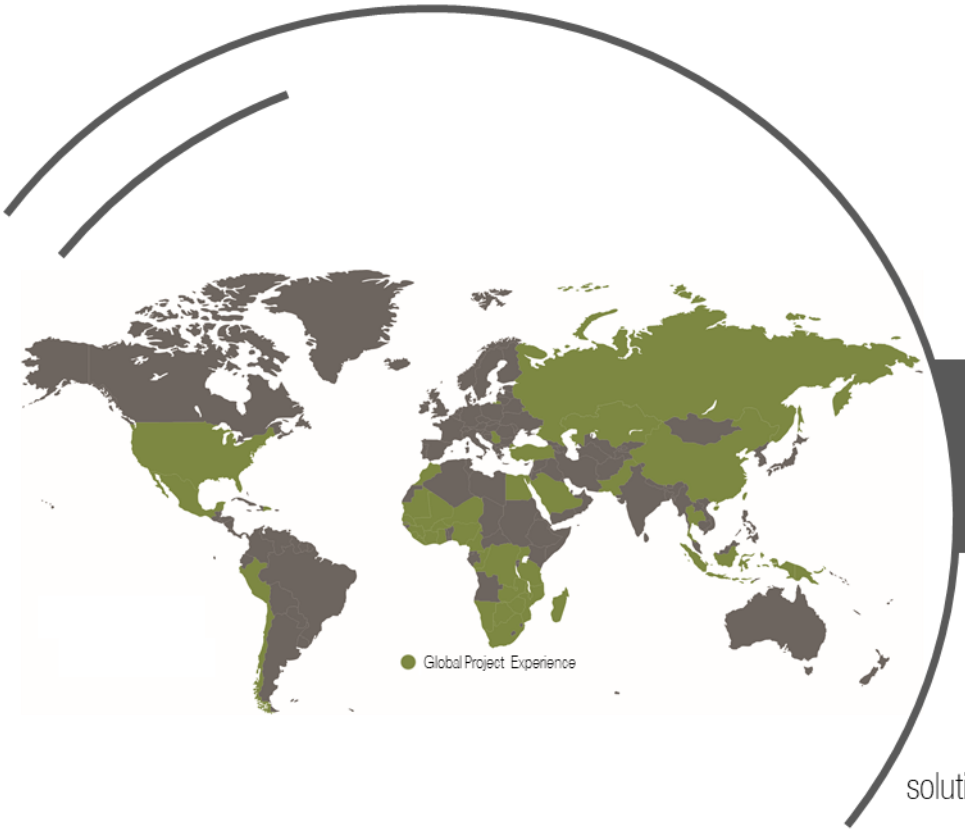

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Environmental Authorisation for Proposed Additional Infrastructure at the Universal Coal Development III (Pty) Ltd, Ubuntu Colliery, Nkangala, Mpumalanga Province

Rehabilitation, Decommissioning and Mine Closure Plan

Prepared for:
Universal Coal Development III (Pty) Ltd

Project Number:
UCD6097

DMRE Reference Number:
MP 30/5/1/1/2/10027 EM

April 2021

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This document has been prepared by Digby Wells Environmental.

Report Type:	Rehabilitation, Decommissioning and Mine Closure Plan
Project Name:	Environmental Authorisation for Proposed Additional Infrastructure at the Universal Coal Development III (Pty) Ltd, Ubuntu Colliery, Nkangala, Mpumalanga Province
Project Code:	UCD6097

Name	Responsibility	Signature	Date
Leon Ellis	Original Report Writer, Senior Review		December 2020
Brett Coutts	Report Update/Financial Provision Update		May 2020/April 2021

DETAILS AND DECLARATION OF SPECIALIST

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Full name:	Brett Coutts
Title/ Position:	Principal Consultant
Qualification(s):	B.Sc. Honours
Experience (years):	13
Registration(s):	IAIAsa

I, Brett Coutts, declare that: –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
    - I declare that there are no circumstances that may compromise my objectivity in performing such work;
    - I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and

- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

January 2021

Signature of the Specialist *Date*

Findings, recommendations and conclusions provided in this report are based on the best available scientific methods and the author's professional knowledge and information at the time of compilation. Digby Wells employees involved in the compilation of this report, however, accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.

