable economic and social developments. This Act provides national norms and standards regulating air quality management and control by all spheres of government. These include the National Ambient Air Quality Standards (NAAQS) and the National Dust Control Regulations (NDCR). The standards are defined for different air pollutants with different limits based on the toxicity of the pollutants to the environment and humans, number of allowable exceedances and the date of compliance of the specific standard.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of Section 21(1)(b) of the NEM:AQA.

The proposed project will not trigger the activities listed under the above-mentioned Regulations, however Welgelegen Colliery must ensure that emissions from the activity complies with the standards as set in the above-mentioned regulations.

3.5 THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT 25 OF 1999)

The National Heritage Resources Act (Act No. 25 of 1999) (NHRA) focuses on the protection and management of South Africa's heritage resources. The governing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected as well as culturally significant symbols, spaces and landscapes. Section 38 of the NHRA stipulates the requirements a developer must undertake prior to development. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed.

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The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. A Heritage Impact Assessment has been undertaken for the entire mining right of Welgelegen Colliery. Hence this assessment will be used to describe the heritage resources identified within the Welgelegen Colliery.

3.6 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (ACT 10 OF 2004) (NEMBA)

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and protection of South Africa's biodiversity within the framework established by NEMA. The Act aims to legally provide for biodiversity conservation, sustainable, equitable access and benefit sharing and provides for the management and control of alien and invasive species to prevent or minimize harm to the environment and indigenous biodiversity. The Act imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms. The Act encourages the eradication of alien species that may harm indigenous ecosystems or habitats. The NEMBA ensures that provision is made by the site developer to remove any aliens which have been introduced to the site or are present on the site.
The NEMBA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.
The Act supports South Africa's obligations under sanctioned international agreements regulating international trade in specimens of endangered species, and ensures that the utilization of biodiversity is managed in an ecological sustainable way. The EIR and EMPr has been complied to ensure that all applicable requirements prescribed in the NEMBA are complied with.

3.7 MPUMALANGA NATURE CONSERVATION ACT (ACT 10 OF 1998)

The Mpumalanga Nature Conservation Act, No. 10 of 1998, aims to consolidate and amend the laws relating to nature conservation within the Province and to provide for matters connected therewith. Provincial legislation relevant to biodiversity conservation comprises of two Provincial Acts, the Mpumalanga Nature Conservation Act (Act 10 of 1998) and the Mpumalanga Tourism and Parks Agency Act (Act 5 of 2005). In relation to nature conservation, the Province has developed the Mpumalanga Biodiversity Sector Plan (MBSP). This plan has been jointly developed by the Mpumalanga Tourism and Parks Agency (MTPA) and the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA). The MBSP takes its mandate from the

South African Constitution, the National Biodiversity Act (10 of 2004) and the Mpumalanga Nature Conservation Act 10 of 1998. The area is primarily situated in terrestrial assessment categories of "Heavily Modified identified under the MBSP meaning areas that are currently transformed and where biodiversity and ecological function has been lost to the point that it is not worth considering for conservation at all. Measures will be proposed for ensuring that the areas are not degrade by the proposed project activities.

3.8 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (MPRDA), 2002 (ACT 28 OF 2002)

The Department of Mineral Resources and Energy (DMRE) is responsible for regulating the mining and minerals industry to achieve equitable access to the country's resources and contribute to sustainable development. Before 2014, The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) required that an EIA be conducted and that the EMP be drafted for the mitigation of impacts identified during the environmental impact assessment for a mining project. During December 2014, the "One Environmental System" was implemented by Government which initiated the streamlining of the licensing processes for mining, environmental authorisations and water use. Under the One Environmental System, The Minister of Mineral Resources, will issue environmental authorisations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) for mining and related activities instead of the MPRDA. The Minister of Environmental Affairs will be the appeal authority for these authorisations. In view of the above, the application for a waste management application for Welgelegen Colliery's in-pit discard disposal was submitted to the Department of Mineral Resources and Energy as the competent authority for their consideration and decision making.

3.9 NATIONAL WATER ACT (NWA), 1998 (ACT 36 OF 1998)

The National Water Act (Act No. 36 of 1998) (NWA) is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof in South Africa. The NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The NWA presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. The National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. Further, an industry can only be entitled to use water if the use is permissible under the NWA. The enforcing authority on water users is the Department of Water and Sanitation (DWS).

Further, Regulation 704 of the NWA deals with the control and use of water for mining and related activities aimed at the protection of water resources.

An integrated water use licence application and an application for an exemption to comply with some of the requirements under the GN 704 is submitted to the Department of Water and Sanitation for their consideration.

3.10 EIA GUIDELINES

A number of national and provincial EIA guidelines were published by different departments. These guidelines are mainly aimed at assisting relevant stakeholders by providing information and guidance and giving recommendations on a number of aspects relating to the environmental impact assessment process. The guidelines can be used by the competent authority, applicant and the EAP

during the EIA process. It is therefore important that the EAP and the person compiling a specialist report must have relevant expertise when conducting the environmental impact assessments.

A number of guidelines were consulted during the compilation of this report and these include amongst them the following i.e., Guidelines on the Need and Desirability, Department of Environmental Affairs and Tourism Integrated Environmental Management Guidelines, Department of Water and Sanitation's Best Practice Guidelines.

SECTION FOUR

Need and desirability of the proposed activities

4. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

In terms of the EIA Regulations the need and desirability of any development must be considered by the relevant competent authority when reviewing an application. The need and desirability must be included in the reports to be submitted during the waste management licence application processes. The section of the EIR and EMPr will indicate the need and desirability for the proposed in-pit discard disposal project, which was compiled in terms of the 2010 guideline on need and desirability, integrated environmental management guideline series 9, Department of Environmental Affairs.

Iyanga Mining (Pty) Limited's Welgelegen Colliery (proposed in-pit discard disposal) is situated within the Victor Khanye Local Municipality in the Mpumalanga Province. An Environmental Impact Assessment (EIA) for the proposed project has been undertaken and results thereof (EIR and EMPr) will be submitted to the Department of Mineral Resources and Energy as the competent authority. As part of the requirements of the compilation of the EIR and EMPr, the applicant must determine the Need and Desirability of the proposed project. This section of the EIR and EMPr was therefore compiled in order to comply with the requirements of the guideline on need and desirability promulgated on the 20th October 2014 under Government Notice 891 of 2014, which in turn will comply with the requirements of the EIA Regulations, 2014.

To undertake the 'needs and desirability assessment' the following were considered in accordance with the NEMA Environmental Impact Assessment Regulations; Guideline and Information Document Series; Guideline on Need and Desirability (2014).

- The spatial development framework plans for Victor Khanye Local Municipality.
- The integrated Development Plans for Victor Khanye Local Municipality.
- Where possible the environmental management framework for Victor Khanye Local Municipality.
- Existing industrial and commercial development and the anticipated impact on other similar developments in reasonable proximity within Welgelegen Colliery.
- Specialist Studies' outcome for the proposed project.

The need and desirability determination for the proposed in-pit discard disposal project will hence be structured such that it determines how the ecological attributes of the area, spatial development of the area, socio-economic profile of the communities within the study area and the project's financial viability fits together in ensuring that the proposed project becomes a success for the region.

4.1 ECOLOGICAL INTEGRITY

4.1.1 Considerations of the ecological integrity

The proposed in-pit discard disposal into yet unmined opencast voids is situated within the Rand Highveld grassland vegetation type (Gm 11) / ecosystem in the Mesic Highveld Grassland bioregion (South African National Biodiversity Institute – SANBI).

This vegetation unit / ecosystem is vulnerable. According to Government Notice 1002, Government Gazette No. 34809 9 December 2011), vulnerable ecosystems are considered threatened ecosystems since it is the ecosystems that have a high risk of undergoing significant degradation of

ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems.

According to the South African National Biodiversity Institute, GIS-based electronic application, 2018: National Biodiversity Assessment - National Wetlands Map 5, the proposed disposal into yet unmined opencast voids are situated in the vicinity of the following wetland type *viz.* a channelled valley bottom wetland, falling into the Mesic Highveld Grassland, Group 4, wetland ecosystem type (SANBI). The ecosystem threat status assessment indicates the following categories for wetland types in this wetland ecosystem *viz.* Channelled valley bottom wetlands – Least threatened; Depression wetlands – Endangered; Flats – Endangered; Floodplain wetlands – Endangered; Seep wetlands – Least threatened; Unchannelled valley bottom wetlands – Least threatened; Valleyhead seep wetlands – Critically endangered (Mbona *et. al.* 2015)

According to the **Mpumalanga Biodiversity Sector Plan GIS-based electronic application (Mpumalanga Tourism and Parks Agency (MTPA), 2013),** the proposed disposal of discard into yet unmined opencast voids, are primarily situated in freshwater assessment categories of **"Heavily Modified"** meaning areas that have experienced a form of land use that has resulted in the near complete loss of biodiversity and a degree of loss of ecological function; **"Other Natural Areas"** meaning areas that have not been identified as a priority in the current systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructural functions; **"Ecological Support Areas (ESA) – Wetlands"** meaning areas that support the hydrological functioning of rivers, water tables, freshwater biodiversity as well as providing a host of ecosystem services through their ecological infrastructure. They need to be maintained in a healthy condition; and **"Dams"** meaning artificial water bodies which may have impacted on wetlands or river systems. These areas may, however, still have a recharge effect on wetlands, groundwater, and river system.

Conservation targets

According to the Mpumalanga Biodiversity Sector Handbook the Rand Highveld grassland vegetation type (Gm 11) / ecosystem is hardly protected. The conservation target is 24 % of which the proportion of target protected is 3.7 %. It is not endemic in Mpumalanga. This vegetation unit occurs still in a natural state (excluding old lands) on 57.84 % of surface area in Mpumalanga.

Ecological drivers of the ecosystem

According to the Mpumalanga Biodiversity Sector Handbook the most important ecological drivers in Mpumalanga are built infrastructure, cultivation, mining, prospecting and residential areas. The proposed disposal of discard into yet unmined opencast voids, are situated in the Nkangala District Municipality with the percentages for the different ecological drivers as a percentage of the surface area of Mpumalanga as:

Built infrastructure – 14.3 %

Cultivation – 1.8 %

Mining – 39.9 %

Prospecting – 75.6 %

Residential – 8 %

Environmental Management Framework

The Mpumalanga Biodiversity Sector Plan (MTPA 2013) is the Environmental Management Framework for Mpumalanga and provides for the sustainable use of natural resources in Mpumalanga by means of utilising

the most recent and best quality spatial biodiversity information to inform land use and development planning, environmental assessments and authorisations and natural resource management.

Spatial Development Framework

The Victor Khanye Local Municipality utilises its Spatial Development Framework for land use planning. Based on the above-mentioned special development framework, the proposed project is situated within an already developed area and will hence not conflict with the municipality's spatial development framework regarding preservation of the ecological integrity of the area.

4.1.2 Consideration of the disturbance or enhancement of the ecosystems and/or result in the loss or protection of biological diversity

Since the proposed disposal of discard into yet unmined opencast voids are primarily situated over crop production areas there will be negligible ecosystem disturbance due to these activities. Rehabilitation and re-vegetation of the areas as well as eradication of all declared invader plant species will result in ecosystem enhancement.

4.1.3 Consideration of pollution and degradation of the biophysical environment

The proposed disposal of discard into yet unmined opencast voids may pollute or degrade the biophysical environment with polluted mine water (in the surface and groundwater), coal dust, alteration of surface run-off water quantity, velocity and patterns, soil compaction and invasion of declared invader species. This negative impact cannot be avoided since this is the area where the coal reserve is situated.

The negative impact will be remedied by keeping the footprint of the development as small as possible, by the separation of dirty and clean water, containing all mine polluted water in a pollution control dam, dust suppression, routing clean water around the mining area to report to the stream and to implement an eradication programme for declared invader species.

4.1.4 Waste to be generated by the proposed development and their management

Waste will include disposal of discard into opencast voids that is not mined yet, overburden dumps, polluted water in the pollution control dams and domestic waste from employees. Polluted water from all dirty water mining areas will report to the respective pollution control dams. Any water from the opencast workings will also be pumped into the pollution control dam. No water from the dirty areas at the mining areas will thus report to any natural areas outside of the demarcated mining areas. Disposal of discard into yet unmined opencast voids situated within the 100 m buffer zone will not be conducted. The disposal of discard into yet unmined opencast voids, situated within the 100 m buffer zone will be avoided in order to minimise polluted groundwater reaching the stream.

4.1.5 Consideration of the disturbance or enhancement of landscape

Since the proposed disposal of discard into yet unmined opencast voids are situated primarily over crop production areas there will be no disturbance of cultural heritage due to these activities. An archaeological investigation was conducted during the initial impact assessment process for verification. Landscapes may be disturbed by voids. Proper rehabilitation measures will remedy the impacts.

4.1.6 Consideration of the impacts on non-renewable natural resources

The proposed disposal of discard into yet unmined opencast voids will exploit the coal reserve in this area. The coal reserve will only be exploited in an area where the coal is economically viable. This will keep the footprint of the activities as small as possible. The consequence of the depletion of the non-renewable natural resource will be a positive impact on the community. The company extracting the coal will make a profit and a part of the profit will be used for community projects as indicated in their Social and Labour Plan. This negative impact cannot be avoided since this is the area where the coal reserve is situated. The negative impact will be remedied by rehabilitation and re-vegetation of the opencast mining areas, according to best practises.

4.1.7 Consideration of the impacts on renewable natural resources

4.1.7.1 Use of natural resources

Since South Africa is still dependant on coal for energy, and it is seen as a strategic mineral by the government, the proposed use of the natural resource constitutes the best use thereof. The use is justifiable since South Africa is currently still dependent on coal for energy because the use of alternative methods for energy is still too expensive in South Africa. It is also justifiable since intra-generational equity is still not balanced; thus, certain communities are dependent on the community projects that are generated with the profits from the coal mining companies. Coal will probably not be used by future societies as an energy resource since alternative energy resources will become cheaper in future. The coal resource will thus not be needed by future societies and thus do not need to be justifiable. Energy generation is the most important priority for which the resource can be used.

4.1.8 Application of risk-averse and cautious approach

4.1.8.1 Knowledge Gaps

The limits of current knowledge are the fact that most of the environmental investigations that were conducted, concentrated on the Welgelegen Colliery opencast coal mining project areas within the Welgelegen Colliery Mining Right area. The soil, groundwater and wetland investigations are the only studies that included areas adjacent to these opencast coal mining areas.

4.1.8.2 Level of risk associated knowledge gaps

The level of risk is the fact that cumulative impacts can thus not be addressed on a larger scale.

4.1.8.3 Application of the risk-averse and cautious approach to the proposed project

A risk-averse and cautious approach was applied by means of the different environmental investigations, including impact assessments, which will be conducted for the proposed disposal of discard into yet unmined opencast voids.

4.1.9 Consideration of people's environmental rights

4.1.9.1 Negative impacts on people's environmental rights

There are commercial farmers situated within or immediately adjacent to the proposed disposal of discard into yet unmined opencast voids, that may be negatively impacted regarding the above-mentioned negative impacts. The negative impact cannot be avoided since this is the area where the coal reserves are situated. The negative impact will be remedied by keeping the footprint of the

development as small as possible and post mining, by means of rehabilitation and re-vegetation of the opencast mining and infrastructure areas, according to best practises.

4.1.9.2 Positive impacts on people's environmental rights

The positive impact will only be socio-economically. The company will spend a part of their profits for community projects indicated in their Social and Labour Plan.

4.1.10 Impacts of the proposed project on ecological integrity objectives/targets/considerations of the project area

The disposal of discard into yet unmined opencast voids activities will have no negative impact on ecological integrity objectives/targets/considerations during mining. Negative impacts may derive post mining due to polluted groundwater migrating away from the mining areas. The negative impact will be remedied to an extent by keeping the footprint of the development as small as possible and post mining, by means of rehabilitation and re-vegetation, according to best practises.

4.1.11 Consideration of the need to secure ecological integrity and a healthy biophysical environment

This negative impact cannot be avoided since this is the area where the coal reserve is situated. No alternatives can be considered since this is the area where the coal reserve is situated.

4.1.12 Description of cumulative ecological/biophysical impacts

No information regarding other planned developments in the area is available. The proposed disposal of discard into yet unmined opencast voids are situated within the Mining Right area of Welgelegen Colliery. The negative cumulative ecological/biophysical impacts of the projects may be high since it is situated in the vicinity of some wetland areas. The positive cumulative impact will be that the areas will be rehabilitated and re-vegetated to be grazing land. Vegetation cover and number of plant species will thus in future be higher than in the case of mono-crop cultivation. Over time, plant species occurring in natural veld may once again colonise the areas and this will enhance the habitat for small mammals, invertebrates and other small animal species.

4.2 SOCIO-ECONOMIC CONTEXT OF THE AREA

4.2.1 IDP and other strategic plans

Currently 3 million metric tons of coal is mined annually within the Victor Khanye Municipality. The area has a potential to grow the mining sector through development plans and other strategies. The Victor Khanye Local Municipality has since made the sector a priority sector and has hence included the sector in its Integrated Development Plan (IDP) and other strategies.

The Victor Khanye Local Municipality has established several development plans as a planning mechanism for sustainable development within the areas under the jurisdiction of the municipality. The plans include a local development plan (LED) and spatial development framework, together the plans were integrated to form an IDP.

The municipality vision in accordance to the IDP regarding the mining sector is of a growing urgency to establish equitable and reliable trade-offs that maximises the benefits of the province from mining and energy sectors while mitigating environmental impacts.

The objective of the IDP is to expedite the service delivery of the communities, develop infrastructure, grow the economy, alleviate poverty, develop environmental sustainability and implement social development.

The strategies set out by the municipality are guided by several parameters that ensures the alignment of the strategies with that of in the district, provincial and national level for a synergistic purpose. The parameters include the following:

- Sustainable Development goals
- National Development plan
- Integrated Urban Development Framework
- Medium Term Strategic Framework
- Medium term Strategic Framework
- Mpumalanga Vision 2030

Through a community survey in 2016 and a revised municipal structure, a strategic planning session was established which enabled the municipality to come up with targets and indicators contributing to the effectiveness of the IDP. Furthermore, the municipality has generated a comprehensive quarterly performance reports that measures progress on a variety of the development performance and project milestones. The above-mentioned process was undertaken in accordance with Section 28, 29 and 34 of the Municipal Systems Act, 2000.

4.2.2 Spatial priorities and desired patterns

The Spatial Development Framework (SDF) developed by the municipality and incorporated into the IDP as mentioned above. The SDF focuses on the integration of the fragmented spatial structure of the municipality to ensure equitable access of communities to sustainable services. Furthermore, to promote economic, cultural, recreational and education activities with opportunities in disperse rural areas.

4.2.3 Spatial characteristics

The Victor Khanye Local Municipality is situated on the Western Highveld of Mpumalanga Province. The municipality covers a geographic area of approximately 1,567 square kilometres.

Delmas, Botleng, Sundra, Eloff and Delpark form part of the prevailing towns and settlements of the municipality. The Municipality is strategically located as the border of the metropolitan areas of Tshwane and Ekurhuleni respectively to the west. The municipality has designated all agricultural activities to be undertaken in rural areas and the mining activities are designated to be situated on the Northern-Eatern section near Phola and Kendall. This makes the proposed Welgelegen Colliery in-pit discard disposal project situated at the optimum area in accordance to the municipality spatial pattern desires. The municipality has prioritised the developmental activities along the N12 and adjacent to R42 routes. They have named the plan, “Delmas Tourism Gateway Objective”. The aim is to brand Victor Khanye Local Municipality as a gateway to Mpumalanga economic development. The plan is to make provision of land for housing along routes, promote the Thusong Centres which are the community multi-purpose centres and develop more social facilities within the area.

4.2.4 Municipal Economic Development Strategy

The Victor Khanye local economic development strategy has based the objective of the strategy on 6 factors namely, industry and commerce, tourism development, SMME and co-operative development, mining and electricity development. The municipality have further introduced poverty alleviation programmes such as community works programme (CWP) and expanded public works programme (EPWP) which provides members of the community with regular daily jobs.

As the above-mentioned, the proposed Welgelegen Colliery project is therefore an ideal project that compliments the objective of the municipality LED programme.

4.2.5 Socio-economic impacts

Compliment of the LED or Skills Development Programme

The municipality has generated 5 key performance areas as part of their IDP and LED. The first key performance area (KPA1) as stipulated on the IDP is the municipal transformation and organisational development. The municipality has therefore identified training and skills development as the key contributor to KPA1.

The municipality has reported a challenge in businesses unwillingness to support learnerships and skills programmes for the unemployed. The municipality has also reported challenges of business failure to support work-based training programs. The proposed project may be able to compliment the municipality's skills development programme by addressing the above mentioned challenges. Welgelegen Colliery through their Social Labour Plan (SLP) may be able to issue learnerships and skill development programs to unemployed residents of the municipality and support work-based training programs by providing further training to their employees.

Pertinence to the Specific Physical, Psychological, developmental, Cultural and social needs and interests of the relevant communities

Welgelegen Colliery has systems and projects in pertaining the wellbeing of the community in Victor Khanye Local Municipality and the sustainability thereof. Welgelegen Colliery has projected 10 years life of mine. To ensure that the well-being of the communities is supported, Welgelegen Colliery has developed and conducted Environmental Impact Assessments (EIA) and environmental management programme (EMPR). This Programme has been development with specialist expertise to address potential physical and cultural impacts and mitigation measures thereof to take care of the health and safety of the communities. Welgelegen Colliery also has designed a SLP that address the Social needs and interest of the relevant communities. Furthermore, Welgelegen Colliery has planned monitoring programmes for both the SLP and EMPR as an ongoing mechanism that ensures the plans are properly executed.

Location

Welgelegen Colliery is situated at a prime location in accordance to the SDF as stipulated by the municipality. The proposed project is projected to create employment opportunities for the communities within the area with first preference to the communities nearby that is poverty stricken.

The Colliery is situated adjacent to the N12 connecting to the nearest town Delmas which is less than 30 km away. This limits urban sprawl and makes the use of public transport easier as the public will be able to commute to and from the colliery to town with convenience. This is in support of the municipality objective to develop the N12 Corridor.

The area is aiming to produce coal, a valuable resource mined that could potentially support the nearby Kendall Power Station with ample resource to supply, a much-needed electrical energy to the community and South Africa at large. Furthermore, the area is located in close proximity to the railway for the convenience of accessing the international export market.

Welgelegen Colliery strategically chose the area for the project to be at a fair distance from the residential area to limit the potential and severity of environmental impacts which includes avoidance of degradation of important heritage sites, sensitive sites and valuable cultural sites which may be otherwise harmful to the community.

With the reference to the above-mentioned Welgelegen Colliery is expected to contribute positively as the proposed project is projected to operate as an investment in the area and will generate high socio-economic returns.

4.2.6 Risk-averse and cautious approaches applied in terms for socio-economic impacts

Desktop studies and literature review, primary data, consultation and fieldwork were used to gather data for the determination of the socio-economic impacts from the proposed project. These included various secondary data sources for the extrapolation of information to determine and analyse the social and economic characteristics of the study area. A site visit was undertaken and interviews conducted with relevant stakeholders and interested and affected parties to assists in establishing the baseline environment, social fabric, as well as the key economic activities of the core communities and the IDP document for local municipality were also used to gather information on social issues. Information gathered in terms of the above approaches is deemed sufficient to determine the current socio-economic situation and the impacts from the proposed project.