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EXECUTIVE SUMMARY

Universal Coal Development III (Pty) Ltd (hereafter Universal Coal) secured a mining right (MP 30/5/1/1/2/10027 MR) for the formerly known Brakfontein Colliery in 2017. The Environmental Management Plan (EMP) was also approved at the same time. Subsequently, the Colliery name was amended in January 2019 to reflect the name change of the mine to Ubuntu Colliery.

This Rehabilitation, Decommissioning and Mine Closure Plan (RCP) was compiled in support of the NEMA application and will form the basis for the Environmental Impact Assessment (EIA) and the Environmental Management Programme (EMPr) report.

Digby Wells also undertakes the annual update and review of the financial provision for Ubuntu in terms of the Financial Provisioning Regulations, 2015 (GN R1147 published in GG 39425 on 20 November 2015).

Note: The previous RCP has been utilised for the required application, thus contains information that is relevant for the entire Mining Right and applicable infrastructure additions. Therefore, this report considers the decommissioning and rehabilitation of existing and proposed infrastructure.

Closure and rehabilitation is a continuous series of activities that begin with planning prior to the project's design and construction, and end with achievement of long-term site stability and the establishment of a self-sustaining ecosystem. Not only will the implementation of this concept result in a more satisfactory environmental conclusion, but it will also reduce the financial burden of closure and rehabilitation. Rehabilitation and closure objectives have been tailored to the project at hand with the objective of assisting Universal Coal in carrying out successful rehabilitation. Specific actions to be undertaken during construction and operation of the mine, as well as decommissioning and closure phases for the Project are discussed in this RCP and summarized below.

Summary of Main Rehabilitation Actions

Construction Phase	
Target Area	**Main Actions**
All areas	Follow specific guidelines on land preparation and correct removal of vegetation and possible relocation. Soil must be stripped to the correct depth and stockpiled according to the provided guidelines. Pollution must be controlled and alien invasive species must be removed
Operational Phase	
Target Area	**Main Actions**
All areas	Concurrent rehabilitation of the open pits should be done as per the Ubuntu Mine Environmental Management Programme (EMPr). Rehabilitation is required for the surface infrastructure and this is required until the end of life of mine. Rehabilitation actions that can occur during operation are the restriction of activities to planned

	areas to reduce the footprint, to control pollution and remove alien invasive vegetation.
Rehabilitation, Closure and Decommissioning Phase	
Target Area	**Main Actions**
Workshops, offices and other Infrastructure	Infrastructure such as the offices, administration buildings and workshops should be removed, unless the liability is taken over by another party. Structures should be demolished to 1 m below surface and the demolition rubble removed. Rehabilitated areas must be shaped to be free draining and roughly emulate the surrounding surface topography. Replace topsoil to 300 mm and rip soil to reduce compaction, add fertilizer if required, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Diesel Bay	Demolish concrete bund wall and dispose of contaminated material at a hazardous waste facility. Once the site has been cleared of all infrastructure no contamination is present, the exposed underlying materials should be shaped to be free draining and roughly emulate the surrounding surface topography. Replace topsoil to 300 mm and rip soil to reduce compaction, thereafter add fertilizer if necessary and establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Access and Service Roads (with weighbridge)	Roads that can and will be used for rehabilitation/monitoring or by other users post-closure should be left in situ. Soil should be tested for contamination and accordingly managed if this exists. Replace topsoil to 300 mm and rip soil to reduce compaction, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Overburden	Utilise overburden material as backfill to fill the open pits. The footprints of the overburden areas must be shaped to be free draining and roughly emulate the surrounding surface topography. Replace topsoil to 300 mm and rip soil to reduce compaction, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Open pit Mining areas and Wetlands	The final void should be sloped and backfilled with overburden up to 40% of the total pit void area. Thereafter an earth bund wall with overburden on the perimeter of each in pit lake should be constructed, on which thorny vegetation must be successfully established. Long term management of the rehabilitated open pit areas must be undertaken. Wetland rehabilitation specifications and goals will need to be set, as well as arable land rehabilitation.
Run of Mine (ROM) pads	Remove contaminated coal veneer from ROM and demolish concrete retaining wall. This must then be disposed of at the correct hazardous waste disposal facility. The ROM area must be shaped to be free draining and roughly emulate the surrounding surface topography. Replace topsoil to 300 mm and rip soil to reduce compaction, and thereafter a successful vegetation cover must be established.