4.2.7 Impacts on people's environmental rights

The environmental rights contained in section 24 of the Constitution provide that everyone is entitled to an environment that is not harmful to his or her well-being. In the context of the proposed activity, this requires a determination of what level of pollution and degradation to the environment from the project is harmful to well-being. The general approach of the common law is to define an acceptable level of impacts, which a reasonable person can be expected to tolerate in the particular circumstances. The subjectivity of this approach can be problematic which has led to the development of environmental guidelines and standards.

Several studies were conducted over the project area, which included studies on biophysical and social aspects of the environment. The outcomes of the studies were used to identify possible impacts from the proposed project. All significant impacts identified from the proposed project will be avoided and if they cannot be avoided, they will be mitigated to ensure that they are within acceptable levels as determined by the applicable environmental guidelines and standards. In view of the above and if the mitigation measures are strictly adhered to, the people's environmental rights as stipulated in section 24 of the Constitution will not be affected by the commencement and operation of the proposed mining project.

During the operation of the proposed project, monitoring of the environment will be ongoing and the results from the monitoring will be regularly reported to the responsible organs of state. Compliance to the measures recommended in the EIR and EMPr will also be undertaken on an annual basis or as determined in the authorisations. Reports from the above monitoring and compliance assessment will be made available to the public for their perusal and commenting. The above illustrates the commitment Iyanga Mining (Pty) Limited has on ensuring that the environment is held in public trust for the people.

4.2.8 Public participation

A process that ensures that consultation with interested and affected parties for the project has been undertaken, will be followed. The process to provide all interested and affected parties with an opportunity to comment on the project that will be undertaken. Platforms such as public meetings and public commenting opportunities will be offered to the interested and affected parties. Iyanga Mining (Pty) Limited further commits to ensure their contribution to environmental education, to their employees and the nearby communities during the life of mine.

The employees are made aware of work that may be harmful to their health and the environment and of any work posing danger. This is undertaken in terms of the Mine Health and Safety Act, 1999 (Act 25 of 1999) and their regulations, which gives the employees the right to refuse work that is dangerous. Iyanga Mining (Pty) Limited will respect decisions of employees regarding the above and is committed to the protection of employees against any dangerous working situations.

All issues raised by the interested and affected parties will be recorded and addressed in the Final EIR and EMPr.

Iyanga Mining (Pty) Limited has developed a local economic development plan, as part of their Social and Labour Plan, which will encourage the participation of the community in the opportunities rendered by Welgelegen Colliery.

4.2.9 Intergovernmental co-ordination

Before the proposed project can proceed, a waste management licence must be applied for and issued. The above-mentioned application must be made to the competent authority, which in this case is the Department of Mineral Resources.

In the spirit of co-operative governance and in compliance with the NEMA, the competent authority will, during the processing for this application, consult with other organs of state that administer laws that relate to a matter affecting the environment relevant to this application.

The organs of state that will be consulted may include the following:

- Mpumalanga Tourism and Parks Agency
- Department of Mineral Resources and Energy
- Department of Water and Sanitation
- National Department of Agriculture, Forestry and Fisheries
- South African Heritage Resources Agency
- SANRAL
- Victor Khanye Local Municipality
- Ward Councillor (Victor Khanye Local Municipality)

Note however that this list is not exhaustive as more organs of state may be identified by the competent authority.

In view of the above, Iyanga Mining (Pty) Limited believes that sufficient intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to environment were undertaken. No conflicts of interests between organs of state are therefore anticipated in the application.

4.2.10 Environmental considerations

In the interest of the public and in bid to ensure that the environment is used to the interest of the public, environmental baseline data was obtained through various independent agencies and used in the EIR and EMPr. The data accumulated and analysed is deemed sufficient to gain a baseline indication of the present state of the environment. The use of this baseline study for impact assessments is thus justified, and reliable conclusions could be made. The impacts that could arise during and after the proposed activities were determined and ranked according to their significance.

Based on the impact assessment, recommendations were made for the mitigation of significant negative environmental impacts that will result from the proposed project.

The proponent will also make sufficient financial provision for remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects through a bank guarantee for closure costs and by making funds available from their operational costs during the operational phase of the mine.

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SECTION FIVE

Motivation for the preferred development footprint

5. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT

5.1 DETAILS OF ALL ALTERNATIVES CONSIDERED

The National Environmental Management Act 107 of 1998, Environmental Impact Assessment Regulations, 2014 requires the EIA phase to identify alternatives for projects applied for. In terms of the above-mentioned regulations, an alternative in relation to activities, refers to different means of meeting the general purpose and requirements of the activity, which may include alternatives to the (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity;(d) the technology to be used in the activity;(e) the operational aspects of the activity; and (f) the option of not implementing the activity.

Iyanga Mining (Pty) Ltd intends on undertaking an in-pit discard disposal at Welgelegen Colliery. The proposed activity will include the disposal of coal discard material from the coal washing plant at mined out opencast pits.

5.1.1 Location Alternative

The following location alternatives were selected based on a number of criteria, which include the environmental considerations (how sensitive is the area in terms of soils, wetlands, groundwater etc.), sensitive receptors (proximity to communities and farmsteads) and the dependency to targeted coal reserves, mine design target areas and existing mine infrastructure.

In Pit Discard Disposal

The only alternative to this activity includes, disposal of mineral residue on a discard dump. This alternative has been approved by the DMRE and forms part of the mine's approved EMPr. The use of an in-pit disposal was considered since it was not certain if the approved mineral residue deposit will be sufficient to cover the volumes to be generated from the mine's coal washing plant. In addition to the above and should the in-pit disposal be approved and with all the measures proposed, the proposed project will ensure that the pollution footprint of the discard dump is minimised.

5.1.2 Land Use Alternatives

It is important to consider if there are any viable alternative uses of the land over which the development is proposed. It must be noted that the proposed development area is located within an existing mining area, hence there cannot be any feasible land use alternatives.

5.1.3 Site Layout Alternatives

In Pit Discard Disposal

No site layout alternative would be applicable for this activity.

5.1.4 Design Target Areas

The Welgelegen Colliery is currently operational through an opencast method. The proposed in-pit discard disposal will not affect the approved mine designs hence there is no need for a mine design alternative.

5.1.5 Technology Alternatives

Based on the policies of the Department of Water and Sanitation, the local municipalities and the mine itself, there's no technology alternatives considered for the proposed activity, the feasible technology undertaking the current mining activity will be employed.

It must however be noted that as part of the approved EMPR, Iyanga Mining (Pty) Limited will ensure that a filter press (water saving technology) is installed in their coal washing plant.

5.1.6 Disposal Alternatives

The following disposal alternatives have been considered for the in-pit coal disposal:

Integrated Discard "Dry Disposal" (Preferred Alternative)

Integrated discard "dry" process involves dumping coal discard material in a conventional way in layers and mixing the low moisture "filter cake" fine discard material in layers with the coarse discard. The integrated discard "dry" technique will reduce the permeability of the coal discard and therefore have a reduction in acid mine drainage. Although the expected acid mine drainage is significantly less than that for co-disposal, acid mine drainage is still expected to continue after closure.

Co-disposal "Wet and Dry Disposal"

Co-disposal involves the impoundment of slurry within the body of the coal discard, which will lead to AMD during the operating life and a considerable period after closure.

Integrated Discard "Wet Disposal"

Integrated discard involves the mixing of slurry and the coarse discard which will be deposited like conventional tailings. The tailings will beach, with the coarse product being deposited first followed by the fine product which will accumulate at the pool centre. The integrated discard technique will reduce the permeability of the coarse discard and therefore a reduction in AMD is expected. Although the expected AMD is significantly less than that for co-disposal, AMD is expected to continue after closure. However, this disposal technique is relatively new and unproven technology.

5.1.7 Input Material Alternatives

Based on the policies of the Water and Sanitation, the local municipalities and the mine itself, it was determined that the only feasible technological way of undertaking the proposed activities would be to use energy currently available to the mine, water from the mine workings, borehole water only for the domestic water use.

5.1.8 Transportation Alternatives

Discard Material

Regarding transportation of the coal discard, the use of an overland conveyor belt or trucks were investigated. However, the option of using trucks works best since Welgelegen Colliery already use these trucks for the transportation of coal from the mine. The option of using a conveyor belt was ruled out due to the short distance from the plant to the in-pit disposal areas and the planned MRD facility. The use of dump trucks was seen to be more feasible since this will not require new infrastructure.

The coal discard will hence be transported from the Welgelegen Colliery's coal washing plant to the mined out opencast pits using dump trucks. The discard will be placed in horizontal layers (bottom-up) following an approved performance compaction specification while the fines or slurry will be

directed to a filter press before being mixed with the coarse discard before disposal in the mined-out pits. The supernatant water will be used as makeup water to the coal washing plant.

5.1.9 No Go Alternative

This alternative would prevent the proposed activity from being implemented, as there might be no facility for the disposal of additional discard. This in turn would shorten the LoM and prevent the exploitation of important coal resources and the retention of employment in the long term.

5.2 Details of the Public Participation Process Followed and Results Thereof

Public participation is the cornerstone of the EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. The general objectives of integrated environmental management laid down in the NEMA include to "ensure" adequate and appropriate opportunity for public participation in decisions that may affect the environment". The National Environmental Management Principles include the principle that "The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured", which basically means that the person responsible for the application (EAP) must ensure that provision of sufficient and transparent information on an ongoing basis to stakeholders are made to allow them to comment, and to ensure that the participation of previously disadvantaged people like women and the youth are undertaken.

In terms of the EIA Regulations, 2014, when applying for a waste management licence, the Environmental Assessment Practitioner managing the application must conduct at least a public participation process where all potential or registered interested and affected parties, including the competent authority, are given a period of at least 30 days to submit comments on each of the scoping report, basic assessment reports, environmental impact assessment report and EMPr and where applicable the closure plan. In this case the Scoping Report and the EIR and EMPr is considered.

This section of the EIR and EMPr will give an explanation of the public participation process taken so far in order to comply with the above-mentioned requirements. A number of public participation guidelines were published in a bid to assist persons responsible for the waste management applications. As much of the available guidelines were used in determining the public participation process, in guiding the public participation process of the proposed project.

The public participation process for the proposed project is designed to provide sufficient and accessible information to interested and affected parties (I&APs) in an objective manner to assist them to:

- raise issues of concern and make suggestions for enhanced benefits;
- contribute local knowledge and experience;
- verify that their issues have been captured;
- verify that their issues have been considered in the technical investigations; and
- comment on the findings of the EIA.

The following are and will be taken in undertaking of the public participation process for the proposed project.

5.2.1 Registration Phase

The public participation process commenced by providing potential interested and affected parties (I&AP's) 30 days to register as interested and affected parties.

5.2.1.1 Notification of potential interested and affected parties

The following methods of notification were used to notify the interested and affected parties of the opportunity to register during the public participation process for the proposed project:

- Notices were fixed i.e., on the fence of the property where the proposed project will be undertaken and at a public place conspicuous to and accessible to the public. The notices were compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.
- Written notices were also sent to all the owners and lawful occupiers of the land on which the proposed project will be undertaken, owners/lawful occupiers of land immediately adjacent to the proposed project area, the municipal councillors of the ward in which the proposed project is situated and the municipality which has jurisdiction in the proposed project area (Victor Khanye Local Municipality). The written notices were compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.

5.2.1.2 Registered Interested and Affected Parties

The following authorities are currently registered as interested and affected parties for the proposed project:

- Mpumalanga Tourism and Parks Agency
- Department of Mineral Resources and Energy
- Department of Water and Sanitation
- National Department of Agriculture, Forestry and Fisheries
- South African Heritage Resources Agency
- SANRAL
- Victor Khanye Local Municipality
- Ward Councillor (Victor Khanye Local Municipality)
- Adjacent and Direct Landowners

5.2.1.3 Finalisation of Interested and Affected Party Database

On expiry of the registration period, the database of interested and affected parties was finalised. All parties who indicated the interest of being registered as interested and affected parties were added to the list of interested and affected parties.

Note: All organs of state, which have jurisdiction in respect of any aspect of the proposed project and the competent authority, are automatically registered as interested and affected parties.

5.2.2 Scoping Phase

The draft Scoping report was made available for comment to all relevant stakeholders during the above-mentioned registration phase.

5.2.2.1 Notification of potential and registered interested and affected parties

The following methods of notification were used to notify the potential and registered interested and affected parties of the opportunity to comment on the draft Scoping Report during the public participation process for the proposed project:

- All fixed notices as described under the registration phase of this public participation were used to invite comments from the interested and affected parties on the draft Scoping Report.
- Written notices were sent during the registration phase of this public participation process to the surface owner of the land on which the proposed project will be undertaken, owners/lawful occupiers of land immediately adjacent to the proposed project area, the municipal councillors of the ward in which the proposed project is situated and the municipality which has jurisdiction over the proposed project area (Victor Khanye Local Municipality) were used to invite comments on the draft Scoping Report from the above-mentioned interested and affected parties.
- The notices for inviting the public to register as interested and affected parties were also used to invite comments on the Scoping Report from the public.
- The draft Scoping report was submitted to all the commenting authorities for their comments.
- A copy of the draft Scoping Report was placed in the Delmas public Library.

5.2.3 EIA Phase

The draft EIR and EMPr for the proposed in-pit discard disposal will be made available for comment to all interested and interested and affected parties.

5.2.3.1 Notification of potential and registered interested and affected parties

The following methods of notification were used to notify the interested and affected parties of the opportunity to comment on the draft EIR and EMPr during the EIA Phase public participation process for the proposed project:

- Written notices inviting comments on the draft EIR and EMPr were sent to interested and affected parties. The written notices were compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.
- Notice inviting interested and affected parties to comment on the draft EIR and EMPr was published in the local newspaper i.e. Streeknuus News. The newspaper notice was published in English. The notice was compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.

- The draft EIR and EMPr was submitted to the relevant commenting authorities for their comments.
- A copy of the draft EIR and EMPr was placed at the Delmas public library for public perusal and commenting. The published newspaper notice will indicate the availability of the draft EIR and EMPr at the above-mentioned places and invited the public to comment of the draft EIR and EMPr.
- A public meeting will be held on the 02 of July 2021. The public meeting was advertised in the local newspaper (Streeknuus News) where interested and affected parties are invited to attend. The meeting is aimed to be used to present the specialist findings for the project and to collect any comments and issues that may be raised by the interested and affected parties.

5.2.3.2 Comments, Issues and Responses on the Draft EIR and EMPr

All comments and issues received after the consultation process for the Scoping Phase are recorded together with the responses to the comments made and reaction from the commenting party in Table 13 of this report.

5.2.3.3 Proof of Consultation

Proof of the Scoping Phase consultation is attached as Appendix A.

5.3 ENVIRONMENTAL ATTRIBUTES (BASELINE INFORMATION)

5.3.1 Geology

5.3.1.1 Regional Geology

The proposed Welgelegen Colliery's in-pit discard disposal is situated in the Witbank Coalfield of the well-known Middle Ecca stage Coal Province. Several coalmines have been, or are operating within this coalfield. The Witbank coalfield extends from Springs to Belfast and from Middelburg to Rietspruit. The Witbank Coalfield includes the districts of Benoni, Nigel, Brakpan/Springs, Delmas, Dryden, Bronkhorstspruit, Kendal, Ogies, Witbank, Middelburg, Arnot and Belfast encompassing a surface area of approximately 568 000 ha. The Witbank Coalfield bounds the Highveld coalfield to the south, the South Rand coalfield to the south-west and the Ermelo coalfield to the south-east. The coal seams of the Witbank coalfield are at a shallow depth, with the lowest seam seldom reaching 100 metres in the deepest lying parts of the field.

The target seams for the Welgelegen Colliery are the No 2 and No 4 seam. The No. 2 seam total thickness ranges from 0.0 m to 6.0 m and has intra-seam carbonaceous partings, which split it into the No. 2 Seam Upper (S2U) and the No. 2 Seam Lower (S2L) horizons on the southern block and the northern boundary of the northern block. The seam maintains an average thickness of 4.50 m with no intra-seam partings south of the northern section where the coal quality is best. Both horizons of the seam are considered as coal resources.

The No. 4 seam in the southern section attains a maximum thickness of 6.0 m. This seam is predominantly homogeneous and occupies a limited area of the section. The coal quality is generally better than the No. 2 seam in the area. Based on the proposed production rate, the estimated life of mine is to be extended to approximately 10 years.

5.3.2 Climate

5.3.2.1 Mean Monthly Rainfall and Evaporation

No weather stations are located in close proximity to the proposed in-pit discard disposal. The closest weather stations are located in Witbank and Springs. Temperature data from the Springs weather station (Station number 0476762 A3) was analysed and a summary of the data is presented in Table 5 The temperature data spanned 2001 to 2010.

Table 5: Mean monthly rainfall, rain days and evaporation data for the site

Month	Ave Rainfall (mm)	Ave rain days	Ave Evaporation (mm S-Pan)
October	69.1	6.1	180.8
November	105.5	9	170.6
December	118.5	8.9	187.8
January	113.8	9.2	184.5
February	87	6.6	153.8

March	78.3	6	151.8
April	39.6	3.7	116.7
May	17.1	1.8	98.3
June	7.7	0.8	79.8
July	5.4	0.5	87.4
August	67.6	0.8	115.7
September	19.8	1.8	149.9

5.3.2.2 Mean Monthly Maximum and Minimum Temperatures

No weather stations are located in close proximity to the proposed in-pit discard disposal. The closest weather stations are located in Witbank and Springs. Temperature data from the Springs weather station (Station number 0476762 A3) was analysed and a summary of the data is presented in Table 6. The temperature data spanned 2001 to 2010.

Table 6: Mean monthly temperature data for 0476762 (Springs)

Month	Average daily minimum temperature (ºC)	Average daily maximum temperature (ºC)
January	15.2	26.5
February	14.5	26.3
March	12.3	25.0
April	8.8	23.2
May	3.7	20.8
June	1.1	18.4
July	-0.1	18.7
August	3.5	21.6
September	7.8	25.5
October	11.3	26.4
November	13.6	25.3
December	14.8	26.9

5.3.2.3 Wind Direction and Speed at the Mine

No data on the wind patterns is available for the proposed in-pit discard disposal. Owing to the location of the site, the gentle undulating topography and the non-existence of mountain ranges and ridges, no localised wind systems (topographically-induced) will be generated. Hence the wind patterns at the mine will conform to the regional wind patterns. The average wind speed and directions as recorded at the closest weather station are presented in Table 7.

Table 7: Average wind speed and direction

Month	N		NE		E		SE		S		SW		W		NW	
	n	v	n	v	n	v	n	V	n	v	n	v	n	v	n	v
Jan	67	4.3	124	4.0	119	4.5	92	5.1	40	4.6	47	4.3	45	3.8	149	3.8
Feb	48	4.1	108	3.8	139	4.1	135	4.9	61	4.5	48	3.9	41	3.5	91	3.7
Mar	53	3.9	99	3.7	126	3.7	99	4.5	50	4.1	56	4.1	43	3.5	111	3.9
Apr	50	4.0	88	3.5	94	4.0	55	4.2	45	4.3	71	4.4	71	4.5	129	4.0
May	54	4.4	66	3.7	61	3.9	62	4.5	47	4.2	79	4.5	67	4.7	116	4.1
Jun	48	4.1	47	3.7	59	4.1	42	4.8	46	4.7	99	4.5	76	4.3	115	4.3
Jul	43	4.1	66	3.7	64	4.1	62	4.9	54	4.6	84	4.5	57	4.2	121	4.1
Aug	80	4.9	96	4.4	97	4.3	33	5.6	35	4.9	75	4.9	65	4.9	192	4.7
Sept	115	4.8	134	4.8	101	5.0	48	5.7	32	4.1	53	5.1	59	5.0	203	4.8
Oct	115	4.5	139	4.7	116	5.4	58	5.6	41	4.9	54	4.7	47	4.8	223	4.8
Nov	105	4.4	135	4.4	110	5.0	56	5.3	37	4.9	45	4.6	55	4.3	229	4.7
Dec	91	4.2	138	4.1	102	4.8	55	4.9	35	4.5	47	4.9	55	4.2	194	4.2
Avg	**72**	**4.4**	**103**	**4.1**	**98**	**4.4**	**66**	**4.9**	**44**	**4.5**	**64**	**4.5**	**57**	**4.4**	**156**	**4.4**

5.3.2.4 Extreme Weather Conditions

Thunderstorms occur frequently during summer (rainy season) and are usually accompanied by lightning, heavy rain, strong winds and occasional hail. Storms are localised and rainfall can vary markedly over short distances. An average of six hail incidents per annum can be expected at a particular site. Frost occurs in the winter months, peaking with an average occurrence of nine days in June.

5.3.3 Topography

Topography can be used as a good first approximation of the hydraulic gradient in an unconfined aquifer. The area of the in-pit discard disposal is characterised by a gentle undulating topography. In the region of the mine, the slope is more or less in the order of 1:125 (0.8%). Drainage at the in-pit disposal site follows the drainage of a tributary of the Wilge River, which flows east towards the Wilge River. There are a number of dams on the farm, as well as two perennial pans and two small non-perennial pans. On larger scale, drainage occurs in a northerly direction towards the generalised flow of the Wilge River.

5.3.4 Soils

The proposed in-pit discard disposal is situated primarily over a mining area (mined out opencast pits) which is further surrounded by crop production/cultivation of crops; therefore, no disturbance of cultural heritage will occur due to these existing activities. The land at the proposed in-pit discard disposal area is impacted upon through the presence of operational opencasts mining.

In order to determine the baseline of the soils within the Welgelegen Colliery's in-pit discard disposal project, Iyanga Mining (Pty) Limited appointed Pedoplan International Consulting cc to undertake a soil survey over the area covered by Welgelegen Colliery which included the area covered by the proposed in-pit discard disposal project. The report is attached in Appendix B. Information from the above report was used to compile this section of the EIR and EMPr.

5.3.4.1 Dominant Soil Types Identified

According to the Pedoplan International Consultants CC soil survey, which was conducted before the commencement of the mining activities at Welgelegen Colliery, a total of 9 homogeneous soil units were identified that forms part of the proposed in-pit discard disposal. These were symbolized as Hu1, Hu2, Av, Cv2, Dr, Gc1, Rg, D1 and Lo-We. The area of the proposed in-pit discard disposal is occupied by a deep, red apedal, sandy clay loams or sandy clays, belts of deep, moderately deep or shallow, yellow-brown apedal loams on soft plinthite (Avalon form) or hard plinthite (Glencoe form). Also present, particularly on upper midslopes, are red apedal loams on hard plinthite of the Lichtenburg form. Upper as well as lower midslopes may display belts of hard plinthite that are covered by very shallow soils of the Dresden form. Areas underlain or affected by pre-Karoo andesite and diamictite (tillite) are covered by heavy textured, red soils which may be deep (Hu2), moderately deep (Hu3) and of variable depth with abundant rock outcrop (Hu-R). The soil-landform map unit of the proposed project area is depicted in Figure 4. Key characteristics and the classification of the soils are shown in the soil report.

5.3.4.2 Land Capability

Land capability is determined by a combination of soil, terrain and climate features. Land capability classes reflect the most intensive long-term use of land under rain-fed conditions. An indication is simultaneously given about the permanent limitations associated with the different land use classes.

A detailed survey on the land capability over the proposed project area was determined through the assessment of the soil study (mentioned above). The land capability of the study area is summarized in Table 8, which shows the soil types grouped into each land capability class, the number of units per land capability class and the physical arable potential that occurs within the proposed project area.

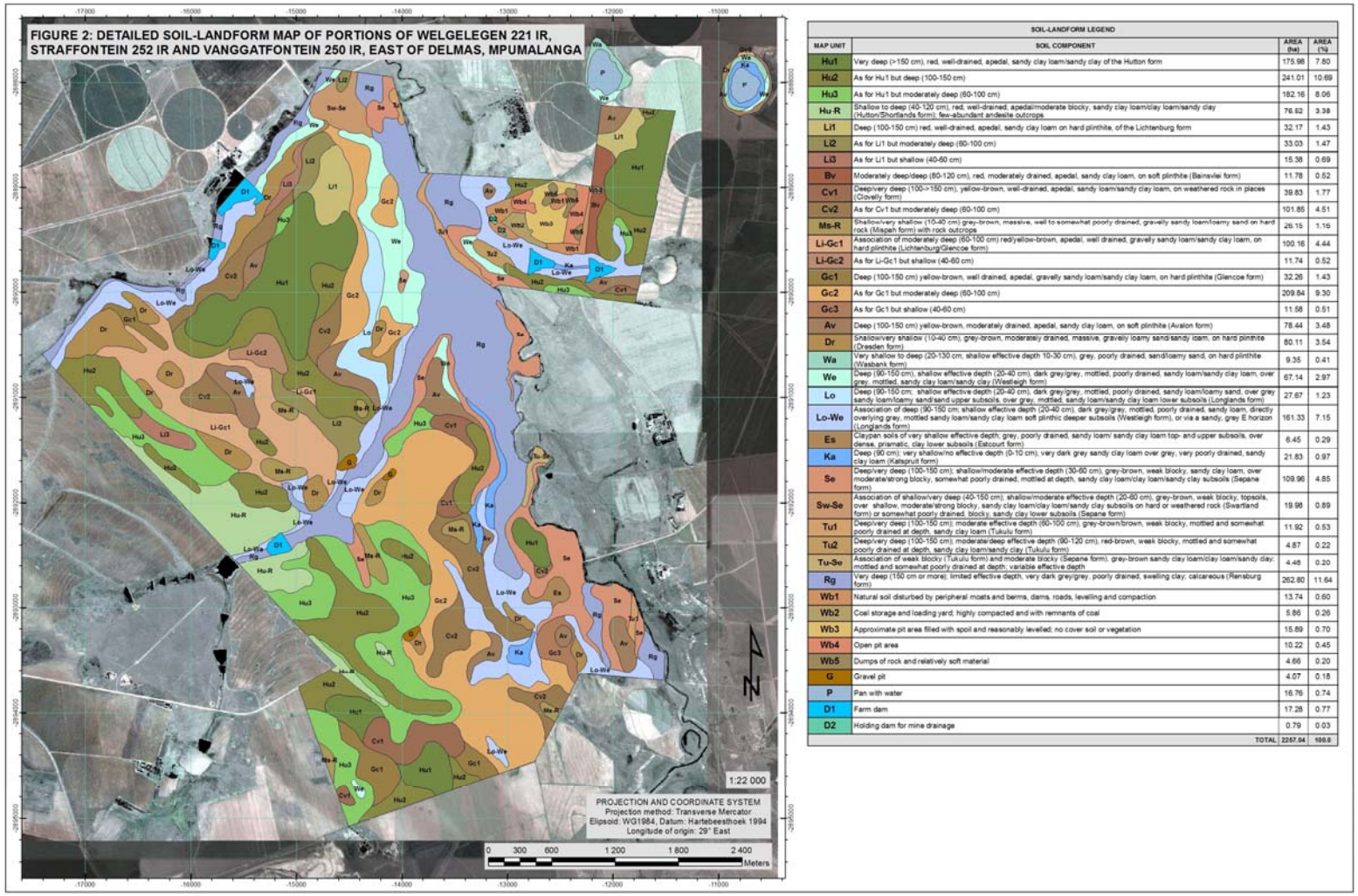
The location and extent of land capability classes within the proposed in-pit discard disposal soil study area is shown in Figure 5.

Table 8: Rainfed land capability assessment for the proposed in-pit discard disposal

MAP UNIT	LAND CAPABILITY CLASS*	PHYSICAL ARABLE POTENTIAL (RAINFED)
Hu1	II	Moderately high
Hu2	II	Moderately high
Cv2	III	Moderate
Gc1	II	Moderately high
Dr	VI	None to Low
Lo-We	V	None to Low
Rg	V	None to low

5.3.4.3 Current Land Use

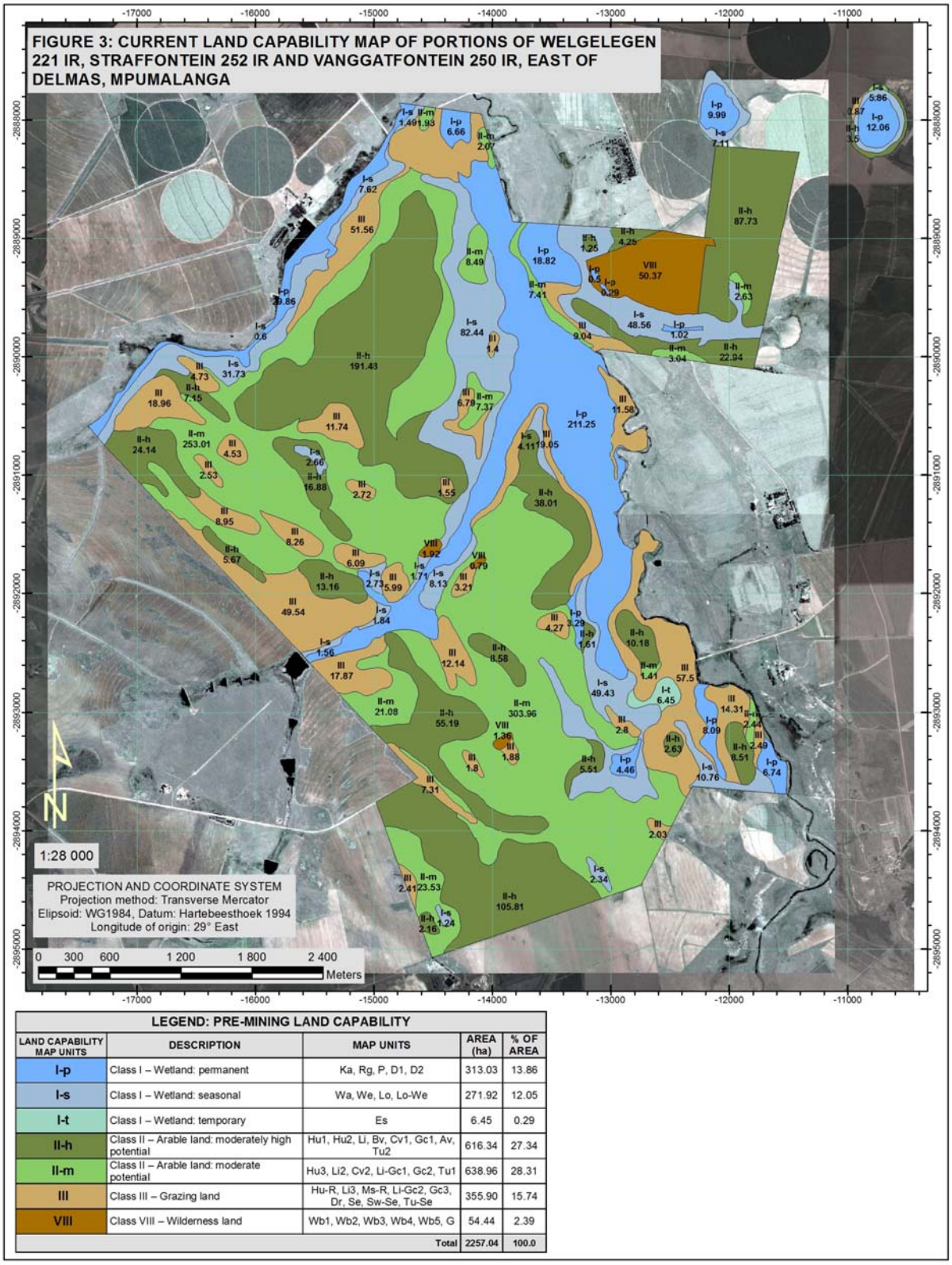
The land use within the proposed project area is characterised by opencast mining activities since it will be undertaken on a mined-out pit, with crop production activities surrounding the opencast areas (in-pit discard disposal). Refer to Figure 6 below for current land uses in and around the proposed in-pit discard disposal.



SOIL-LANDFORM LEGEND

MAP UNIT	SOIL COMPONENT	AREA (ha)	AREA (%)
Hu1	Very deep (>150 cm), red, well-drained, apedal, sandy clay loam/sandy clay of the Hutton form	175.98	7.80
Hu2	As for Hu1 but deep (100-150 cm)	241.01	10.69
Hu3	As for Hu1 but moderately deep (60-100 cm)	182.16	8.06
Hu-R	Shallow to deep (40-120 cm), red, well-drained, apedal/moderate blocky, sandy clay loam/clay loam/sandy clay (Hutton/Shortlands form), few-abundant andesite outcrops	76.62	3.38
Li1	Deep (100-150 cm) red, well-drained, apedal, sandy clay loam on hard plinthite, of the Lichtenburg form	32.17	1.43
Li2	As for Li1 but moderately deep (60-100 cm)	33.03	1.47
Li3	As for Li1 but shallow (40-60 cm)	15.38	0.69
Bv	Moderately deep/deep (80-120 cm), red, moderately drained, apedal, sandy clay loam, on soft plinthite (Bainsvlei form)	11.78	0.52
Cv1	Deep/very deep (100->150 cm), yellow-brown, well-drained, apedal, sandy loam/sandy clay loam, on weathered rock in places (Clovelly form)	39.83	1.77
Cv2	As for Cv1 but moderately deep (60-100 cm)	101.85	4.51
Ms-R	Shallow/very shallow (10-40 cm) grey-brown, massive, well to somewhat poorly drained, gravelly sandy loam/loamy sand on hard rock (Mispah form) with rock outcrops	26.15	1.16
Li-Gc1	Association of moderately deep (60-100 cm) red/yellow-brown, apedal, well drained, gravelly sandy loam/sandy clay loam, on hard plinthite (Lichtenburg/Glencoe form)	100.16	4.44
Li-Gc2	As for Li-Gc1 but shallow (40-60 cm)	11.74	0.52
Gc1	Deep (100-150 cm) yellow-brown, well drained, apedal, gravelly sandy loam/sandy clay loam, on hard plinthite (Glencoe form)	32.26	1.43
Gc2	As for Gc1 but moderately deep (60-100 cm)	209.84	9.30
Gc3	As for Gc1 but shallow (40-60 cm)	11.58	0.51
Av	Deep (100-150 cm) yellow-brown, moderately drained, apedal, sandy clay loam, on soft plinthite (Avalon form)	78.44	3.48
Dr	Shallow/very shallow (10-40 cm), grey-brown, moderately drained, massive, gravelly loamy sand/sandy loam, on hard plinthite (Dresden form)	80.11	3.54
Wa	Very shallow to deep (20-130 cm; shallow effective depth 10-30 cm), grey, poorly drained, sand/loamy sand, on hard plinthite (Wasbank form)	9.35	0.41
We	Deep (90-150 cm), shallow effective depth (20-40 cm), dark grey/grey, mottled, poorly drained, sandy loam/sandy clay loam, over grey, mottled, sandy clay loam/sandy clay (Westleigh form)	67.14	2.97
Lo	Deep (90-150 cm; shallow effective depth (20-40 cm), dark grey/grey, mottled, poorly drained, sandy loam/loamy sand, over grey sandy loam/loamy sand/sand upper subsoils, over grey, mottled, sandy loam/sandy clay loam lower subsoils (Longlands form)	27.67	1.23
Lo-We	Association of deep (90-150 cm; shallow effective depth (20-40 cm), dark grey/grey, mottled, poorly drained, sandy loam, directly overlying grey, mottled sandy loam/sandy clay loam soft plinthic deeper subsoils (Westleigh form), or via a sandy, grey E horizon (Longlands form)	161.33	7.15
Es	Claypan soils of very shallow effective depth; grey, poorly drained, sandy loam/ sandy clay loam top- and upper subsoils, over dense, prismatic, clay lower subsoils (Estcourt form)	6.45	0.29
Ka	Deep (90 cm); very shallow/no effective depth (0-10 cm), very dark grey sandy clay loam over grey, very poorly drained, sandy clay loam (Katspruit form)	21.83	0.97
Se	Deep/very deep (100-150 cm); shallow/moderate effective depth (30-60 cm), grey-brown, weak blocky, sandy clay loam, over moderate/strong blocky, somewhat poorly drained, mottled at depth, sandy clay loam/clay loam/sandy clay subsoils (Sepane form)	109.96	4.85
Sw-Se	Association of shallow/very deep (40-150 cm); shallow/moderate effective depth (20-60 cm), grey-brown, weak blocky, topsoils, over shallow, moderate/strong blocky, sandy clay loam/clay loam/sandy clay subsoils on hard or weathered rock (Swartland form) or somewhat poorly drained, blocky, sandy clay lower subsoils (Sepane form)	19.98	0.89
Tu1	Deep/very deep (100-150 cm); moderate effective depth (60-100 cm), grey-brown/brown, weak blocky, mottled and somewhat poorly drained at depth, sandy clay loam (Tukulu form)	11.92	0.53
Tu2	Deep/very deep (100-150 cm); moderate/deep effective depth (90-120 cm), red-brown, weak blocky, mottled and somewhat poorly drained at depth, sandy clay loam/sandy clay (Tukulu form)	4.87	0.22
Tu-Se	Association of weak blocky (Tukulu form) and moderate blocky (Sepane form), grey-brown sandy clay loam/clay loam/sandy clay; mottled and somewhat poorly drained at depth; variable effective depth	4.48	0.20
Rg	Very deep (150 cm or more); limited effective depth, very dark grey/grey, poorly drained, swelling clay; calcareous (Rensburg form)	262.80	11.64
Wb1	Natural soil disturbed by peripheral moats and berms, dams, roads, levelling and compaction	13.74	0.60
Wb2	Coal storage and loading yard, highly compacted and with remnants of coal	5.86	0.26
Wb3	Approximate pit area filled with spoil and reasonably levelled; no cover soil or vegetation	15.89	0.70
Wb4	Open pit area	10.22	0.45
Wb5	Dumps of rock and relatively soft material	4.66	0.20
G	Gravel pit	4.07	0.18
P	Pan with water	16.76	0.74
D1	Farm dam	17.28	0.77
D2	Holding dam for mine drainage	0.79	0.03
	TOTAL	2257.04	100.0

Figure 4: Soil Map for the proposed in-pit discard disposal project area



LAND CAPABILITY MAP UNITS	DESCRIPTION	MAP UNITS	AREA (ha)	% OF AREA
I-p	Class I – Wetland: permanent	Ka, Rg, P, D1, D2	313.03	13.86
I-s	Class I – Wetland: seasonal	Wa, We, Lo, Lo-We	271.92	12.05
I-t	Class I – Wetland: temporary	Es	6.45	0.29
II-h	Class II – Arable land: moderately high potential	Hu1, Hu2, Li, Bv, Cv1, Gc1, Av, Tu2	616.34	27.34
II-m	Class II – Arable land: moderate potential	Hu3, Li2, Cv2, Li-Gc1, Gc2, Tu1	638.96	28.31
III	Class III – Grazing land	Hu-R, Li3, Ms-R, Li-Gc2, Gc3, Dr, Se, Sw-Se, Tu-Se	355.90	15.74
VIII	Class VIII – Wilderness land	Wb1, Wb2, Wb3, Wb4, Wb5, G	54.44	2.39
		Total	2257.04	100.0

Figure 5: Land Capability Classes for the proposed in-pit discard disposal project area

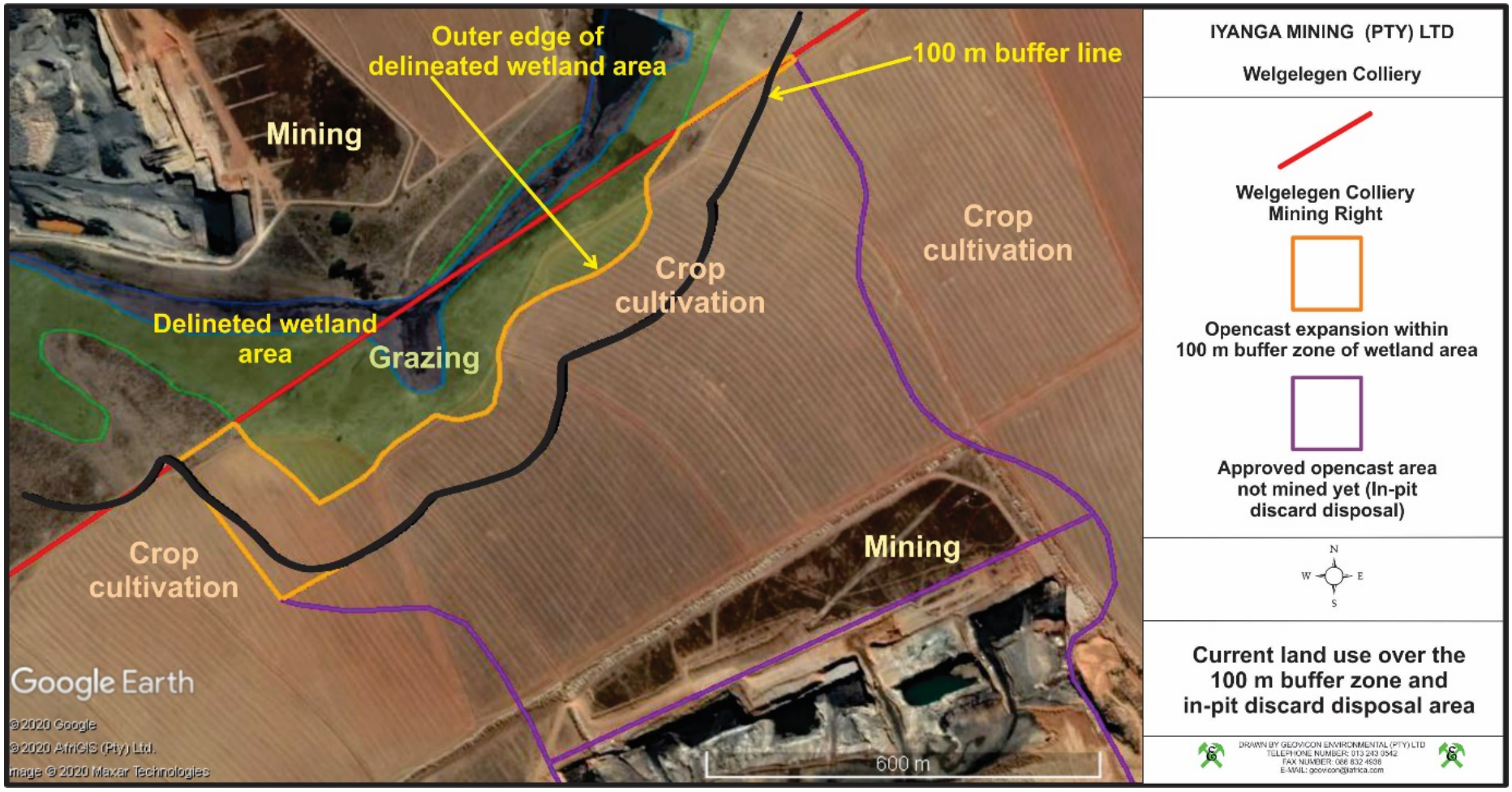


Figure 6: Land Use Map for the proposed in-pit discard disposal project area

5.3.5 Natural Vegetation/Plant Life

The proposed in-pit discard disposal is located within the Rand Highveld grassland vegetation type (Gm 11) / ecosystem in the Mesic Highveld Grassland bioregion (South African National Biodiversity Institute – SANBI). However, no vegetation will be impacted by the proposed project since it is already disturbed by mining activities. The landscape features are disturbed by voids from opencast mining. Proper rehabilitation measures will remedy the impacts which will be after the completion of the in-pit discard disposal.

5.3.6 Surface Water

In terms of the Department of Water and Sanitation demarcations, Welgelegen Colliery, which covers the proposed in-pit discard disposal area, is located in the Olifants Water Management Area (WMA 2). Within the water management area, the proposed in-pit discard disposal falls within the Wilge River catchment area, which is demarcated as tertiary drainage region B20. The proposed in-pit discard disposal falls into quaternary drainage region B 20 E. Figure 7 depicts the location of the project area in relation to the quaternary drainage regions within the Wilge River catchment. The Wilge River eventually drains into the Olifants River upstream of the Loskop Dam. See Appendix C for the Welgelegen Colliery Surface Water Study which covers the area of the proposed in-pit discard disposal. Outcomes of the above-mentioned hydrological study were used to inform this section of the EIR and EMPr.

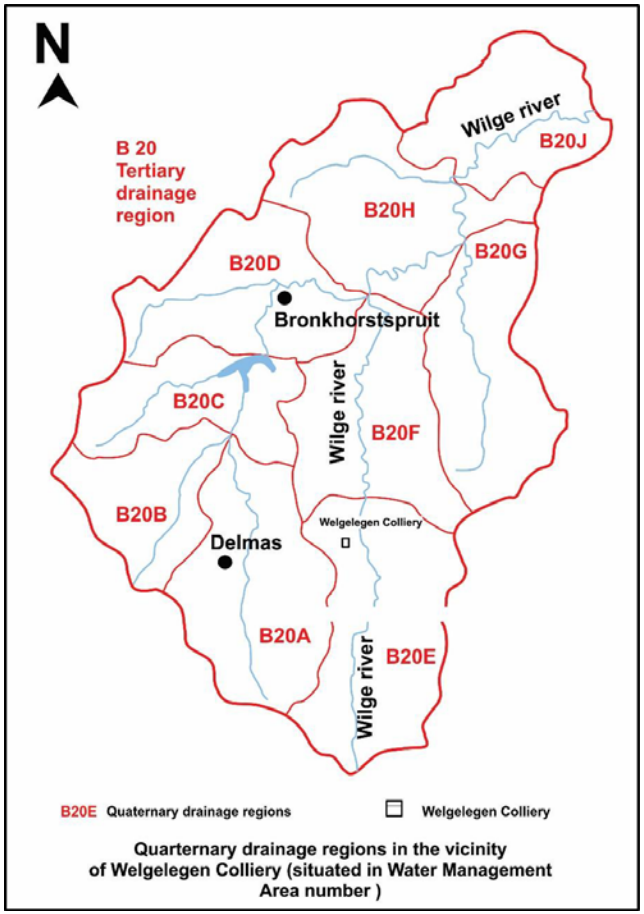


Figure 7: DWS Drainage Regions for Welgelegen Colliery

5.3.6.1 Baseline hydrology

The proposed in-pit discard disposal falls in the Olifants Water Management area. Within the water management area, the proposed project falls within the Wilge River catchment area, which is demarcated as tertiary drainage region B20. Welgelegen Colliery falls into quaternary drainage region B 20 E. The Wilge River eventually drains into the Olifants River upstream of the Loskop Dam.