	Remove alien invasive vegetation. Monitor required aspects according to guidelines.
PCD	Pollution control dams must be desilted if necessary. Thereafter the liners can be removed and disposed of at the correct hazardous waste disposal facility. The Pollution Control Dam (PCD) area must be shaped to be free draining and roughly emulate the surrounding surface topography. Replace topsoil to 300 mm and rip soil to reduce compaction, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Site fencing	Remove and dispose of fence. Areas were fence were removed must be ripped to to reduce compaction, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.
Topsoil Berms	After all the topsoil was used for rehabilitation. The footprint areas must be shaped to be free draining and roughly emulate the surrounding surface topography. Rip soil to reduce compaction, thereafter establish successful vegetation cover. Remove alien invasive vegetation. Monitor required aspects according to guidelines.

Monitoring actions are also outlined in this RCP. The purpose of monitoring is to ensure that the objectives of rehabilitation are met, and that the rehabilitation process is followed. The physical aspects of rehabilitation should be carefully monitored during the operational phase as well as during the progress of establishment of a desired final ecosystem.

A summary of the calculated financial provision is presented in Table 13-1 below dated May 2020 and a new provision for the additional infrastructure has been included dated January 2020. According to the DMRE method of calculation, the cost for rehabilitation and closure of the mine for unscheduled closure is **R 14,729,425,** as of May 2020 (Incl. VAT). The additional infrastructure will require an additional amount of **R 791,537** (Incl. VAT).

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1 Introduction

Universal Coal Development III (Pty) Ltd (Universal Coal) secured a mining right (MP 30/5/1/1/2/10027 MR) for the formerly known Brakfontein Colliery in 2017. The Environmental Management Plan (EMP) was also approved at the same time. Subsequently, the Colliery name was amended in January 2019 to reflect the name change of the mine to Ubuntu Colliery. The following approvals exist for the Ubuntu Colliery:

- Mining Right and EMP issued by the Mpumalanga Department of Mineral Resources and Energy (MP 30/5/1/1/2/10027 MR);
- The name changes of the colliery from Brakfontein Colliery to Ubuntu Colliery on 29 January 2019; and
- Water Use License (WUL) issued by the Department of Water and Sanitation on 22 February 2019 (03/B20E/ABCGIJ/4751).

This application focuses on the inclusion of additional infrastructure not previously considered in the original applications (i.e. Current EMP). This infrastructure triggers Listed Activities contemplated under the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) and thus the need for Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

This Rehabilitation, Decommissioning and Mine Closure Plan (RCP) was compiled in support of the NEMA application and will form the basis for the EIA and the EMP report.

Digby Wells also undertakes the annual update and review of the financial provision for Ubuntu in terms of the Financial Provisioning Regulations, 2015 (GN R1147 published in GG 39425 on 20 November 2015).

Note: The previous RCP has been utilised for the required application, thus contains information that is relevant for the entire Mining Right and applicable infrastructure additions. Therefore, this report considers the decommissioning and rehabilitation of existing and proposed infrastructure.

The main aim in developing the RCP for the Ubuntu is to minimise and mitigate the impacts caused by mining and mining-related activities and to restore land back to a satisfactory standard. It is best practice to develop the RCP as early as possible so as to ensure the optimal management of rehabilitation and closure issues that may arise. It is critical that a mine's RCP is defined and understood from before mining progresses and is complimentary to the objectives and goals set. The RCP contains specific final mine closure and rehabilitation measures with the associated financial provision cost for the Ubuntu Mine.

1.1 Project Locality

The Ubuntu Colliery Project Area is located within the western margins of the Witbank Coalfields under the jurisdiction of the Victor Khanye Local Municipality which is located in the Nkangala District Municipality, Mpumalanga Province (Table 1-1, and Figure 1-2). The site is

located approximately 16 kilometres (km) north-east of Delmas and 14 km and 17 km north of Devon and Leandra respectively.