5.3.6.2 Surface Water Quality

In view of the potential effects on the surface water from the upstream land uses and the with regards to the proposed in-pit discard disposal, it is crucial that the quality status of the surface water environment be determined to assess and quantify the impacts that the proposed project can have on the health of the receiving river system as well as water quality requirements of other downstream users. In relation to the above, Geovicon Environmental (Pty) Ltd conducts water quality monitoring within the water resources in the vicinity of Welgelegen Colliery. The surface water quality at Welgelegen Colliery is monitored at 8 localities. However, only three localities are relevant for the proposed in-pit discard disposal. The three sampling points have been sited to monitor the effects of the mining activities together with the proposed project on the Wilge River and its Tributaries i.e., WUS, WDS–1 and WDS–2.
Water quality observed from the sampling points, contrary to being determined by natural weathering processes that is usually observed in unaffected catchments, is mainly influenced by the upstream mining and historical mining and other activities. From the water quality results, it is evident that the Wilge River and its tributary are influenced by the current activities which include the current opencast mining operation and its associated dirty water areas within the Welgelegen Colliery. The impacts from the proposed in-pit discard disposal will be minimal due to the already existing activities that have impacted the Wilge River and its tributaries.

Sulphate, which is probably the most reliable indicator of pollution emanating from coal mining since sulphates could be discharged from acid mine wastes, dominates the inorganic water quality with other ionic species also recording high concentrations in these sampling point, with a value of 2289.00 mg/l (WUS), 937.33 mg/l (WDS–1) and 661.00 mg/l (WDS–2) exceeding the Water Quality Targets as prescribed in the South African quality guidelines. The TDS which should under natural conditions be ranging from 134 mg/l to 435 mg/l is currently at 3393.33 mg/l (WUS), 1486.00 mg/l (WDS–1), 1013.33 and mg/l (WDS–2), which is higher than it would be under natural conditions. Heavy metals within the sampling point have also shown higher than normal levels.

Further evaluation of the water qualities has shown that the low pH (WUS–2.95 and WDS–1–3.91, and WDS–2–3.38) is most probably the cause for the high concentration of heavy metals i.e. the low pH would have resulted in the mobilisation of the heavy metals (manganese, aluminium, iron etc.).

Based on the above mentioned, it can be concluded that the surface water on the mining site, of where the proposed in-pit discard disposal will be sited is of poor quality.

The location of the sampling points and results of analysis of the sampled water are indicated in Figure 8 and described in Table 9 and Table 10.

Table 9: Description of surface water sampling points on and surrounding Welgelegen Colliery

Monitoring site	Description
WUS	Situated within a tributary of the Wilge River, upstream of the northern mining section of Welgelegen area.
WDS – 1	Situated within a tributary of the Wilge River, downstream of the northern mining section of Welgelegen area.
WDS – 2	Situated within a tributary of the Wilge River, downstream of the northern mining section of Welgelegen area.

Table 10: Surface water quality in the vicinity of the mining area

Sampling Points	Variables												
	TDS (Mg/l)	Cl (Mg/l)	F (Mg/l)	SO_4 (Mg/l)	Ca (Mg/l)	Mg (Mg/l)	Na (Mg/l)	K (Mg/l)	Fe (Mg/l)	Mn (Mg/l)	EC (mS/m)	pH	Al (Mg/l)
WUS	3034	33	0.20	1964	258	156	78.8	11	23.4	45.3	313	3.02	96.3
WDS–1	2418	55.6	0.54	1519	207	90	230	10.5	67	17	265	4.06	10.7
WDS–2	440	18.3	0.35	282	33.2	16.6	26.6	5.37	1.18	4.31	72.3	3.38	14.7

5.3.7 Receiving Water Quality Objectives

The objective of Resource Directed Measures (RDM) is to facilitate the proactive protection (for use) of the country's water resources, in line with sustainability principles. The National Water Act (NWA) recognises the need to develop and use the country's water resources. However, the Act also recognises that our water resources cannot be used to the detriment of future users. RDM hence strives to ensure that the water resources are afforded a level of protection that will assure a sustainable level of development for the future. The RDM comprises three main interrelated components, namely: Classification, Reserve and Resource Quality Objectives. Iyanga Mining (Pty) Limited will comply with any classifications, reserve and resource quality objectives promulgated by DWS.

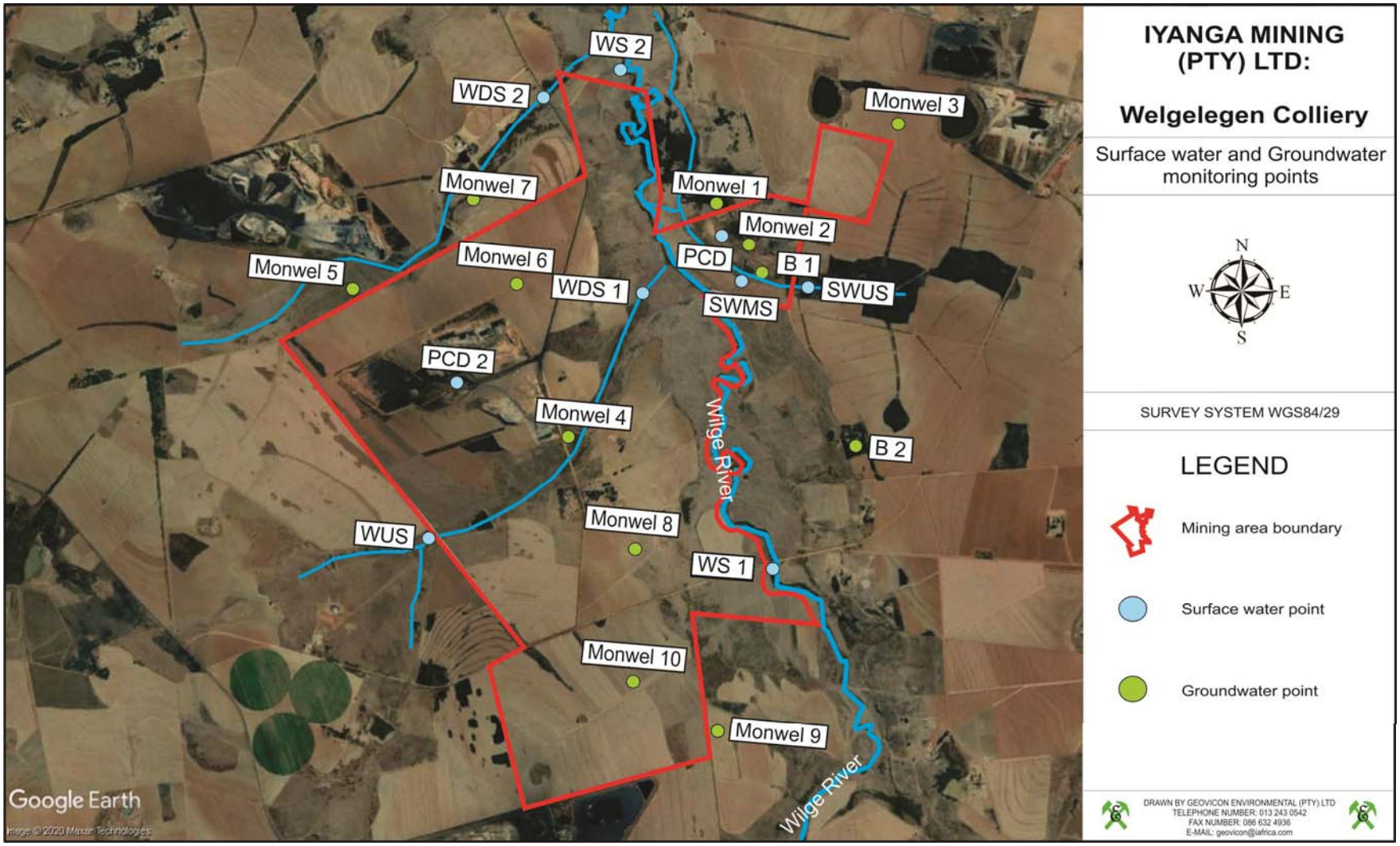


Figure 8: Welgelegen Colliery Surface Water Monitoring points

5.3.8 Groundwater

Since the proposed in-pit discard disposal can potentially impact on the groundwater, a description of the current groundwater conditions is required. The purpose of this section is, therefore to describe the prevailing groundwater conditions. This will serve as a reference baseline for quantifying potential mining impacts on the existing groundwater regime. Geo Pollution Technologies (Pty) Ltd (GPT) was appointed by Geovicon Environmental (Pty) Limited to conduct an update of the existing baseline geohydrological study at the Welgelegen Colliery which this included the area of the proposed in-pit discard disposal. See Appendix D for the updated groundwater study.

5.3.8.1 Geohydrology

According to the 1:50 000 General hydrogeological Map (Johannesburg 2526) groundwater resources are widespread but limited with borehole yields generally between 0.1 and 0.5l/s. Groundwater occurrence is better developed along aquifers associated with the contact zones of the dolerite intrusions where yields of 0.5 – 2.0 l/s are likely to occur. The aquifer represents important source for base flow into the streams draining the area. The hydrogeology of the area can be described in terms of the saturated and unsaturated zones. From the previous studies, the summary below of the aquifer system is given.

The aquifer represents an important source for base flow into the streams draining the area. The hydrogeology of the area can be described in terms of the saturated and unsaturated zones:

Unsaturated Zone - Shallow, regolith aquifer

The main source of recharge into the shallow aquifer is rainfall that infiltrates the aquifer through the unsaturated (vadose) zone. Vertical movement of water is faster than lateral movement in this system as water moves predominantly under the influence of gravity. This aquifer is comprised of transported alluvium and in-situ weathered sediments and is underlain by consolidated sedimentary rocks (sandstone, shale and coal). Based on literature the hydraulic conductivity of this aquifer likely ranges between 10-3 and 1 m.day-16.

Saturated Zone - Fractured, bedrock aquifer

The host geology of the area consists of consolidated sediments of the Karoo Supergroup and consists mainly of sandstone, shale and coal beds of the Ecca Group. Groundwater movement is predominantly associated with secondary structures in this aquifer (fractures, faults, dykes, etc.). The average water level depth in the area ranges between 5 and 25mbgl. Borehole yields in the Vryheid Formation and Dwyka aquifers are generally low and can be expected to be less than 2 l/s. Groundwater quality in the area is also expected to be intermediate to excellent with EC values ranging from 34 to 57mS/m.6

Both the porosity8 and the hydraulic conductivity9 of the Ecca Group fractured aquifers are known to be low. The commonly expected values of porosity and permeability for the rock types present in the site area, are 0 – 30% (porosity) and 10-7 – 1 m.d-1 (hydraulic conductivity) respectively (Kruseman & de Ridder, 1994). Movement of groundwater in this aquifer will be preferential in secondary structures such as joints, faults and fractures.

Dolerite intrusions in the form of dykes and sills are often encountered in these aquifers. These intrusions can serve both as aquifers and aquifuges. Thick, unbroken dykes inhibit the flow of water perpendicular to the dykes, forming (leaky) compartments in most instances. In contrast, the baked and cracked contact zones is normally highly conductive parallel to the dykes and these effectively interconnect the strata of the sediments both vertically and horizontally into a single aquifer, though highly heterogeneous and anisotropic unit on the scale of mining. These structures thus tend to dominate the flow of groundwater in fractured aquifers. Unfortunately, their location and properties are

rather unpredictable and expensive to define in sufficient detail. Their influence on the flow of groundwater is thus incorporated by using higher than usual flow parameters for the sedimentary rocks of the aquifer.

5.3.8.2 Depth of Groundwater Table

During the hydrocensus, 5 boreholes were measured for groundwater levels. The groundwater levels at the proposed area varies between a minimum of 4.63 m and a maximum of 10.7 m below ground level.

The relationship between water levels and surface topography is shown in Figure 9 below.

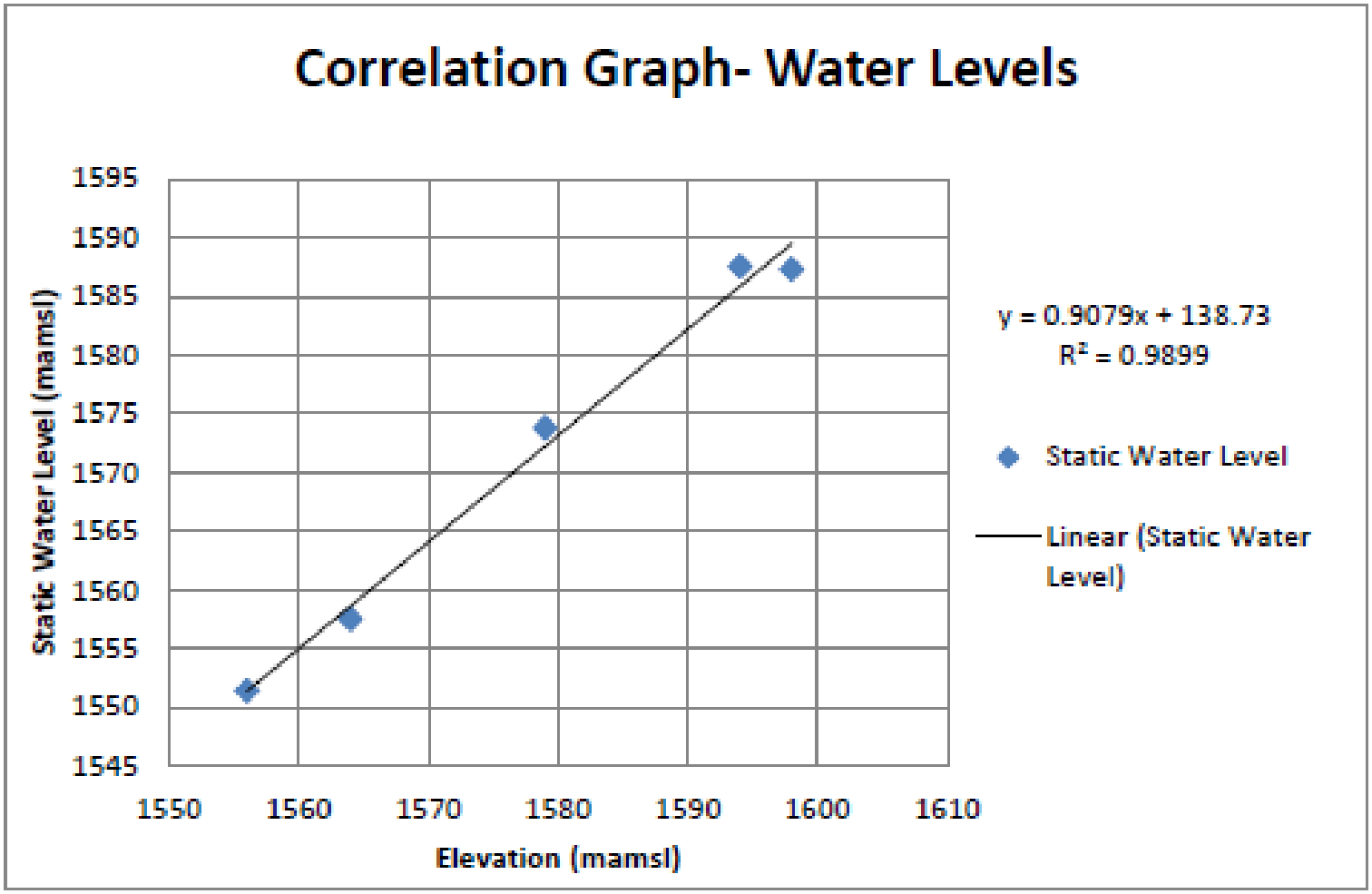


Figure 9: Correlation Graph of Topography vs available Groundwater Levels

5.3.8.3 Ground Water Quality

To determine if any groundwater quality deterioration and groundwater level lowering occurs with the area where the proposed in-pit discard disposal will be positioned, the groundwater quality and static water levels are monitored on a quarterly basis for the existing mining operations at Welgelegen Colliery. Boreholes are used for the sampling of groundwater and measuring of groundwater levels at Welgelegen Colliery. Groundwater monitoring boreholes have been sited and drilled for monitoring of groundwater at Welgelegen Colliery of which four monitoring points will be affected by the proposed in-pit discard disposal. The groundwater monitoring ensures that any decline in the quality and yield of groundwater of legitimate groundwater users in the area is detected in time, while also providing a necessary database for future disputes. In addition to the above mentioned, Geovicon Environmental (Pty) Limited has been contracted by Iyanga Mining (Pty) Limited to evaluate the groundwater quality and water level trends at Welgelegen Colliery. The borehole samples are submitted for major cation and anion analyses to determine the present water quality in the area. As part of the WUL, groundwater monitoring (Table 11 described the monitoring points) is conducted on a quarterly basis, the latest results from these analyses are contained in Table 12.

Based on the current groundwater monitoring, MONWEL – 4, MONWEL – 5 , MONWEL – 6 and MONWEL – 7 indicated water of good quality in water quality in variables and heavy metals during the latest reporting period, all of which are complying with the limits of the IWUL.

Table 11: Description of groundwater monitoring points

Monitoring site	Description
MONWEL – 4	Groundwater Borehole located within Welgelegen Colliery.
MONWEL – 5	Groundwater Borehole located in the western side of the Colliery.
MONWEL – 6	Groundwater Borehole located within Welgelegen Colliery.
MONWEL – 7	Groundwater Borehole located in the northern side of the Colliery.

Table 12: Groundwater quality in the vicinity of the mining area

Sampling Points	Variables												
	TDS (mg/l)	Cl (mg/l)	F (mg/l)	SO_4 (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	EC (mS/m)	pH	Al (mg/l)
MONWEL –4	72.00	0.10	17.30	6.35	6.46	4.72	9.88	3.95	0.02	0.24	15.00	6.35	0.02
MONWEL – 5	92.00	0.47	5.80	5.71	11.20	6.83	8.59	2.46	0.03	0.10	18.20	7.05	0.01
MONWEL – 6	94.00	10.80	4.70	1.36	7.74	6.21	5.94	1.65	0.02	0.21	18.50	6.98	0.01

MONWEL – 7	132.00	1.32	7.30	5.30	15.50	10.40	12.20	0.82	0.05	0.15	23.10	6.67	0.01

5.3.9 Sensitive Landscapes

Welgelegen Colliery recognises that all streams and wetlands occurring in vicinity of the proposed in-pit discard disposal should be treated as sensitive landscapes. To this extent, Geovicon Environmental (Pty) Limited, an independent consultant, was commissioned by Iyanga Mining (Pty) Limited to conduct a wetland assessment for the Welgelegen Colliery which caters the area for the proposed in-pit discard disposal. This specialist study consisted of the identification and delineation of wetland areas associated with Welgelegen Colliery which caters the area for the proposed in-pit discard disposal. In addition to this, the ecological functioning and integrity (health) of the delineated wetland systems was described. Wetland areas in association with Wilge Rivers and its Tributaries were identified during this wetland study (Appendix E).

5.3.9.1 Wetland Delineation

The wet soils delineation was considered for a desktop delineation of the wetland areas within the project area. In order to ground truth these findings, the wetland areas were delineated in accordance with the DWAF (2005) guidelines, whereby features such as soil, vegetation and topography were considered. Palustrine wetland types identified in the study area are valley bottom wetlands without a channel, valley bottom wetlands with a channel, hillslope seepage wetlands feeding a water course, hillslope seeapge not feeding a water course, depressions (pans) and a floodplain system (Kotze D. C., Marneweck, Batchelor, Lindley, & Collins, 2004). In addition to this, a soil investigation conducted by Pedoplan International Consultants CC was jointly considered on a confirmatory basis for the delineation of wetland areas. The delineated wetland areas within the proposed in-pit discard disposal are presented in **Error! Reference source not found.**

5.3.9.2 Wetland Unit Identification

The wetland types associated with the study area were initially identified at desktop level and then ground truthing was conducted to confirm these findings. The wetland types were determined according to the classification system developed by hydro-geomorphic setting Kotze D. C., Marneweck, Batchelor, Lindley, & Collins (2004). This system focuses on the HGM determinants of wetlands and incorporates geomorphology, water movement into, through and out of the wetland and landscape and topographic setting.

The wetland type identified for the project area (in-pit discard disposal) is the valley bottom wetlands with channels. The perennial Wilge River runs through the study area. The extent to which a river has been modified by human activity is referred to as the river condition (Nel et al., 2011). In South Africa, six ‘present ecological state’ (PES) categories are used to describe river condition (after Kleynhans, 2000), ranging from ‘A’ (natural) to ‘F’ (critically modified) (Nel et al., 2011). According to NFEPA, the Wilge River and the channelled valley bottom wetlands has a PES category of ‘D’, which means that it is largely modified such that a large loss of natural habitat, biota and basic ecosystem functions has occurred.

5.3.9.3 Ecological Integrity Assessment

The health assessment of the identified wetland areas made use of the indicator’s hydrology, geomorphology and vegetation. The overall (combined) findings of the WET-Health assessment for the HGM types are presented in section 4.1 of this report.

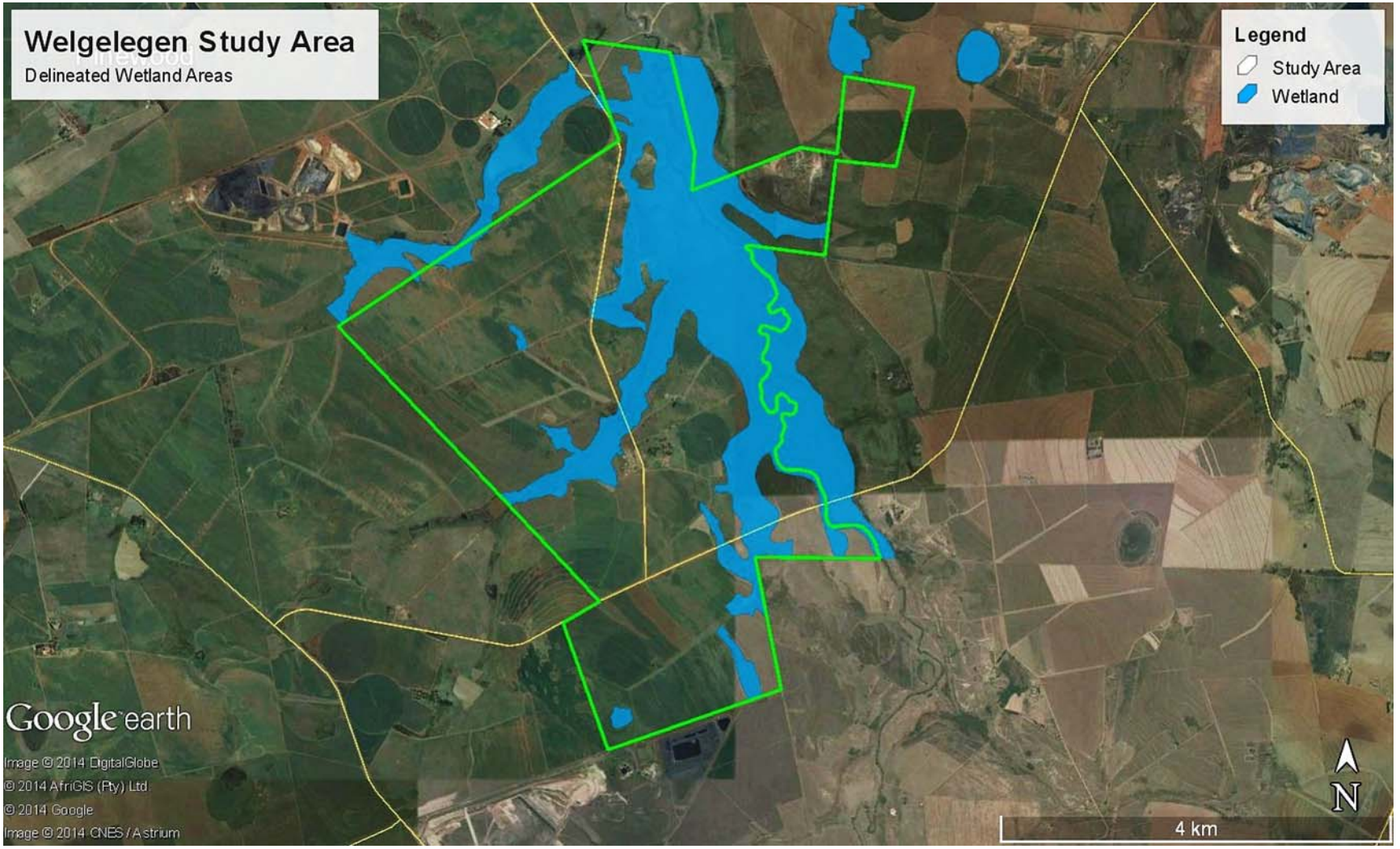


Figure 10: Wetland Delineation Plan of Welgelegen Colliery

5.3.10 Air Quality

The proposed in-pit discard disposal has the potential to impact on the air quality of the surrounding area. Potentially, air pollution may arise as a result of particulates entering the atmosphere. These particulates arise as dust from vehicle movement on haul roads since the discard material will be transported using trucks. The proposed in-pit discard disposal is situated within the Welgelegen Colliery. This area is dominated by the existing mine activities which include opencast mining, movement of trucks for other purposes, overburden stockpiling areas, ROM stockpiling area, beneficiation plant and other mining related activities that causes dust generation. These activities have the potential to generate particulates that may cause air pollution.

Environmental and Health Risk Consulting (Pty) Limited was contracted by Geovicon Environmental (Pty) Limited to conduct an ambient air quality impact assessment in support of the Iyanga Mining (Pty) Limited development of the Welgelegen Colliery, prior to the current mining operations. The objectives of this study were to describe the ambient emissions from the coal mining process and to assess the impact on the health of the receiving community. This study includes the impacts and mitigation measures of air pollution which covers the impacts that are related to the proposed in-pit discard disposal. The findings of the study were aimed at providing Iyanga Mining (Pty) Limited and other stakeholders with scientific data required in terms of present and future air quality management systems.

Associated impacts that may arise from the proposed in-pit discard disposal is the movement of vehicles during the transportation and the disposal of the discard material. From the impact's assessment conducted for the proposed project, the impacts on dust will be minimal.

5.3.11 Noise

Associated impacts that may arise from the proposed in-pit discard disposal is the movement of vehicles during the transportation and the disposal of the discard material. From the impact's assessment conducted for the proposed project, the impacts on noise will be minimal.

5.3.12 Sites of Archaeological and Cultural Importance

Archaetnos cc was requested by Geovicon Environmental to conduct a cultural heritage impact assessment for the Iyanga Mining (Pty) Ltd's Welgelegen Colliery opencast mining for their mining right application.

Six sites of cultural heritage significance were identified in the surveyed area. Figure 11 below indicate the locations identified.

In relation to the above, the proposed in-pit discard disposal will not be located within the mentioned sites of cultural heritage significance.

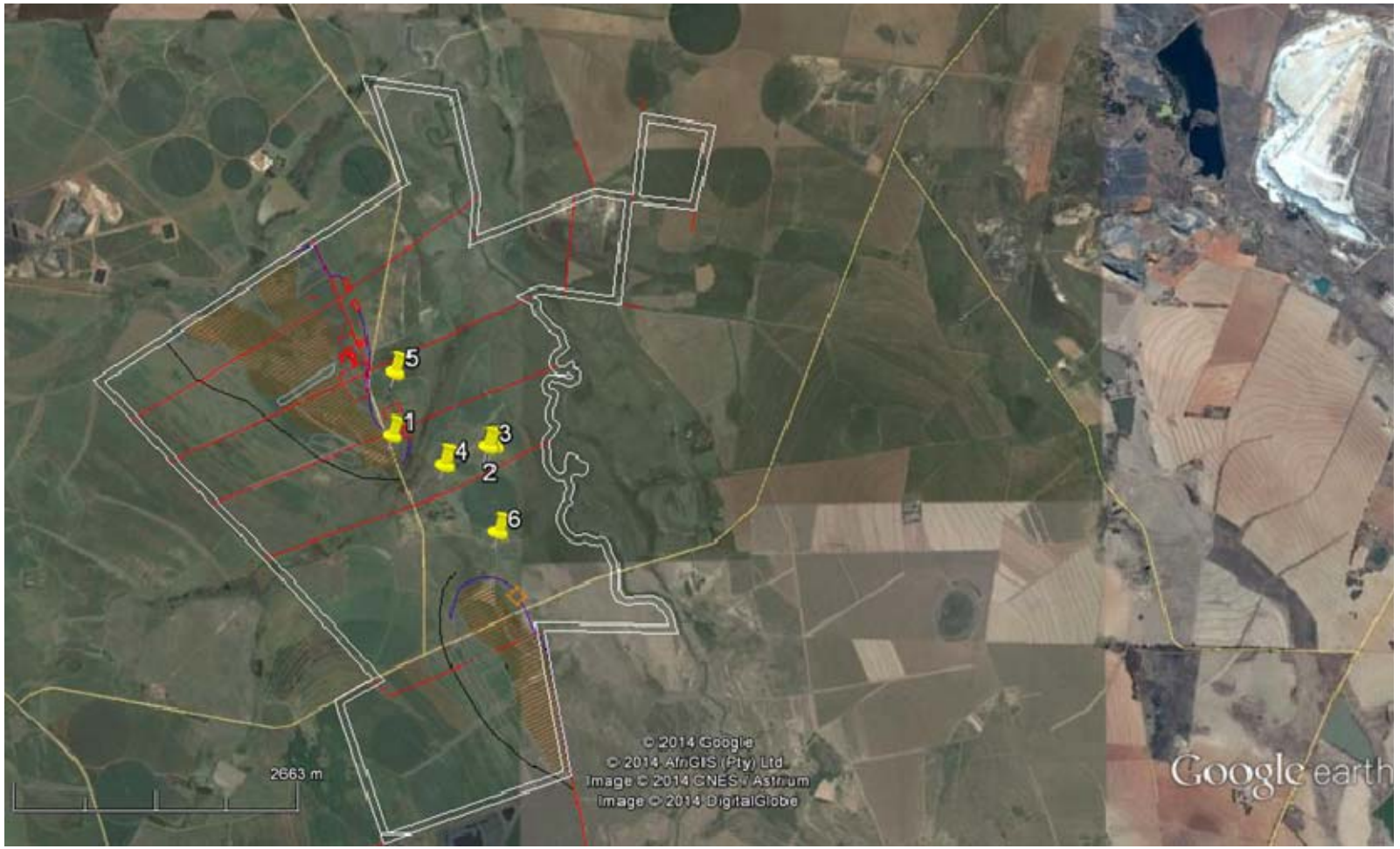


Figure 11: Google image indicating the six sites that were identified during the survey

6. ENVIRONMENTAL IMPACT ASSESSMENT

6.1 Environmental Impact Assessment for the Initial Site Layout

The initial site layout (current plan in this report) will be presented to the interested and affected parties for their comments. Once finalised with or without changes the final site layout (approved initial site layout) will be presented to the authorities for their consideration.

6.2 Statement Motivating the Alternative Development Location

The current layout plan attached as Figure 1 is the initial site layout for the project. Results of the environmental assessment including results from the public participation were used to determine whether the initial site layout must be changed. All changes will be provided in this chapter for EIAR/EMPr for approval by the competent authority.

6.3 Environmental Impact Assessment Process Followed

6.3.1 Approach to Environmental Impact Assessment

The term 'environment' is used in the broadest sense in an EIA. It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

An Environmental Impact Assessment is a good planning tool. It identifies the environmental consequences of a proposed project from the beginning and helps to ensure that the project, over its life cycle, will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

6.3.2 Environmental Impact Assessment Process Followed

Under Section 24 of the National Environmental Management Act (NEMA), the Minister promulgated the regulations pertaining to environmental impact assessments (EIA Regulations, 2014) under Government Notice R326. These EIA regulations repealed the 2010 EIA regulations and therefore any process relating to waste management licence must be undertaken under the EIA Regulations, 2014.

Chapter 5 of National Environmental Management: Waste act 59 of 2008 deals with the provisions for application for a waste management licence. In view of the above, Iyanga Mining (Pty) Limited is obliged to comply with provisions of Chapter 5 for the intended waste management licence for the activities of the Project.

Part 3 of chapter 4 of the EIA Regulations, 2014, contemplate the process to be undertaken for the application for waste management licence for the proposed In-pit Discard Disposal Project, which is the S & EIR process. The process to be followed is described below.

6.3.2.1 Pre-application consultation with the Competent Authority

In terms of section 24D (1) of the National Environmental Management Act, 1998 (Act 107 of 1998), the Minister responsible for mineral resources and energy is the competent authority for environmental matters relating to mining and associated activities. In view of the above, an application for the waste management application for the proposed in-pit discard disposal was

submitted to the Department of Mineral Resources and Energy (DMRE), eMalahleni Regional Office for their consideration and decision making.

6.3.3 Public Participation Process

Public participation is the cornerstone of the EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment. Comments received from the public participation process will be included in the impact assessment and measures will be determined on how the comments will be addressed during the life of the proposed project.

The following steps will be taken during the public participation process:

- The public participation process will commence by providing an opportunity for potential interested and affected parties to register.
- Making reports compiled within the environmental impact assessment available to registered and potential interested and affected parties for their comments.
- Interested and affected parties and the public will also be invited to public meetings where the project and all major impacts from the proposed project will be discussed.
- Further to the above, interested and affected parties and the public will be informed of the decision taken by the responsible authorities on the submitted application.

The above process will ensure that the EIR and EMPr is subjected to a public participation process, which ensures that the proposed project is brought to the attention of interested and affected parties, the public and relevant organs of state including the competent authority.

6.3.4 Scoping Phase

According to Regulation 21 of the EIA Regulations, 2014, a Scoping report must be submitted to the competent authority within 44 days after the submission of the waste management application. As part of the public participation process, the draft Scoping report was made available to the competent authority, potential and registered interested and affected parties for their comments from the 12th of October 2018 to 12th November 2018 (30) days. After the completion of the consultation process the Scoping Report was submitted to the competent authority and for their review. The Scoping Report was accepted by the competent authority on the 14 of April 2021. All comments and issues received after the consultation process for the Scoping Phase are recorded together with the responses to the comments made and reaction from the commenting party in Table 13.

Table 13: Results of Public Participation Process for the Scoping Phase

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
Landowners or lawful occupiers on adjacent properties				
27 September 2019	Rooibult Trust (Magda Kleyn)	An amended of the approved EMPR and an Environmental Authorisation for the repositioning of the surface infrastructures is required before the commencement of these infrastructures. We would especially appreciate sight of the Water Licence and approval by NEMA for the projects.	The amendment of the repositioning of the surface infrastructures was removed from this application. A separate application will be undertaken for the repositioning of the surface infrastructures.	Finalised.
		As per the draft report all the activities below are already operational even though some of the projects, which may impact on the health of people and the environment, are not constructed yet. • Use of Mine Infrastructure, access and haul roads (operational). • Disposal of mine affected water into the pollution control dam (not yet constructed). • Transportation of coal products (operational). • Disposal of the coal discards at mined out opencast pit i.e. in-pit discard disposal (proposed new activity). • Pumping of water from a portion of portion 3 of existing area to a new plant via pipeline (proposed new activity). DMR should issue a section 54 directive to stop all mining activities until all the related issues have been resolved.	The amendment of the repositioning of the surface infrastructures was removed from this application. A separate application will be undertaken for the repositioning of the surface infrastructures.	Finalised.
		The pollution control dams that should have been erected during the construction phase in 2016 have still not been completed as it seems they do not have the required linings. The risk of this is that polluted water may seep through into the underground water system posing great risks to health of people, animals and the environment.	The mine is currently using mined out pits for the storage of dirty water around the mining area. The construction of the pollution control dam, approved by the civil engineers with the appropriate lining is still ongoing. Once the dam is constructed, all the dirty water will be disposed at the PCD.	Finalised.

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
		The proposed crushing and water plant is also causing major pollution due to the fact that the slurry dams are not fully operational.	Noted. The slurry dams are currently operational. Iyanga Mining will ensure that pollutions from the crushing and washing plant are minimal.	Finalised.
Not Applicable	Copperzone 139 (Pty) Ltd	No comments received.	-	-
Not Applicable	Gert Johannes van der Merwe	No comments received.	-	-
Not Applicable	Farm House Holdings Pty Ltd	No comments received.	-	-
Not Applicable	Welbez Beleggings (Pty) Ltd	No comments received.	-	-
Not Applicable	Truter Boerdery Trust	No comments received.	-	-
Not Applicable	Burgh Plant Hire Pty Ltd	No comments received.	-	-
Not Applicable	T B T Boerdery Pty Ltd	No comments received.	-	-
Not Applicable	Stuart Coal (Pty) Limited	No comments received.	-	-
Not Applicable	Annelise Bezuidenhout	No comments received.	-	-
Not Applicable	Keaton Mining (Pty) Ltd	No comments received.	-	-
Not Applicable	Wear Control Equipment CC	No comments received.	-	-
23 September 2019	Petrus Johannes Bezuidenhout Snr)	An amended of the approved EMPR and an Environmental Authorisation for the repositioning of the surface infrastructures is required before the commencement of these infrastructures. We would especially appreciate sight of the Water Licence and approval by NEMA for the projects.	The amendment of the repositioning of the surface infrastructures was removed from this application. A separate application will be undertaken for the repositioning of the surface infrastructures.	Finalised.
		We would like to object against the fact that a lot of the below projects is still outstanding: • Construction of storm water and dirty water	Noted. The comment will be address to Iyanga Mining (Pty) Ltd.	Finalised.

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
		diversion facilities. • Construction of pollution control dam. (Not operational yet) • Repositioning of mining related infrastructure; (According to the report Iyanga Mining requires the proposed changes but they are in fact already in working order without the necessary approvals). • Construction of dirty water pipeline; (We don't understand how it can be a new proposed activity when the pipeline is already laid and pumping water).		
		As per the draft report all the activities below are already operational even though some of the projects, which may impact on the health of people and the environment, are not constructed yet: • Use of Mine Infrastructure, access and haul roads (operational) • Disposal of mine affected Water into the pollution control dam (not yet constructed) • Transportation of coal products (operational) • Disposal of the coal discards at mined out opencast pit i.e. in-pit discard disposal (proposed new activity) • Pumping of water from a portion of portion 3 of existing area to a new plant via pipeline (proposed new activity) DMR should give a section 54 directive to stop all mining activities until all the raised issues are sorted.	The amendment of the repositioning of the surface infrastructures was removed from this application. A separate application will be undertaken for the repositioning of the surface infrastructures.	Finalised.
		The rehabilitation of the mine on portion 3 has not been completed. Mine management has assured us that no mining activities shall continue before portion 3 has been rehabilitated. A photo of the pollution control dam that is not completed as attached.	Noted. Iyanga Mining Pty) Ltd will ensure that the rehabilitation of the said portion is completed.	Finalised.

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
		On the new mine there should have been a pollution control dams on the mine and it should have been erected during the construction phase in 2016 and that has not been done. The effect of this is that all the dirty water of the mine activities seeps through in the underground water systems and results in major pollution of the water it results in a greater impact on the environment.	The mine is currently using mined out pits for the storage of dirty water around the mining area. The construction of the pollution control dam approved by the civil engineers with the appropriate lining is still ongoing. Once the dam is constructed, all the dirty water will be disposed at the PCD.	Finalised.
		The proposed infrastructure (crushing and washing plant) is also contributing to large scale pollution because the slurry dams is not operational and major pollution is occurring at the plant	Noted. The slurry dams are currently operational. Iyanga Mining will ensure that pollutions from the crushing and washing plant are minimal.	Finalised.
State Departments				
25 September 2019	Mpumalanga Tourism and Parks Agency	There is no objection to this mining amendment proposal but is concerned about the route crossing of the dirty water pipeline and the mitigation of the negative impacts on the wetland.	Noted. It must be noted that the application of the dirty water pipeline has been removed from this application. This will be addressed in the application of the pipeline.	Finalised.
		The terrestrial biodiversity assessment according to the Mpumalanga Biodiversity Sector plan indicates the Eastern Highveld Grassland areas that are sensitive, Other Natural area that must be avoided. The placing of the pipeline should be planned to be positioned within the modified area.	Noted. The comment will be address to Iyanga Mining (Pty) Ltd. It must be noted that the application of the dirty water pipeline has been removed from this application. This will be addressed in the application of the pipeline.	Finalised.
		The fresh assessment map attached indicates a large Critical Biodiversity Area wetland in portion 3 that should be delineated with a 100 m buffer. No mining activities Should take place within this wetland and its buffer. Care should be taken not to impact on the Ecological Support Area wetlands in order to maintain its present ecological status. All the wetlands need to be delineated with a 100 meter buffer and avoided by mining activities.	Noted. The comment will be address to Iyanga Mining (Pty) Ltd.	Finalised.
		The mitigation and final rehabilitation of the open pits impacts from the dirty water contamination, above ground decanting, natural water flow over	Noted. It must be noted that the management measures for the rehabilitation of the mined out its forms part of the mines' existing EMPR.	Finalised.

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
		discard dumps, and the dewatering of the above ground wetlands and subsidence that might take place must be addressed in the EMPR.		
		A throughout ecological study of the wetland must be done.	Noted. This will be addressed in the EIA phase.	Finalised.
		A route for the proposed dirty water pipeline with the mitigation of the negative impacts and alternative routes must be provided. The end destination of the dirty water from the pipeline must be provided.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		A throughout rehabilitation plan that includes the post mining land use of the opencast pits and bioremediation of soils removal of pollution control facilities, discard dumps, reseeding, control of exotic tree infestation and further storm water management restoration and mitigation of all the negative effects on the surrounding environment is included in the EMPR.	Noted. The Rehabilitation Plan compiled for the mine includes the post mining land use of the opencast pits and bioremediation of soils removal of pollution control facilities, discard dumps, reseeding, control of exotic tree infestation. Storm water management restoration and mitigation of all the negative effects on the surrounding environment will be included in the EMPR.	Finalised.
		Iyanga Mining must ensure that clean water, free from contaminants is returned in the wetlands systems and that all forms of the spillages of dirty water will be contained in the pollution control facilities.	Noted. Iyanga Mining Pty Ltd will ensure that all dirty water generated from the mining activities will be contained in the pollution control dam that is still being constructed. Currently the mine is using mined out pits for the storage of dirty water around the mining area.	Finalised.
Not Applicable	Department of Mineral Resources	No comments received.	-	-
Not Applicable	Department Of Human Settlements ,Water And Sanitation	No comments received.	-	-
Not Applicable	Department Agriculture, Forestry and Fisheries	No comments received.	-	-
Not Applicable	Department of Economic Development, Environment and Tourism	No comments received.	-	-

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
Not Applicable	Eskom	No comments received.	-	-
Not Applicable	South African Heritage Resource Agency	No comments received.	-	-
Not Applicable	Victor Khanye Local Municipality	No comments received.	-	-
Not Applicable	Ward councillor	No comments received.	-	-
04 September 2019	TRANSNET	The pipeline is a fair distance from the mining area but we have opted to issue our standard conditions and requirements for your information and reference. Blasting activities could affect our pipeline sighting the 500m radius proximity of our pipeline to the mining area. A meeting must be arranged with our servitude Supervisor to discuss the proposed project and determine if our pipeline will be affected by the proposal activities.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		Prior to commencement of the work it is required that a representative of Transnet Pipeline be present to indicate the position of the pipeline(s) and to undertake any work on Transnet's pipeline(s) that may be necessary. The Servitude Supervisor must be contacted before the date on which the commencement of the work start in the vicinity of the pipeline. Arrangements will also be made to visit the site periodically whilst the work is in progress.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		Should the work be undertaken without Transnet Pipelines' representative being contacted, Transnet reserves the right to request that you expose the pipeline at your cost in order that an examination can be made for possible damage.	Noted. The comment will be forwarded to Iyanga Mining (Pty) Ltd as they are the responsible personnel.	Finalised.
		The standard crossing conditions and requirements for surface improvements, fencing/boundary walls, underground services, blasting conditions must be complied with.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.

Date Comments Received	Interested & Affected Party	Comments/Issue Raised	EAP's Responses to Issues Raised	Consultation Status (Consensus dispute, not finalised, finalised, etc.)
		An Excavation Permit shall be issued by Transnet Pipelines' Servitude Supervisor to the competent person of the applicants' Contractor, should excavation work be required within or in close proximity of Transnet Pipelines' servitudes.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		Heavy plant or mechanical driven equipment shall not be used in the pipeline servitudes. All excavations must be done by hand. Hand-held compactors shall be used in the servitudes area.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		It is imperative that our representative must be contacted before work commencement to determine our pipeline levels and also assist you with our pipeline related information. It is also important that our representative must witness and approve all the crossings/works.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		Please be informed that in the event of damages of our pipelines, repair cost will be to your account.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.
		On completion of the work you are required to return a copy of this to this letter to our office, duly endorsed and signed by your site representative as well as the Transnet Pipelines' representative that the work was satisfactorily completed and conditions adhered to.	The application for the proposed dirty water pipeline has been removed from this application. A separate application will be undertaken for the proposed pipeline.	Finalised.

6.3.5 EIA Phase

The public participation process for the EIA phase of the In-pit Discard Disposal Project will commence on the 11th June 2021 for a period of 30 days. The consultation has been conducted in line with the Public Participation Plan submitted to the DMRE for approval. All comments and issues received after the consultation process for the EIA phase will be recorded together with the responses to the comments made and reaction from the commenting party in the Final EIR/EMPR.

6.3.5.1 Information Gathering

Environmental baseline data has been obtained through various agencies, pertaining to surface water quantities and qualities, geohydrological data and modelling, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions. Weather data was acquired from the South African Weather Service. The combined data was used to determine the land capability. Historic land use was determined through available data and by visual observations made during various field studies. The data accumulated and analysed is sufficient to gain a baseline indication of the present state of the environment. The use of these baseline studies for impact assessments is thus justified and reliable conclusions could be made.

The following specialist studies were conducted for the whole Welgelegen Colliery's mining right area and were referenced during the compilation of final report i.e.:

- Soil Study
- Hydrological Study
- Geohydrological Study
- Heritage Impact Assessment
- Wetland Assessment
- Air Quality Impact Assessment

6.3.5.2 Decision on the S & EIR application

In compliance with Regulation 24 of the EIA Regulations, 2014, the competent authority will within 107 days of receipt of the EIR and EMPr grant or refuse the waste management licence.

6.4 Environmental Impact Assessment Methodology

The following prediction and evaluation of impacts is based on the proposed in-pit discard disposal.

The evaluation distinguishes between significantly adverse and beneficial impacts and allocates significance against national regulations, standards and quality objectives governing:

- Health & Safety;
- Protection of Environmentally Sensitive Areas;
- Land use; and
- Pollution levels.

Irreversible impacts are also identified.

The significance of the impacts is determined through the consideration of the following criteria:

Probability	:	likelihood of the impact occurring
Area (Extent)	:	the extent over which the impact will be experienced.
Duration	:	the period over which the impact will be experienced.
Intensity	:	the degree to which the impact affects the health and welfare of humans and the environment (includes the consideration of unknown risks, reversibility of the impact, violation of laws, precedents for future actions and cumulative effects).

The above criteria are expressed for each impact in tabular form according to the following definitions:

Probability (P)	Definition
Low	There is a slight possibility (0 – 30%) that the impact will occur.
Medium	There is a 30 –70% possibility that the impact will occur.
High	The impact is definitely expected to occur (70% +) or is already occurring.
Area/Extent (E)	**Definition**
Small	0 – 40 ha
Medium	40 – 200 ha
Large	200 + ha
Duration (D)	**Definition**
Short	0 – 5 years
Medium	6 – 25 years
Long	26 – 100 years or impact cease after operational life of project
Permanent	101 + years
Intensity (I)	**Definition**
Low	Does not contravene any laws. Is within environmental quality standards, thresholds, targets or objectives. Will not constitute a precedent for future actions. Effect's observable and is reversible with time without human intervention. Will not result in the loss of irreplaceable resources or will result in the loss of least concerned resourced. Will have a slight impact on the health and welfare of humans or the environment.
Medium	Does not contravene any laws. Will not constitute a precedent for future actions. Is not within environmental quality standards, thresholds, targets or objectives. Effect's observable and is reversible through rehabilitation or human intervention. Will result in the loss of irreplaceable resources (Vulnerable and Near Threatened). Will have a moderate impact on the health and welfare of humans or the environment.
High	Contravene laws. May constitute a precedent for future actions. Is not within environmental quality standards, thresholds, targets or objectives. Extensive effects – irreversible alteration to the environment. Will result in the loss of irreplaceable resources (Endangered or critically endangered). Will have a significant impact on the health and welfare of humans or the environment.
Significance and	**Definition**

Risk Category (S)	
Negligible	The impact/risk is insubstantial and does not require management
Low	The impact/risk is of little importance, but requires management
Medium	The impact/risk is important; management is required to reduce negative impacts to acceptable levels
High	The impact/risk is of great importance, negative impacts could render options or the entire project unacceptable if they cannot be reduced or counteracted by significantly positive impacts, and management of these impacts is essential
Positive (No risk identified)	The impact, although having no significant negative impacts, may in fact contribute to environmental or economical health

6.5 RESULTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

6.5.1 Assessment of Welgelegen Colliery's In-pit Discard Disposal impacts/risks and mitigation measures identified

6.5.1.1 Construction Phase

No construction activities will be undertaken for the proposed in-pit discard disposal since it will be situated on a mined out opencast pits which have already been disturbed. Therefore no environmental impact assessment is required.

6.5.1.2 Operational Phase

Table 14: Results of the EIA (operational phases)

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Transportation of discard material from the coal washing plant to the mined out opencast pits							
Spillages and leakage of coal discards and hydrocarbon liquids from mine vehicles transporting discard material will result in the contamination of soils around the transportation routes, which will subsequently result in the loss of viability of the affected soils.	Soil	Without Mitigation					Vehicles must be regularly inspected for overloading to prevent spillages of the discard material. Vehicles will be maintained regularly by the mine. Should coal discard spillages occur along the routes, the spillage must be removed and the area restored. Soils contaminated by the hydrocarbon liquids must be remedied using hydrocarbon spill kids or taken away for remediation offsite or for disposal by a registered contractor. Training, which will be in compliance with the requirements of the national norms and standards for the storage waste,
		S	M	M	M	M	
		With Mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							on waste handling will be conducted for employees working with coal discards, including contractors. Existing workshops will be used for servicing vehicles and mine's machinery. Vehicles and mine machinery will be serviced at designated areas within the mine i.e., existing mine workshop complex. Emergency repairs must be undertaken on protected ground.
Spillage/leakages of the coal discard, oil and diesel (from the vehicles) during the transportation may result in deterioration of surface water resources in the vicinity.	Surface Water Quality	Without Mitigation					Storm water management measures will be put in place at the opencast pits and transportation routes. Dirty water from the transportation routes must as much a possible report to the opencast pits. Vehicles to be used for the transportation will be well maintained and inspected for overloading to avoid leakages and spillages. Incidents of spillages will be reported and treated immediately in a reputable manner. Loading of the trucks must be supervised to prevent overloading. Trucks will be required to obey certain road regulations
		S	M	M	M	M	
		With Mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							when transporting coal at the mine. This will include speed limits etc.
Accumulation of spilled coal discard for a prolonged period along the transportation routes may lead to pollution of ground water.	Groundwater Quality	Without Mitigation					Current groundwater monitoring must be continued and used to determine if there is any groundwater contamination that might have been impacted by the transportation of the discard material. Where the discard is transported along roads, emergency containment and mitigation measures must be developed to minimize impacts should accidental spillages occur along the transport routes. Haul roads will be graded regularly to remove any coal discard and oil spillages. Trucks will be regularly serviced to reduce risk of coal discard and oil spillages. Incidents of coal discard and oil spillages will be reported and treated immediately in a reputable manner. Soil contaminated by coal discard must be disposed of by a registered contractor and taken to an approved waste disposal site. If it can be proven that the spillages are indeed affecting the
		S	M	M	M	M	
		With Mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							quantity of groundwater available to certain users, the affected parties should be compensated. This may be done through the installation of additional boreholes for water supply purposes, or any alternative water supply.
Generation of dust and fuel fumes by vehicular movement along the transportation routes.	Air Quality	Without Mitigation					All machinery will be fitted with the correct exhaust systems, which will be maintained and in good repair. Dust suppression will be undertaken during the operational phase on haul roads where movement of machinery may generate dust. Water for dust suppression purposes will be obtained from the pollution control dams. Speed on access and haul roads will be limited to 40 km/h. Current ambient air quality monitoring must be continued and used to determine if there are any significant air quality impacts from the transportation of the discard material.
		M	H	M	M	M	
		With Mitigation					
		S	L	S	L	L	
Use of the mine machinery/vehicles during the transportation of the discard material may generate noise levels that may have health effects on the employees if not properly controlled.	Noise	Without Mitigation					Limit the maximum speed on the haul roads to 40 km/h or less. Educate employees on the dangers of hearing loss due to mine machinery noise. Any deviation detected by the noise monitoring results that
		S	L	S	L	L	
		With Mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
		S	L	S	L	L	might have been affected by the transportation of the discard material must be addressed. Ambient noise monitoring will be undertaken as per recommendations from the suitably qualified noise specialist, which will be used to determine if the mine is having a detrimental impacts on surrounding interested and affected parties.
The roads that will be used for the transportation of the coal discard would be sited such that they are not on areas identified as wetlands. If the roads are not properly managed, their footprint may increase resulting in the destruction of nearby channelled valley bottom wetland.	Sensitive Landscapes	Without Mitigation					Ensure that the footprint of the roads does not increase beyond their intended area. Measures must be taken should it be proven that the transportation of coal along the roads are affecting the nearby wetland areas. Loading of discard trucks must be supervised to prevent overloading. The road must be designed and operate to minimise the likelihood of spillages. All vehicles should only use designated roads with no indiscriminate driving through wetland or riparian areas. Incidents of coal discard and oil spillages will be reported and treated immediately in a reputable manner. Dust suppression should be undertaken at the facility and
		S	L	S	M	M	
		With Mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							roads to prevent generation of excessive dust. Any streams and wetlands close to the transportation routes that have been disturbed or damaged by the trucks will be rehabilitated under the supervision of an ecologists.
Disposing of the coal discards at mined out opencast pit i.e., in-pit discard disposal							
Erosion of soils through soil contamination.	Soil	Without Mitigation					No surface stockpiling of the discards will be allowed outside and adjacent the mined out opencast pits.
		S	H	M	H	L	
		With Mitigation					
		S	L	M	M	M	
Seepage and rainwater contained within the in-pit disposal areas may result in the contamination of groundwater resources and thus affecting the nearby groundwater users and water resources.	Groundwater Quality/Quantity	Without Mitigation					The practice of depositing discard below the groundwater level will be conducted and must be maintained accurately. This will reduce the contamination of Sulphate levels to the north-western Tributary of the Wilge River. Groundwater monitoring programme will continue
		S	M	S	M	M	
		With Mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
		S	L	S	L	L	throughout the life of the mine (existing) which will cater for the in-pit discard disposal that involve groundwater quality monitoring on a quarterly basis to determine if the in-pit discard disposal does not have any impact on the groundwater quality. If it can be proven that the proposed activity is indeed affecting the quantity of groundwater available to the groundwater users, the affected parties must be compensated. Measures must be put in place for and maintained for the collection of seepage and runoff emanating from the disposal site. Seepage/runoff water captured must be pumped into the pollution control dam. Store all potential sources of contamination in secure facilities with appropriate water collection systems in place to ensure that contaminants are not released to the water resource. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water. Route all clean storm water around the pit used for the disposal of coal discards directly to natural watercourses

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							without increasing the risk of a negative impact on safety and infrastructure, e.g. loss of life or damage to property due to an increase in the peak runoff flow. Develop and implement proper environmental management and auditing systems to ensure that pollution prevention and impact minimisation plans and measures developed in the design and feasibility stages are fully implemented.
Storm water and seepage generated from in-pit discard disposal will likely be contaminated and have a detrimental effect on the water quality in the Wilge River north-west tributaries causing deterioration of surface water quality should this water be released to the stream either directly or via pollution plume.	Surface Water Quality	Without Mitigation					All dirty water that falls within the catchment area of the in-pit discard disposal will be collected in pit and pumped to a lined pollution control dam. Ensure that all possible sources of dirty water have been identified and that appropriate collection and containment systems have been implemented and that these do not result in further unnecessary water quality deterioration. Measures must be put in place for and maintained for the collection of seepage and runoff emanating from the disposal site. Seepage/runoff water captured must be pumped into the pollution control dam. Seepage and contaminated rain water must be collected and routed to lined pollution control dam. The pollution control dam must be sized in accordance with Government
		S	H	S	M	M	
		With Mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							Notice 704 of the South African National Water Act. All water management structures constructed to isolate the disposal facility from the clean water environment and contain dirty water (drains, pipelines, sumps and pumping systems) will continue to be maintained in good order and will not be allowed to spill to the clean water environment. All clean water will be diverted around the opencast pots used for the disposal of discards to the nearby streams. The water management system at the disposal facility will be maintained to be in compliance with the requirements of the GN704. If any activity is not complying with the requirements of the regulations under the GN704, exemptions must be sought from the DWS. This will ensure that the surrounding surface water environment is not affected. Incidents of discard material spillages will be reported and treated immediately in a reputable manner. Should large spillages occur, clean-up of the spillages should be undertaken as soon as possible. The proposed in-pit discard disposal will not be situated within the 100 m buffer zone in order to minimise polluted

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							groundwater reaching the stream.
The proposed in-pit discard disposal has been sited in close proximity to the north-west tributary of the Wilge River. Should the project not be undertaken properly, it may encroach into this wetland area. Should this be allowed, it will result in loss of the wetland habitat due to the damage on the wetland areas. Water collected in the in-pit discard disposal area will typically contains various pollutants that will contribute to deteriorating the water quality in the wetlands should this water be released to the wetland system. Areas disturbed during the in-pit discard disposal (backfilled opencasts) will be susceptible to invasion by alien vegetation, which could spread to the adjacent wetland areas and result in decreased flows, increased erosion and decreased biodiversity in the wetland systems.	Sensitive Landscape	Without Mitigation					Ensure that the disposal of the discards is designed such that single handling of the discards is achieved. No surface stockpiling of the discards will be allowed outside and adjacent the mined out opencast pits. Fence off all wetland areas outside the direct development footprint. Include a 32m buffer zone around all wetlands within the fenced off area. Clearly demarcate the proposed development footprints and limit all activities to the demarcated area. Separate clean and dirty water areas. No dirty water is to be discharged. Rehabilitate and re-vegetate all disturbed areas as soon as possible following disturbance. Implement alien vegetation management plan to remove and control establishment and spread of alien species.
		S	M	M	M	M	
		With Mitigation					
		S	L	M	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL COMPONENTS	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Generated dust within the in-pit discard disposal site affects the health of the mine employees and surrounding communities and livelihood of the natural environment.	Air Quality	Without Mitigation					Sufficient dust suppression will be undertaken to reduce the impacts of the generated dust on the employees and surrounding properties. Employees will be provided with dust masks and will be instructed to use the dust masks.
		M	H	M	M	M	
		With Mitigation					
		M	L	S	L	L	
Noise generated from the operation of the mine machinery within the in-pit discard disposal site may have health effects on the mine employees and be a nuisance to surrounding communities.	Noise.	Without Mitigation					Sufficient noise buffering will be undertaken to reduce the impacts of the generated noise on the employees and surrounding communities. Employees will be provided with ear plugs for hearing protection. Educate employees on the dangers of hearing loss due to mine machinery noise. Any deviation detected by the noise monitoring results that might have been affected by the disposal of the discard material must be addressed.
		M	L	S	L	L	
		With Mitigation					
		M	L	S	L	L	

6.5.1.3 Decommissioning Phase

During the decommissioning phase, the following activity, which will likely have a detrimental, impact on the environmental, social and cultural aspects, will be conducted:

- Rehabilitation of the opencast workings where in-pit discard disposal was undertaken. This forms part of the rehabilitation that is already outlined in the existing EIR/EMPr for the rehabilitation of the mined out opencast pits. Therefore, no decommissioning and closure phase activities will be included in this EIR/EMPr.

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6.6 SUMMARY OF SPECIALIST REPORTS

Table 15: Summary of the specialist reports

STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS		SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT	APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	ASPECT	RECOMMENDATION AND/OR CONCLUSIONS		
Groundwater	Impact Statement	The environmental management measures developed and recommended in the EMPR document should be maintained where implemented and where applicable, in order to ensure that the baseline environmental risk status of the operation is sustained. The practice of depositing discard below the groundwater level should be conducted and should be maintained accurately. This will reduce the contamination of Sulphate levels to the north-western Tributary of about 100 mg/l from a value of 2000 mg/l. Surface and ground water quality data should be collected on a regular, surface water monitoring on monthly basis and groundwater monitoring on quarterly basis. These data will be used to recalibrate and update the mine water management model, to prepare monitoring and audit reports, to report to the regulatory authorities against the requirements of the IWWMP and other authorisations and as feedback to stakeholders in the catchment, via the Catchment Management Agency. The baseline hydrogeological study and risk assessment should at least be repeated once before the end of the	Included in EIA and EMPr)	Section 5.3.

STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS		SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT	APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	ASPECT	RECOMMENDATION AND/OR CONCLUSIONS		
		operational phase to evaluate any impacts.		
Sensitive Landscape	Impact Statement	The wetlands areas inside the mining right area of Welgelegen Colliery were already modified prior to mining. Crop cultivation, livestock grazing, power lines, farm roads and a provincial tar road were probably the activities with the largest historic impact. Historically, wetland areas were deemed as “waste land” by surface owners (farmers) and since crop cultivation is their core activity, they over exploit wetland areas specifically as grazing land. The proposed in-pit discard disposal into the yet unmined opencast voids is situated in the vicinity of the following wetland type viz. a channelled valley bottom wetland, falling into the Mesic Highveld Grassland, Group 4, wetland ecosystem type. The proposed activity will not take place directly into the wetland systems mentioned above. Although impacts may occur on the wetland system, measures will be put in place to ensure that the tributary of the Wilge River is protected from the operational activities of the proposed project.	Included in EIA and EMPr)	Section 5.3.

6.7 ENVIRONMENTAL IMPACT STATEMENT

This section of the report provide the description of the environmental impact assessment statement for the proposed in-pit discard disposal project as contemplated in regulation 3(l) under Appendix 3 of the NEMA EIA Regulations, 2014.

6.7.1 Description of affected environment

The proposed in-pit discard disposal is located within the Grassland Biome and the Mesic Highveld Grassland Bioregion (Mucina & Rutherford, 2006). Within the bioregion the site can further be classed as a transition between Rand Highveld Grassland and Eastern Highveld Grassland, which is generally considered, threatened mainly due to extensive and on-going mining and agricultural operations within its preferred region. The proposed in-pit discard disposal falls in the Olifants Water Management area. Within the water management area, the proposed activity falls within the Wilge River catchment area, which is demarcated as tertiary drainage region B20E.

The topography is relatively flat. Localised areas have steeper slopes, particularly in the vicinity of the streams.

Surface and groundwater environments have shown some changes due to the current land uses (mining), with the surface water environment being the most impacted. The study area is comprised of wetland systems. The wetland systems identified within the proposed project area have been significantly impacted upon by previous and current mining activities. As such the ecological services rendered by the wetland areas are minimal.

The wetlands areas inside the mining right area of Welgelegen Colliery were already modified prior to mining. Crop cultivation, livestock grazing, power lines, farm roads and a provincial tar road were probably the activities with the largest historic impact. Historically, wetland areas were deemed as “waste land” by surface owners (farmers) and since crop cultivation is their core activity, they over exploit wetland areas specifically as grazing land.

The proposed in-pit discard disposal into the yet unmined opencast voids is situated in the vicinity of the following wetland type viz. a channelled valley bottom wetland, falling into the Mesic Highveld Grassland, Group 4, wetland ecosystem type. The proposed activity will not take place directly into the wetland systems mentioned above. Although impacts may occur on the wetland system, measures will be put in place to ensure that the tributary of the Wilge River is protected from the operational activities of the proposed project.

The proposed project is situated within the Victor Khanye Municipality. The major economic activities in the region are those associated with coal mining, metallurgical industries, commerce and light engineering, power generation, agriculture and administration. Mining is the major industrial activities in the vicinity of the proposed project area. An increase in the environmental and economic impacts and various criminal activities and land invasions has been noted over the last number of years.

Alternatives considered for the location and designing/layout of the project has shown that the selected location and designs would be the most favourable.

In view of the above, it can be deduced that the baseline condition of the proposed project area has, to some extent, been altered while still maintaining some degree of functionality. It is imperative that the proposed project be undertaken in a manner that will ensure protection of the remaining environment.

6.7.2 Summary of key findings of the environmental impact assessment

6.7.2.1.1 Summary of positive and negative impacts and risks of the proposed activity

During the proposed project, impacts may occur on sensitive landscapes, soils, surface water, groundwater, air quality and noise. The severity of the identified impacts will be worsened by the failure of Iyanga Mining (Pty) Limited to adhere to the measures that has been proposed to minimise the identified impacts. With the exception of the impacts on the surface and groundwater quality, assessment of the identified impacts with the mitigation measures has shown the significance of the impacts on all affected environmental components to be reduced from medium to low and negligible significance.

As much as possible, workers will be locally sourced, which will enhance the positive socio-economic impacts from the project. Employees will be given strict instruction not to undertake activities that will affect the environment and that may have an impact on the surrounding landowners. Waste generated from the site will be collected in proper receptacle and disposed of in registered waste disposal sites.

Programmes established for the monitoring of the environment at the mine will be continued. Where necessary, these programs will be revised to monitor effects of the proposed project.

The presence of the proposed in-pit discard disposal will pose a risk to the surface and groundwater environment in the form of contaminated leachate or seepage which will have an elevated sulphate concentration which is likely to impact negatively on the aquifer and could potentially also affect the north-west tributary of the Wilge River. Water management measures have been provided that will ensure that the predicted impacts are managed and reduced. Should the measures be undertaken, the significance rating predicted impacts would reduce to low rating.

Dirty storm water runoff from the proposed activity will have a detrimental impact on the surrounding water environment should this water be released to the environment. In order to prevent the occurrence of the above-mentioned impacts, a storm water management system (existing), which will ensure the diversion and collection of dirty storm water from the in-pit disposal site has been developed and will be implemented at the proposed project area. Please note that since the proposed in-pit discard disposal will be undertaken on a mined -out pit, the existing storm water management will be sufficient for the project. This system will further ensure that clean storm water from the project is diverted to the clean water environment, thereby preventing the contamination of clean storm water from the proposed project area. The dirty storm water and seepage water from the project area will be pumped into a lined pollution control dam.

The proposed in-pit discard disposal project will also occur within the regulated area (500-meter distance) of a channelled valley bottom wetland system. Assessment of the affected wetland system has shown that the proposed project may negatively impact on the identified wetlands in the form of water quality deterioration and damage or disturbance of the wetland system through encroachment or disposal of coal discards into the wetland. However, the proposed project will be sited to be more than 100 meters away from the identified wetland. In addition to the above, additional measures such as storm water management within the project area, increasing awareness of the presence of the wetland to the mine employees and contractors, visible demarcation of the identified wetlands and

development area and avoiding surface stockpiling of coal discards will be conducted to minimise impacts on the affected wetland system.

With the prevention of spillages along the transportation routes, the impacts on soils will be low with mitigation.

Dust and noise will have low impacts on the surrounding communities. Despite the low impact significance rating, measures will be put in place and implemented in order to maintain the impact significance rating as low.

Commencement of the proposed in-pit discard disposal project will ensure that employment opportunities, although on a temporary basis during the construction phase, are created. This will, to a limited extent, have a positive impact on the socio-economies of the surrounding towns.

All workers will be housed in surrounding towns and villages to minimise their potential impact on community security. Iyanga Mining (Pty) Limited will work with the local communities to promote security on an ongoing basis.

6.7.3 Final Master Layout Plan

The final maps showing the layouts of the proposed project in relation to the proposed activity and after the impact assessment exercise will be generated once all comments have been received from the public participation process. All recommendations provided in the EMPr will be incorporated in the layout plan. The map will be developed to superimpose the proposed project over the environmental sensitivities within the preferred project site.

6.8 Final Proposed Alternatives

Once the public participation process has been completed and all comments received the current layout plan will be revised and finalised for approval. This will take into consideration the comments from the public and the recommendations from the authorities and environmental specialists.

6.9 Aspects for Inclusion as conditions of the Waste Management Licence

In authorising the proposed in-pit discard disposal project, the following conditions should form part of the waste management licence:

- Iyanga Mining (Pty) Limited may not alter the location of any of the project activities included in this environmental impact assessment without obtaining the required waste management licence to do so under NEMA/NEMWA.
- Iyanga Mining (Pty) Limited will not undertake any new activity that was not part of this environmental impact assessment and that will trigger a need for a waste management licence without proper authorisation.
- The EMPr must be implemented fully at all stages of the proposed in-pit discard disposal Project.
- Iyanga Mining (Pty) Limited must consider the development of an environmental management system with applicable operational procedure to support the efforts of ensuring compliance with the EMPr commitments. These must be updated regularly. Frequency of updates must be informed by suitably qualified persons.

6.10 DESCRIPTION OF ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The EIA Regulations, 2014 outline specific requirements that a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures must be provided in the EIR.

The specialist assessments undertaken are based on conservative methodologies and these methods attempts to determine potential negative impacts that could occur on the affected environmental aspects. These impacts may however be of smaller magnitude than predicted, while benefits could be of a larger extent than predicted.

This section outlines various limitations to the specialist studies that have been undertaken and indicates, where appropriate, the adequacy of predictive methods used for the assessment. This has been done to provide the authorities and interested and affected parties with an understanding of how much confidence can be placed in this impact assessment.

The EIA has investigated the potential impact on key environmental media relating to the specific environmental setting for the site. A number of studies were undertaken and result thereof, which forms part of this report, will be presented during the public meeting to be arranged.

The information provided in this EIR is therefore considered sufficient for decision-making purposes.

The environment that is likely to be affected by the proposed in-pit discard disposal was detailed in the section dealing with the environmental attributes. The studies are already existing and they were used for the compilation of this report. These studies include a soil survey, vegetation study, wetland survey, geological reports, hydrological study, geohydrological study, heritage impact assessment, air quality impact assessment, noise impact assessment and surface water studies etc.

6.11 SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY

Negative impacts of the proposed in-pit discard disposal

According to the impact assessment undertaken for the proposed in-pit discard disposal, the key negative impacts of the project are on deterioration of surface and ground water quality, contamination of surface water environment through spillages from the transportation of the discard material. These impacts may be experienced throughout the life of the in-pit discard disposal.

Other impacts from the proposed project include the air quality and noise through the transportation of the discard material. It must however be noted that the area is currently used for mining purposes, hence the communities surrounding the proposed project area are used to mine related operations.

Positive impacts of the proposed in-pit discard disposal

The proposed project will have the following positive impacts on the environment:

- Will form part of backfilling, intending to minimise the dirty catchment within the mining area.
- The isolation of solid mine wastes in an anoxic environment, which has been shown to inhibit acid generation and the release of soluble metals and other contaminants.
- The reduction or elimination for the need to maintain engineered structures.
- Improved social and regulatory acceptance of mining activities by restoring land forms and function; and, in some cases.

- The permanent isolation of hazardous substances resulting from emergencies and normal processing.
- Restoration of pre-mining conditions.

All comments received during Public Participation Process and detailed specialist reports will be included in this EIR and EMPr. The management of the impacts identified in the EIR of the proposed project will be undertaken through a range of programmes and plans contained in the EMPr. In consideration of the programmes and plans contained within the EMPr as well as designs, layouts and method statements compiled for the project, which is assumed will be effectively implemented, there will be significant reduction in the significance of potential impacts.

Based on the above, it is therefore the opinion of the EAP that the activity should be authorised.

6.11.1 Commitments that must be included in the Waste Management Licence

See section 6.5 of the EIR.

6.12 Period for the Waste Management Licence

Based on the production rate and the estimated reserve, the proposed project will have a life of ten years.

6.13 Undertaking

The signed undertaking is presented at the back of this document.

6.14 Financial Provision

According to Appendix 3 of the EIA Regulations, 2014, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts must be provided in the EIR and EMPr. In order to avoid duplication, the financial provision has only been provided under the relevant section of the EMPr.

Iyanga Mining (Pty) Limited has undertaken an assessment for required financial provision for the proposed in pit discard disposal project. The proposed project will be undertaken over an area that would have been disturbed by opencast mining and in the process of being rehabilitated. The rehabilitation of the opencast to be used for disposal of the coal discards will include backfilling with carbonaceous material first and then sandstone followed by subsoils and topsoil. The undertaking of the proposed project will include the placement of the discard material before placement of the above-mentioned material i.e. carbonaceous hards material, sandstone material, subsoils and topsoil, which basically align with the rehabilitation of the opencast. In view of the above and since no additional negative environmental impacts that requires financial provision will result from this project, the mine's current financial provision determination (updated annually) will be sufficient for the proposed project.

6.15 Deviation from approved Scoping Report

No deviation from the approved Scoping Report.

6.16 Other Information Required by the Competent Authority

Aside from the EIR and EMPr, no other information has been requested by the competent authority.

6.17 Other Matters Required in Terms of Section 24 (4)(a) and (b) of the Act

Any matter required in terms of the above section of the Act will be complied with by Iyanga Mining (Pty) Ltd.

PART B

Environmental Management Programme (EMPr)

For

Iyanga Mining (Pty) (Pty) Limited:

Welgelegen Colliery In-Pit Discard Disposal Project

June 2021

1. DETAILS OF THE EAP

The details of the EAP are provided in section 1.1 of part A of this document.

2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The requirements to describe the aspects of the activity are covered by the environmental management programme and are included in PART A of the document under section 1. The reader is therefore referred to section 1 of PART A of this document.

3. COMPOSITE MAP

The map superimposing the proposed in-pit discard disposal is indicated in Figure 1.

4. DESCRIPTION OF THE MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.1 WATER USE LICENCE APPLICATION

A number of activities that have been declared as water uses in terms of the National Water Act, 1998 (Act 36 of 1998) will be undertaken. In terms of section 22(1)(b), a person may use water if the water use is authorised by a licence under the National Water Act, 1998 (Act 36 of 1998). According to section 40 of the National Water Act, 1998 (Act 36 of 1998), the water use activities to be undertaken at the proposed in-pit discard disposal must be authorised by the Department of Water and Sanitation, whose authorisation must be in the form of an integrated water use licence. In view of the above, Iyanga Mining (Pty) Limited compiled and submitted an application for an integrated water use licence to the Department of Water and Sanitation (Mpumalanga Regional Office, Bronkhorstspruit) for consideration.

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 16: Environmental management programme

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
OPERATIONAL PHASE								
Transportation of discard material from the coal washing plant to the mined out opencast pits								
Spillages and leakage of coal discards and hydrocarbon liquids from mine vehicles transporting discard material will result in the contamination of soils around the transportation routes, which will subsequently result in the loss of viability of the affected soils.	Soil	To ensure that during the transportation of the discard material, contamination of soils is minimised.	Soils will be managed in accordance with best practices for handling contaminated areas and will be undertaken in accordance with Iyanga Coal (Pty) Limited's soil conservation plan.	Vehicles must be regularly inspected for overloading to prevent spillages of the discard material.	Appointed contractors and the ECO.	The site, vehicles and machinery will be inspected for signs of discard leakages.	ECO will undertake the inspections on a weekly basis.	Throughout the operational phase of the project.
				Soils contaminated by the hydrocarbon liquids must be remedied using hydrocarbon spill kids or taken away for remediation offsite or for disposal by a registered contractor.	Appointed contractors and the ECO.	Areas with spillages will be monitored after remediation to confirm that the areas are properly cleaned up.	ECO will monitor the affected areas on a monthly basis.	Throughout the operational phase of the project.
				Training, which will be in compliance with the requirements of the national norms and standards for the storage waste, on waste handling will be conducted for employees working with coal discards, including contractors.	Appointed contractors and the ECO.	Records of training will be kept.	ECO will inspect the records quarterly.	Training will be conducted at intervals approved by the mine
				Existing workshops will be used for servicing vehicles and mine machinery. Vehicles and mine machinery will be serviced at designated areas within the mine i.e. existing mine workshop complex.	Appointed contractors and the ECO.	All incidents of emergency repairs will be inspected and occurrence recorded.	Safety Officer. ECO or mine environmental co-ordinator will undertake the inspections as and when incidents are reported.	Throughout the operational phase of the project.
				Emergency repairs must be undertaken on protected ground.	Appointed contractors and the ECO.	Inspections will be undertaken to ensure that emergency repairs are undertaken on protected ground.	ECO will undertake inspections on monthly basis.	Throughout the operational phase of the project.
				Trucks will be required to obey certain road regulations when transporting coal at the mine. This will include speed limits etc (40km/h).	Appointed contractors and the ECO.	The route will be inspected for the identification of areas not complying with the management action plan. Inspection will be undertaken	Appointed contractor, ECO and mine manager (monthly).	Throughout the operational phase of the project.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				Vehicles will be maintained regularly by the mine.	Appointed contractors and the ECO.	Maintainace schedules will be kept.	Appointed contractor, ECO on monthly basis.	Throughout the operational phase of the project.
				Coal discard spoilages along the routes must be removed and the area restored.	Appointed contractors and the ECO.	Inspection along the transportation routes will be undertaken.	Inspection will be undertaken regularly.	Throughout the operational phase of the project.
Spillage/leakages of the coal discard, oil and diesel (from the vehicles) during the transportation may result in deterioration of surface water resources in the vicinity.	Surface Water Quality	Ensure that the use and maintenance of the road do not result in detrimental impacts on the surface water environment.	Waste spillages will be undertaken according to the national norms and standards for the storage of waste.	Vehicles to be used for the transportation will be well maintained and inspected for overloading to avoid leakages and spillages.	Appointed contractors and the ECO.	The site, vehicles and machinery will be inspected for signs of discard leakages.	ECO will undertake the inspections on a weekly basis.	Throughout the operational phase of the project.
				Incidents of spillages will be reported and treated immediately in a reputable manner.	Appointed contractors and the ECO.	Monitoring will be conducted on the spillages to ensure that here are recorded.	ECO will undertake the monitoring on a weekly basis.	Throughout the operational phase of the project.
				Loading of the trucks must be supervised to prevent overloading.	Appointed contractors and the ECO.	Supervision of loading of the discard material will be undertaken.	Supervision will be undertaken whenever loading.	Whenever loading is undertaken.
				Trucks will be required to obey certain road regulations when transporting coal at the mine. This will include speed limits etc (40km/h).	Appointed contractors and the ECO.	The route will be inspected for the identification of areas not complying with the management action plan.	Appointed contractor, ECO and mine manager (monthly).	During the operational phase.
				Should coal discard spillages occur along the routes, the spillage must be removed and the area restored. Should the mine not have the capacity to handle the spill services of an outside service providers will be sort.	Remediation specialists and ECO	Regular inspections of the entire discard transportation route must be undertaken regularly.	Monthly by the ECO.	Throughout the operational phase of the project.
				Storm water management measures will be put in place at the opencast pits and transportation routes.	Appointed contractors and the ECO.	Storm water measures will be monitored.	Monthly by the ECO.	Throughout the operational phase of the project.
				Dirty water from the transportation routes must as much a possible report to the opencast pits.	Appointed contractors and the ECO.	Monitoring will be undertaken to ensure that all dirty water report to the opencast pits.	Monthly by the ECO.	Throughout the operational phase of the project.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
Accumulation of spilled coal discard for a prolonged period along the transportation routes may lead to pollution of ground water.	Groundwater Quality	To ensure that the transportation of the discard material does not have detrimental impacts on groundwater quality.	Comply with the groundwater water quality objectives for the affected catchment and groundwater quality objectives indicated in the integrated water use licence.	Current groundwater monitoring must be continued and used to determine if there is any groundwater contamination that might have been impacted by the transportation of the discard material of the discard material.	Appointed contractors and the ECO.	Groundwater quality will be monitored.	ECO will conduct the monitoring quarterly.	Throughout the operational phase of the project.
				Where the discard is transported along roads, emergency containment and mitigation measures must be developed to minimize impacts should accidental spillages occur along the transport routes.	Appointed contractors and the ECO.	Inspections will be undertaken to ensure that emergency repairs are undertaken on protected ground.	ECO will undertake inspections on monthly basis.	Throughout the operational phase of the project.
				Haul roads will be graded regularly to remove any coal discard and oil spillages.	Appointed contractors and the ECO.	Site will be inspected for any spillages.	ECO will undertake inspections on monthly basis.	Throughout the operational phase of the project.
				Trucks will be regularly serviced to reduce risk of coal discard and oil spillages.	Appointed contractors and the ECO.	Trucks will be serviced whenever required.	Trucks will be serviced whenever required.	Throughout the operational phase of the project.
				Incidents of coal discard and oil spillages will be reported and treated immediately in a reputable manner.	Appointed contractors and the ECO.	The transportation routes will be inspected for signs of leakages.	Inspections will be undertaken on monthly basis.	Throughout the operational phase of the project.
				Soil contaminated by coal discard must be disposed of by a registered contractor and taken to an approved waste disposal site.	Appointed contractors and the ECO.	The transportation routes will be inspected for any spillages and records of disposal will be kept.	ECO will inspect the records quarterly	Throughout the operational phase of the project.
				If it can be proven that the spillages are indeed affecting the quantity of groundwater available to certain users, the affected parties should be compensated. This may be done through the installation of additional boreholes for water supply purposes, or any alternative water supply.	Appointed contractors and the ECO.	Monitoring results will be used to determine the effect of the disposal site to groundwater users. Should water be supplied to the affected groundwater users the volumes provided must be recorded.	As and when the groundwater user is affected by the mine.	As and when the groundwater user is affected by the mine.
Generation of dust and fuel fumes by vehicular movement along the	Air Quality	Ensure that the transportation of the discard material does	The transportation of the discard material will be undertaken such that	All machinery will be fitted with the correct exhaust systems, which will be maintained and in good repair.	Appointed contractors and the ECO.	Visual inspections of areas with possible dust emissions.	ECO will inspect the records monthly.	Throughout the operational phase of the project.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
transportation routes.		not result in detrimental air quality impacts.	the ambient air quality does not exceed the National Air Quality Standards.	Dust suppression will be undertaken during the operational phase on haul roads where movement of machinery may generate dust. Water for dust suppression purposes will be obtained from the pollution control dams.	Appointed contractors and the ECO.	Inspections will be undertaken.	Monthly inspections by the ECO.	Throughout the operational phase of the project.
				Speed on access and haul roads will be limited to 40 km/h.	ECO/Safety Officer and Mine Manager.	Speed checking will be conducted.	Safety Officer will conduct speed checking as regularly as possible.	Throughout the operational phase of the project.
				Current ambient air quality monitoring must be continued and used to determine if there is any significant air quality impacts from the transportation of the discard material.	ECO/Safety Officer and Mine Manager.	Air quality will be monitored.	Air quality monitoring will be undertaken on monthly basis.	Throughout the operational phase of the project.
Use of the mine machinery/vehicles during the transportation of the discard material may generate noise levels that may have health effects on the employees if not properly controlled.	Noise	Ensure that the transportation of the discard material has minimal impacts on noise levels.	The mine will comply with relevant ambient noise standards.	Limit the maximum speed on the haul roads to 40 km/h or less.	ECO/Safety Officer and Mine Manager.	Speed checking will be conducted.	Safety Officer will conduct speed checking as regularly as possible.	Throughout the operational phase of the project.
				Educate employees on the dangers of hearing loss due to mine machinery noise.	Safety Officer	Safety meetings where the awareness is conducted will be recorded and records must be kept.	Safety Officer will attend the daily safety meetings with the employees.	Throughout the operational phase of the project.
				Any deviation detected by the noise monitoring results that might have been affected by the transportation of the discard material must be addressed.	Safety Officer	Whenever deviation is identified.	Safety Officer when deviation is identified.	Safety Officer when deviation is identified.
				Ambient noise monitoring will be undertaken as per recommendations from the suitably qualified noise specialist, which will be used to determine if the mine is having a detrimental impact on surrounding interested and affected parties.	Appointed specialist	Noise monitoring will be conducted.	ECO on monthly basis.	Throughout the operational phase of the project.
The roads used for the transportation of the	Sensitive Landscapes	Ensure that the use and maintenance of the	Maintain or improve the current PES and EIS of	Ensure that the footprint of the roads does not increase beyond their intended	Plant manager and mine engineer	Inspection and auditing of the transportation routes.	ECO on monthly basis	Throughout the operational phase

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
coal discard would be sited such that they are not on areas identified as wetlands. If the roads are not properly managed, their footprint may increase resulting in the destruction of channelled valley bottom wetland.		roads do not result in detrimental impacts of the identified wetlands areas	the wetlands and water qualities within the affected streams.	area. Measures must be taken should it be proven that the transportation of coal along the roads are not affecting the nearby wetland areas. Loading of discard trucks must be supervised to prevent overloading. The road must be designed and operated to minimise the likelihood of spillages. All vehicles should only use designated roads with no indiscriminate driving through wetland or riparian areas. Incidents of coal discard and oil spillages will be reported and treated immediately in a reputable manner. Dust suppression should be undertaken at the facility and roads to prevent generation of excessive dust. Any streams and wetlands close to the transportation routes that have been disturbed or damaged by the trucks will be rehabilitated under the supervision of an ecologists.	Environmental Manager Environmental Manager Environmental Manager Environmental Manager Environmental Manager	Inspection and auditing of the transportation routes. Regular inspections of the entire discard transportation route must be undertaken regularly Regular inspections of the entire coal transportation route should be undertaken regularly Visual monitoring and inspections. Visual monitoring and inspections.	Monthly by the ECO. Monthly by the ECO. ECO and mine engineer monthly. Monthly by the ECO. Monthly by the ECO.	of the project Throughout the operational phase of the project Throughout the operational phase of the project Throughout the operational phase of the project Throughout the operational phase of the project Throughout the operational phase of the project
Disposing of the coal discards at mined out opencast pit i.e., in-pit discard disposal								
Erosion of soils through soil contamination.	Soils	Ensure that the disposing of the discard material does not result in contamination of soils.	The disposing of the discard material will be conducted in accordance with the waste management procedure.	No surface stockpiling of the discards will be allowed outside and adjacent the mined out opencast pits.	ECO and site manager	Inspections of the entire discard disposal will be undertaken.	ECO will conduct the inspections monthly.	Throughout the operational phase of the proposed in-pit discard disposal.
Seepage and rainwater contained within the in pit disposal areas may result in the contamination of groundwater resources and thus affecting the	Groundwater	Ensure that the water retained into the discard material does not have detrimental impacts on the groundwater levels and resources.	Groundwater management will be undertaken in compliance with the mine's environmental policy.	The practice of depositing discard below the groundwater level will be conducted and must be maintained accurately. This will reduce the contamination of Sulphate levels to the north-western Tributary of the Wilge River. Groundwater monitoring programme will	ECO, mine and environmental manager. Appointed contractor,	Monitoring of the disposal method will be conducted. Ground water quality will	ECO will monitor the facility monthly. ECO will undertake	Throughout the life of the mine of the project. Throughout the

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
nearby groundwater users and water resources.				continue throughout the life of the mine (existing) which will cater for the in-pit discard disposal that involve groundwater quality monitoring on a quarterly basis to determine if the in-pit discard disposal does not have any impact on the groundwater quality.	Mine engineer and ECO.	continue to be monitored as per the ground water monitoring programme	monitoring quarterly.	life of the mine of the project. Throughout the life of the mine of the project.
				If it can be proven that the proposed activity is indeed affecting the quantity of groundwater available to the groundwater users, the affected parties must be compensated.	Mine Manager and ECO/appointed contractor.	Quarterly sampling of the boreholes must be conducted.	As and when the groundwater user is affected by the mine.	As and when the groundwater user is affected by the mine.
				Store all potential sources of contamination in secure facilities with appropriate water collection systems in place to ensure that contaminants are not released to the water resource.	Appointed contractor, mine engineer, appointed civil engineer and mine environmental coordinator.	Inspections will be conducted.	ECO will conduct the inspections monthly.	Throughout the life of the mine of the project.
				Ensure that all storm water structures that are designed to keep dirty and clean water separate can accommodate a defined precipitation event. (The magnitude of the precipitation event used in such an objective statement must, as a minimum, adhere to the relevant legal requirement).	Mine Manager and ECO/appointed contractor.	Inspections and audits conducted disposal facility.	ECO will conduct the inspections monthly.	Throughout the life of the mine of the project.
				Seepage and contaminated storm water run-off must be collected and routed to lined pollution control dam.	Mine Manager and ECO/appointed contractor.	Inspections will be conducted to ensure that runoff water is collected and routed to a pollution control dam.	ECO will conduct the inspections monthly.	Throughout the life of the mine of the project
				The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act.	Appointed contractor, mine engineer, appointed civil engineer and mine environmental coordinator.	Inspections will be conducted to ensure that the facility is operated in accordance with the designs specifications approved by relevant authorities/compliance with the requirements of the GN704.	ECO will conduct the inspections monthly.	Throughout the life of the mine of the project

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				Route all clean storm water directly to natural watercourses without increasing the risk of a negative impact on safety and infrastructure, e.g., loss of life or damage to property due to an increase in the peak runoff flow.	Appointed contractor, mine engineer, appointed civil engineer and mine environmental coordinator.	Inspections will be conducted to ensure that clean water is routed to the natural watercourses.	ECO will conduct the inspections monthly.	Throughout the life of the mine of the project
Storm water and seepage generated from in-pit discard disposal will likely be contaminated and have a detrimental effect on the water quality in the Wilge River north-west tributaries causing deterioration of surface water quality should this water be released to the stream either directly or via pollution plume.		Ensure that the operation of the in-pit discard disposal does not result in the detrimental impacts on the surface water environment.	The quality of water within and around the in-pit discard disposal will comply with the target water quality objectives as stipulated in the Welgelegen Colliery water use licence. Welgelegen Colliery will operate the in-pit discard disposal in compliance with the regulations under the GN704.	All dirty water that falls within the catchment area of the in-pit discard disposal will be collected and pumped to a lined pollution control dam.	Appointed contractor, mine engineer, appointed civil engineer and mine environmental coordinator.	Inspections of the water management facilities.	ECO monthly and after a high storm event.	Throughout the life of the in-pit discard disposal facility.
				Ensure that all possible sources of dirty water have been identified and that appropriate collection and containment systems have been implemented and that these do not result in further unnecessary water quality deterioration.	Appointed contractor, mine engineer, appointed civil engineer and mine environmental coordinator.	Inspections of the water management facilities.	ECO will undertake the inspections monthly.	Throughout the life of the in-pit discard disposal facility.
	Surface Water Quality			Seepage and contaminated rain water must be collected and routed to lined pollution control dam. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act.	Mine engineer and production manager	Inspection and monitoring operational capacity of the water management structures.	ECO or appointed civil engineer monthly.	Throughout the life of the mine of the project.
				All water management structures constructed to isolate the disposal facility from the clean water environment and contain dirty water (drains, pipelines, sumps and pumping systems) will continue to be maintained in good order and will not be allowed to spill to the clean water environment. All clean water will be diverted around the opencast pits used for the disposal of discards to the nearby streams.	ECO, production manager, mine engineer.	Inspections will be conducted to ensure that the facility is operated in accordance with the designs specifications approved by relevant authorities.	ECO will undertake the inspections monthly.	Throughout the life of the mine of the project.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				All clean water will be diverted around the opencast pits used for the disposal of discards to the nearby streams.	ECO, production manager, mine engineer.	Inspections will be conducted to ensure that clean water is diverted around the disposal facility to the nearby streams.	ECO will undertake the inspections monthly.	Throughout the life of the mine of the project.
				The water management system at the disposal facility will be maintained to be in compliance with the requirements of the GN704. If any activity is not complying with the requirements of the regulations under the GN704, exemptions must be sought from the DWS. This will ensure that the surrounding surface water environment is not affected.	ECO, production manager, mine engineer.	Inspections will be conducted to ensure that the facility is operated in accordance with the designs specifications approved by relevant authorities/compliance with the requirements of the GN704.	ECO will undertake the inspections monthly.	Throughout the life of the mine of the project.
				Vehicles to be used for discard transportation will be well maintained to avoid discard material spillages.	Appointed contractors and the ECO.	Inspections of the vehicles will be conducted to ensure that the vehicles are maintained in good order.	ECO will undertake the inspections monthly.	Throughout the life of the mine of the project.
				Trucks will be regularly serviced to reduce risk of discard material spillages. Incidents of discard material spillages will be reported and treated immediately in a reputable manner.	Appointed contractors and the ECO.	Regular inspections on the trucks will be undertaken to reduce risk of discard material spillages.	ECO will undertake the inspections monthly.	Throughout the life of the mine of the project.
				Loading of the discard trucks must be supervised to prevent overloading. All vehicles should only use designated roads with no indiscriminate driving through wetland or riparian areas.	Appointed contractor.	Supervision will be undertaken whenever loading.	Supervision of loading of the discard material will be undertaken.	Whenever loading is undertaken.
				Should large spillages occur, clean-up of the spillages should be undertaken as soon as possible.	Remediation specialists and ECO	Regular inspections of the entire discard transportation route must be undertaken regularly.	Monthly by the ECO	Throughout the life of the mine of the project.
				The proposed in-pit discard disposal will not be situated within the 100 m buffer zone in order to minimise polluted water	Appointed contractors and the ECO.	Inspections will be conducted to ensure that any development of the disposal facility does not	Monthly by the ECO.	Throughout the life of the mine of the project

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				reaching the stream.		take place within the 100 m wetland restriction area.		
The proposed in-pit discard disposal has been sited in close proximity to the north-west tributary of the Wilge River. Should the project not be undertaken properly, it may encroach into this wetland area. Should this be allowed, it will result in loss of the wetland habitat due to the damage on the wetland areas. Water collected in the in-pit discard disposal area will typically contains various pollutants that will contribute to deteriorating the water quality in the wetlands should this water be released to the wetland system. Areas disturbed during the in-pit discard disposal (backfilled opencasts) will be susceptible to invasion by alien vegetation, which could spread to the adjacent wetland areas and result in decreased flows, increased erosion and decreased biodiversity in the wetland	Sensitive Landscape	Ensure that the disposal does not result in detrimental impacts of the identified wetlands areas	Maintain or improve the current PES and EIS of the wetlands and water qualities in the vicinity of the area.	Ensure that the disposal of the discards is designed such that single handling of the discards is achieved. No surface stockpiling of the discards will be allowed outside and adjacent the mined out opencast pits. Fence off all wetland areas outside the direct development footprint. Include a 32m buffer zone around all wetlands within the fenced off area. Heavy vehicles must not enter the north-west tributary of the Wilge River. The proposed in-pit discard disposal will not be situated within the 100 m buffer zone. This will minimise polluted groundwater reaching the stream. Spillages of the discard material must be cleaned as soon as possible. Ensure that no equipment's are maintained anywhere near the wetlands. Clearly demarcate the proposed development footprints and limit all activities to the demarcated area. Separate clean and dirty water areas. No dirty water to be discharged to the environment. Rehabilitate and re-vegetate all	Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors and the ECO. Appointed contractors.	Inspections will be conducted on the disposal site. Visual inspections will be conducted. Visual inspections will be conducted. Inspections will be conducted to ensure that any development of the disposal facility does not take place within the 100 m wetland restriction area. Areas with spillages will be monitored after remediation to confirm that the areas are properly cleaned up. Visual inspections will be conducted. Visual inspections will be conducted. Monitoring will be undertaken. Monitoring will be undertaken.	ECO monthly. ECO monthly. ECO monthly. Monthly by the ECO. ECO will monitor the affected areas on a monthly basis. Monthly by the ECO. Monthly by the ECO. Monitoring will be undertaken monthly by the ECO. Monitoring will be	Throughout the life of the mine of the project.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
systems.				disturbed areas as soon as possible following disturbance. Implement alien vegetation management plan to remove and control establishment and spread of alien species.	Vegetation specialist	Alien vegetation management plan will be compiled and kept for records and for implementation.	undertaken monthly by the ECO. Records of the plan will be kept and will be made available.	
Generated dust within the in-pit discard disposal site affects the health of the mine employees and surrounding communities and livelihood of the natural environment.	Air quality.	Ensure that the air quality in the vicinity of the disposal site does not affect the health of the mine employees, communities and livelihood of the natural environment.	Air quality within the coal stockpiling facility will comply with the national dust control regulations.	Sufficient dust suppression will be undertaken to reduce the impacts of the generated dust on the employees and surrounding properties. Employees will be provided with dust masks and will be instructed to use the dust masks.	Safety Officer/ECO Safety Officer/ECO	Dust fall will be monitored. Use of dust masks by employees will be monitored.	ECO will ensure that monitoring is conducted monthly. ECO will monitor the use of dust masks monthly.	Throughout the operational phase of the project. During the operational phase of the project.
Noise generated from the operation of the mine machinery within the in-pit discard disposal site may have health effects on the mine employees and be a nuisance to surrounding communities.	Noise.	Ensure that the noise levels within the in-pit discard disposal site does affect mine employees and surrounding communities.	Noise levels within the in-pit discard disposal site will comply with the required noise limits.	Sufficient noise buffering will be undertaken to reduce the impacts of the generated noise on the employees and surrounding communities. Employees will be provided with ear plugs for hearing protection. Educate employees on the dangers of hearing loss due to mine machinery noise. Any deviation detected by the noise monitoring results that might have been affected by the disposal of the discard material must be addressed.	Safety Officer. Safety Officer. Safety Officer. Safety Officer.	Ambient noise levels will be monitored around the mine including the in-pit discard disposal site. Use of ear protection by employees will be monitored. Safety meetings where the awareness is conducted will be recorded and records must be kept. Whenever deviation is identified. Safety Officer when deviation is identified.	ECO will ensure that noise monitoring conducted. Safety Officer will monitor the use of ear protection by employees monthly. Safety Officer will attend the daily safety meetings with the employees.	Throughout the operational phase of the proposed operation. Throughout the operational phase of the proposed operation. Throughout the operational phase of the proposed operation. Safety Officer when deviation is identified.

6. PROCEDURE FOR ENVIRONMENTAL RELATED EMERGENCIES AND REMEDIATION

An environmental emergency is an unplanned event, which has the potential to result in a significant adverse environmental impact and/or could result in legal liability to Iyanga Mining (Pty) Limited in terms of environmental legislation requirements. The following define most likely potential environmental emergencies:

- Hydrocarbon spills or leaks
- Explosions (electrical transformers)
- Spills or leaks of process water or slurry
- Flooding due to Burst/Overflowing Dams
- Burst pipelines
- Chemical spills from equipment
- Transportation accidents

Iyanga Mining (Pty) Limited has developed procedures for environmental related emergencies for the Welgelegen Colliery, which is explained in more detail below.

Note that the responsible person will revise these procedures. The date of commencement of the revised procedures will always be indicated to prevent confusion.

Introduction

This procedure describes the process to be followed to report and deal with emergencies, which may occur on the mine property. An effective, comprehensive, well-considered and tested environmental emergency preparedness and response plan has the potential to save lives, prevent unnecessary damage to the company and other properties and to manage environmental risk.

This standard procedure aims to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. Below are the objectives of the above-mentioned procedure:

- To ensure quick and controlled responses to environmental emergencies through the use of correct personnel and equipment.
- To prevent incidents from becoming more extensive through the timeouts contact and arrival of trained personnel on site.
- To establish a management mechanism from which a range of safety, environmental and health issues can be dealt with, should they arise.

Purpose of the procedure

To provide guidance to all mine employees and contractors in the event of an environmental emergency at Welgelegen Colliery or related to its activities.

This procedure is developed to provide guidance to ensure that:

- Danger to the environment, personnel, contractors and non-employees are minimised.
- Legal liability is managed and minimised.
- Public relations are effectively managed during and following emergencies.

This procedure contains information relevant to all employees and contractors of the mine. It is the responsibility of all employees to familiarise themselves with the contents of this procedure.

Furthermore, mine management should ensure that all contractors have access to this procedure and the requirements contained herein.

Legal requirements

The following below listed legislation was identified for the emergency response activities in the mining industry. The legislation requires that governmental departments be kept informed of incidents and accidents:

- Regulation 51 of Regulations under the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) – PROCEDURE FOR ENVIRONMENTAL RELATED EMERGENCY AND REMEDIATION
- Mine Health & Safety Act 29 of 1996 – MANNER OF REPORTING AND KEEPING OF INFORMATION REGARDING INCIDENTS & EMERGENCIES
- Occupational Health & Safety Act 85 of 1993 – EMPLOYEE REQUIREMENTS TO REPORT INCIDENTS WHERE ACTIVITY HAS OCCURRED

Iyanga Mining (Pty) Limited is responsible for the safety and wellbeing of employees working at Welgelegen Colliery as well as the protection of the environment from unnecessary negative impacts. The management of the mine has a responsibility to initiate a warning process should an emergency occur or should something at the mine site deteriorate in an uncontrolled manner presenting a risk to employees, the public or the environment.

General Mine Manager

It is the responsibility of the Mine Manager to appoint a person or persons to review and audit the activities as covered by the scope of this Procedure. The Mine Manager or his appointed representative shall ensure that the audits are being conducted systematically and at regular defined intervals. The Mine Manager shall further ensure that the person nominated to perform audits of the emergency system, are given all the necessary assistance and facilities to conduct the task effectively.

Local Government

Local government departments have the responsibility to warn residents of a hazardous situation, these warnings must be based on information provided by the mine.

All employees, contractors and other relevant parties

All employees, contractors and other relevant parties should ensure that they are familiar with this procedure.

Description of Possible Emergencies, Mine's Preparedness and Remedial actions

The following define most likely potential environmental emergencies. The safety officer will be contacted in all emergencies. In all cases the surrounding area must be cordoned off in a safe and efficient way. Emergency equipment for direct incidents must be available on the mine at all times.

Hydrocarbon spills or leaks caused by diesel spills, oil spills.

These are typically spillages or leaks of hydrocarbon liquids from containers and pipelines. The hydrocarbon liquids involved in these emergencies are diesel, new and used oils and paint. The spillages of hydrocarbon liquids may potentially contaminate the groundwater regime, surface water and soil over the affected areas. These, if not remediated properly, may have permanent detrimental effects on environmental components.

All hydrocarbons will be stored in well enclosed containers. The containers will be placed within bunded areas. The bunded areas will be constructed to have capacity to contain the total volumes of stored liquids plus ten percent of the stored liquids. Emergency telephone numbers with contact persons will be placed near the containers. Credible companies will be called, if a carbon spill occurs, to assess the situation and take the necessary steps.

Surface fires, including veld fires.

These include any fires within the Welgelegen Colliery mining right area. These fires may emanate either from the mine area or outside the mining area. The fires are considered emergency situations since they put lives of employees at risk and result in the destruction of environmental components such as natural vegetation (grasses, trees), animal life (wild and domestic livestock) and air quality. It is for this reason that fires have been identified as a potential emergency situation.

Fire fighting equipment will always be kept ready at the mine, in a good working condition and at an accessible location. Correct fire extinguishers will be used to extinguish the fire. Note that no water on electrical and liquid based fires will be used. The employees will be trained on dealing with fire situations. Fire breaks will be made at suitable locations. Where possible the fire breaks will be made by machinery by removing the vegetation. Employees will be trained on making and maintaining fire breaks. Small patches will at times be burned to ensure that the fire breaks are kept in good condition. No fire breaks will be burned during windy conditions. First aid equipment will be made available at all times. Emergency telephone numbers with contact persons will be placed near the areas prone to the emergency situation. The following procedure will be implemented.

- Safety Officer will assemble the fire team and combat the fire.
    - If the fire seems to go out of control, the Fire Brigade from the nearby town will be contacted. Iyanga Mining (Pty) Limited will establish a working agreement with the Fire Brigade from the nearby town to make themselves available at any time in case fires are out of control.
- All affected farmers will be contacted.

Transportation accident

The mine will use various machinery and vehicles such as dump and haulage trucks for the transportation of material around the mine. During an accident, while transporting the material, both the material and the liquid within the vehicles may cause detrimental damage to the environment. Liquids will include diesel, petrol and oils from the vehicles. Transported material will include coal, slurry and discard.

Speed limit signs will be place around the mine. The employees will be made aware of the speed limits and the reasons for having them. Measures will be implemented in areas prone to accidents. The following procedure will be implemented.

- Spillages will be remediated as soon as possible.
- Type of spillage must be identified.
- Clean-up will be done by a credible company.
- Transport Company will be notified.
- If outside the mine grounds, the traffic department will be notified.

Notification process

There are six main steps in managing an emergency, from the identification of the situation to final close off. They are as follows:

- Find and identify
- Ensure human safety
- Reporting (to relevant stakeholder)
- Containment and clean-up
- Corrective action
- Monitoring

Emergency equipment and supplies

There will be a directory of emergency equipment and other supplies on site as well as person/s responsible for the equipment.

Communication systems

Communication is critical during an emergency on site so that efforts to manage the situation are coordinated to produce the desired results. The communication channels that will be available on site will include:

- Internal phone line system
- Hand held radios
- Cellular phones

Training

The mine management will ensure that employees are trained regarding emergencies that might occur at Welgelegen Colliery.

Monitoring and activity procedure

The above listed typical environmental emergencies were identified through the compilation of the Environmental Impact Assessment and Environmental Management Programme (This document) and from previous mine environmental management experiences.

During the mining operations, the mine management will ensure that measures are implemented to ensure that all possible environmental emergency activities are identified.

Review and revision

During the course of the mining operation a number of emergency response drills will be carried out and recorded (minimum of one per section every year). Emergency response drills are normally carried out during operational hours to best evaluate the response and to involve the highest number of employees. These are at the discretion of the General Manager and Site/Section Manager and may involve one or more of the emergency activities listed in this standard procedure. Emergency response drills should not be of the same type unless significant problems were experienced with the previous drill.

Regular auditing and questioning of the key personnel involved in emergency response will also be conducted. These involve the form of planned task observations (PTO). It is the responsibility of the Site/Section Manager to undertake these PTO's on a regular basis and record the response.

Information from PTO's and drills are collated and assessed. Alterations and modifications to the Emergency Response Procedure are conducted after the response drill evaluation. This task is performed in co-ordination with the Section/Site Manager to which the drill applies

A report is generated, which will be distributed to the parties concerned for review and modification. Any significant problems are addressed by altering the response plan in this procedure.

7. FINANCIAL PROVISION

Section 24 P (1) of NEMA requires an applicant for an environmental authorisation (in this case a waste management licence) related to relating to prospecting, exploration, mining or production to comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts of their proposed operation before

the Minister responsible for mineral resources issues the waste management licence. The above-mentioned financial provision may be in the form of an insurance, bank guarantee, trust fund or cash.

To this effect regulations pertaining to the above-mentioned financial provision for prospecting, exploration, mining or production operations (GNR 1147) were promulgated on the 20th of November 2015. Further to the above, in terms of Regulation 23(3) and 23(4), an environmental impact: report (EIR) and EMPr must, where an application is for an waste management licence application for activities directly related to prospecting, exploration, extraction and primary processing of a mineral or petroleum resource, must address the requirements as determined in the regulations pertaining to the financial provision for the rehabilitation, closure and post closure of prospecting, mining or production operations, made in terms of the National Environmental Act, 1998 (Act 107 of 1998) as amended.

In view of the above, Iyanga Mining (Pty) Limited has undertaken an assessment for required financial provision for the proposed in pit discard disposal project. The proposed project will be undertaken over an area that would have been disturbed by opencast mining and in the process of being rehabilitated. The rehabilitation of the opencast to be used for disposal of the coal discards will include backfilling with carbonaceous material first and then sandstone followed by subsoils and topsoil. The undertaking of the proposed project will include the placement of the discard material before placement of the above-mentioned material i.e. carbonaceous hards material, sandstone material, subsoils and topsoil, which basically align with the rehabilitation of the opencast. In view of the above and since no additional negative environmental impacts that requires financial provision will result from this project, the mine's current financial provision determination (updated annually) will be sufficient for the proposed project. Refer to Appendix F for Welgelegen Colliery financial provision report.

8. MECHANISM FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF

8.1 FUNCTIONAL REQUIREMENTS FOR ENVIRONMENTAL MONITORING

During the impact assessment, potential impacts on the environment were identified. Mitigation measures were also specified for prevention and management of the impact so as to minimise their effect on the environment. This section will describe how the mine intends to ensure that the mitigation measures are being undertaken and that their effectiveness is proven.

A monitoring programme has been developed for the identified impacts and their mitigation measures. This monitoring programme will be undertaken and results thereof used to determine the effectiveness of the mitigation measures. The ECO has an overall responsibility for ensuring that all monitoring is conducted according to the approved EMPr. Below is the explanation of how each environmental aspect to be affected by the mine will be monitored or will continue to be, which include all aspects of the environment affected by the proposed project.

8.1.1 Soil

The soils will also be monitored once used during the rehabilitation of the disturbed areas. Competent and accredited laboratories will be used for the analysis of the soils. Records of soil placement and package thickness will be kept during mining the decommissioning phase.

8.1.2 Surface and Groundwater

8.1.2.1 Water Monitoring

The existing water quality monitoring program will continue, until it can be shown that water quality (surface and groundwater) is both stable and within acceptable guidelines and limits, as determined by the relevant State Departments. Frequency of monitoring will remain monthly for the surface water monitoring points and quarterly for groundwater monitoring points for until the first three years after closure. Thereafter, the frequency for surface water monitoring points will decrease to quarterly and the groundwater monitoring points to be twice a year. This will again be reviewed after a further 2 years.

8.1.3 Noise

Environmental Noise Monitoring can be divided into two distinct categories, namely:

- Passive monitoring – the registering of any complaints (reasonable and valid) regarding noise; and
- Active monitoring – the measurement of noise levels at identified locations.

Active environmental noise monitoring is recommended due to the medium (after the implementation of appropriate mitigation measures) significance for a noise impact to develop. In addition, should a valid complaint be registered, the mine must investigate this complaint as per the following sections. It is recommended that the noise investigation be done by an independent acoustic consultant.

Annual noise measurements will continue at the receptors identified in the noise impact assessment report. Noise measurements should continue during the operational phase (annual) for the first two years of operation when the noise monitoring plan can be reviewed (measurements increased, continued, reduced or stopped).

Noise measurements must be conducted as required by the National Noise Control Regulations (GN R154 of 1992) and SANS 10103:2008.

8.1.4 Air Quality

During the operational phase, the movement of machines and blowing winds will generate dust. Impacts resulting from the generated dust will be low. Despite this, the fact that cumulative impacts may result from other sources, Welgelegen Colliery has developed a dust-monitoring programme. Services of an independent service provider are used to monitor the overall dust generated at Welgelegen Colliery.

8.1.5 Sensitive Landscapes

The monitoring of wetlands involves the assessment of the wetland Present Ecological State and the Ecological Services on an annual basis. The soil types in the unaffected areas will not change thus a soil investigation will not be necessary. Soil investigation will only be limited to the areas where

wetlands are affected. Below is the description on how the Present Ecological State and the Ecological Services will be determined.

8.1.5.1 Present Ecological State – PES (Wetland Health or integrity)

The Present Ecological State (PES) will be determined using the method described by Macfarlane *et. al.* 2008. Level 2 Hydrological, Geomorphological and Vegetation assessments are conducted separately after which an overall wetland PES is determined.

8.1.6 Ecosystem services

The assessment of the ecosystem services supplied by the identified wetland units was conducted according to the guidelines as described by Kotze *et. al.* 2008 (WET Eco Services - A technique for rapidly assessing ecosystem services supplied by wetlands). This technique is designed for inland palustrine wetlands that refers to non-tidal wetlands dominated by emergent plants, shrubs or trees and includes a variety of systems commonly described as marsh, floodplain, vlei or seep. A level 2 assessment will be undertaken which examines and rates natural as well as human services. **The system is not designed to provide a single overall measure of value or importance of a wetland.**

8.1.7 Interested and Affected Parties

A list of all identified interested and affected parties is given in the EIR. Any additional or new parties that would like to be included in this list will be included in the list.

Welgelegen Colliery will continue with the regular meetings with the interested and affected parties and will continue having these meetings. These meetings are held with interested and affected parties on a bi-annual basis. Issues raised in these meetings are recorded and addressed as far as possible.

The mine also uses an open-door approach with the surrounding inhabitants and landowners. This allows the mine to pro-actively react to any perceived complaint from its neighbours thus ensuring that the situation is resolved timeously.

8.2 Monitoring compliance with and performance assessment against the environmental management programme and reporting thereof

According to Regulation 34 (1)b of the amended EIA Regulations, 2014, the holder of an environmental authorisation 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 EMPr, and where applicable the closure plan, is audited; and

(b) submit an environmental audit report to the relevant competent authority.

Regulation 34 (3) further state that (3) 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 environmental authorisation, EMPr and where applicable, the closure plan.

In view of the above, Iyanga Mining (Pty) Limited will on a regular basis (as determined the responsible authority) undertake an environmental audit for the waste management licence for the proposed in-pit discard disposal projects. The audit will be conducted and submitted in accordance with regulation 34 of the amended EIA Regulations, 2014.

As part of the general terms and conditions for waste management licence and in order to ensure compliance with the EMPr and regulation 34 under the EIA Regulations, 2014 and in order to assess the continued appropriateness and adequacy of the EMPr, Iyanga Mining (Pty) Limited (Welgelegen Colliery) will, for the period during which the waste management licence and EMPr remain valid, ensure that the compliance with the conditions of the waste management licence and the EMPr, is audited and that an environmental audit report is submit to the Department of Mineral Resources and Energy as determined in the waste management licence for the proposed Welgelegen Colliery Project.

8.3 ENVIRONMENTAL AWARENESS PLAN

In order to describe the core elements of the mine's Environmental Management System (EMS), which include environmental awareness, Iyanga Mining (Pty) Limited has developed an environmental management manual for Welgelegen Colliery. A copy of the manual is attached as Appendix G of this report. This manual indicates the colliery's commitment to reduce, control, bring within the law and manage the impact that its activities have on the environment and to continually improve its environmental performance. According to the above-mentioned manual, environmental competence, training and awareness at mine is dealt with through the Training Department. The mine's training centre is used to provide induction to employees on an annual cycle, courses and environmental awareness training. The environmental training of employees and contractors, which include environmental awareness is undertaken as per the mine's Environmental Training Procedure.
In relation to the above mentioned, the proposed in-pit discard disposal will implement the existing environmental awareness compiled for Welgelegen Colliery.
Environmental awareness and training records will be kept at a safe and accessible place on site

8.4 STATUTORY REQUIREMENTS

A water use licence application for the water uses within the proposed in-pit discard disposal is submitted to the Department of Water and Sanitation.

9. UNDERTAKING

Herewith I, the person whose full names is stated below, confirm that I am the EAP authorised to act as representative of Geovicon Environmental (Pty) Ltd, the company commissioned by the applicant in terms of Regulation 12 of the Environmental Impact Assessment Regulations, 2014 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and confirm that:

- The above report is compiled with all relevant available information pertaining to the proposed project.
- All relevant stakeholders and Interested and Affected Parties were consulted and any comments received were included in the compilation of this report.
- Any responses provided to Interested and Affected Parties by the EAP is included in this report.

The plan of study for the proposed project is included in this report and was provided to all Interested and Affected Parties to ensure that they are aware and agree to the plan of study for undertaking the Environmental Impact Assessment.

Full Names and Surname	Mr. Ornassis Tshepo Shakwane (Pr. Nat. Sc.)
Signature	
Date	11 June 2021