Table 1-1: Summary of the Ubuntu Colliery Project Location Details

Province	Mpumalanga
Magisterial District/Local Authority (Figure 1-1**)**	Victor Khanye Magisterial District
District Municipality	Nkangala District Municipality (NDM)
Local Municipality	Victor Khanye Local Municipality (VKLM)
Nearest Town	Devon (14 km), Delmas (16 km), Leandra (17 km)
Property Name and Number	**Farm Name** / **Farm Portion** Brakfontein 264 IR/RE / 0 Brakfontein 264 IR / 10
21 digit Surveyor General Code for each farm portion:	T0IR00000000026400000 T0IR00000000026400010
GPS Co-ordinates (relative centre point of study area)	28°51'39.698"E 26°12'31.237"S

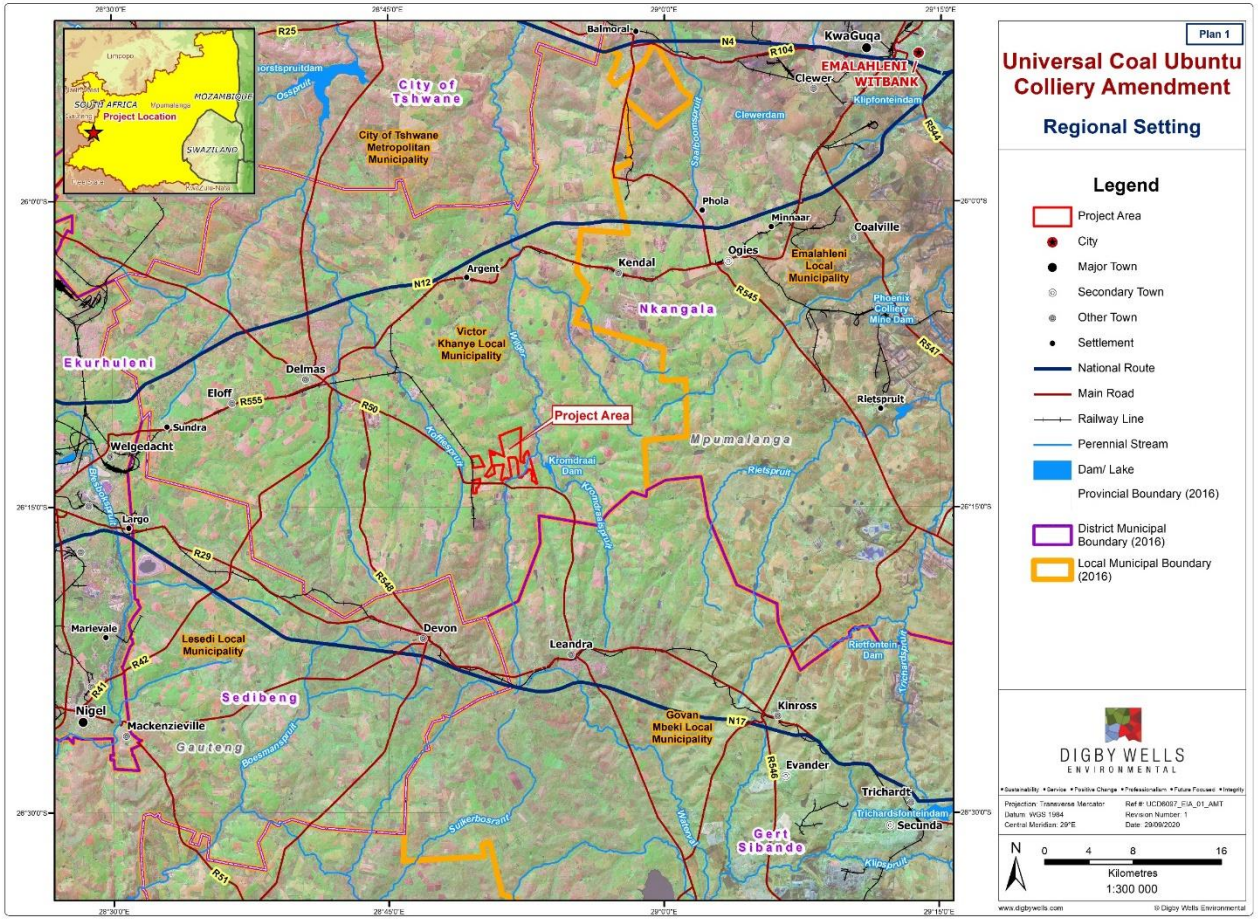

Figure 1-1: Regional Setting

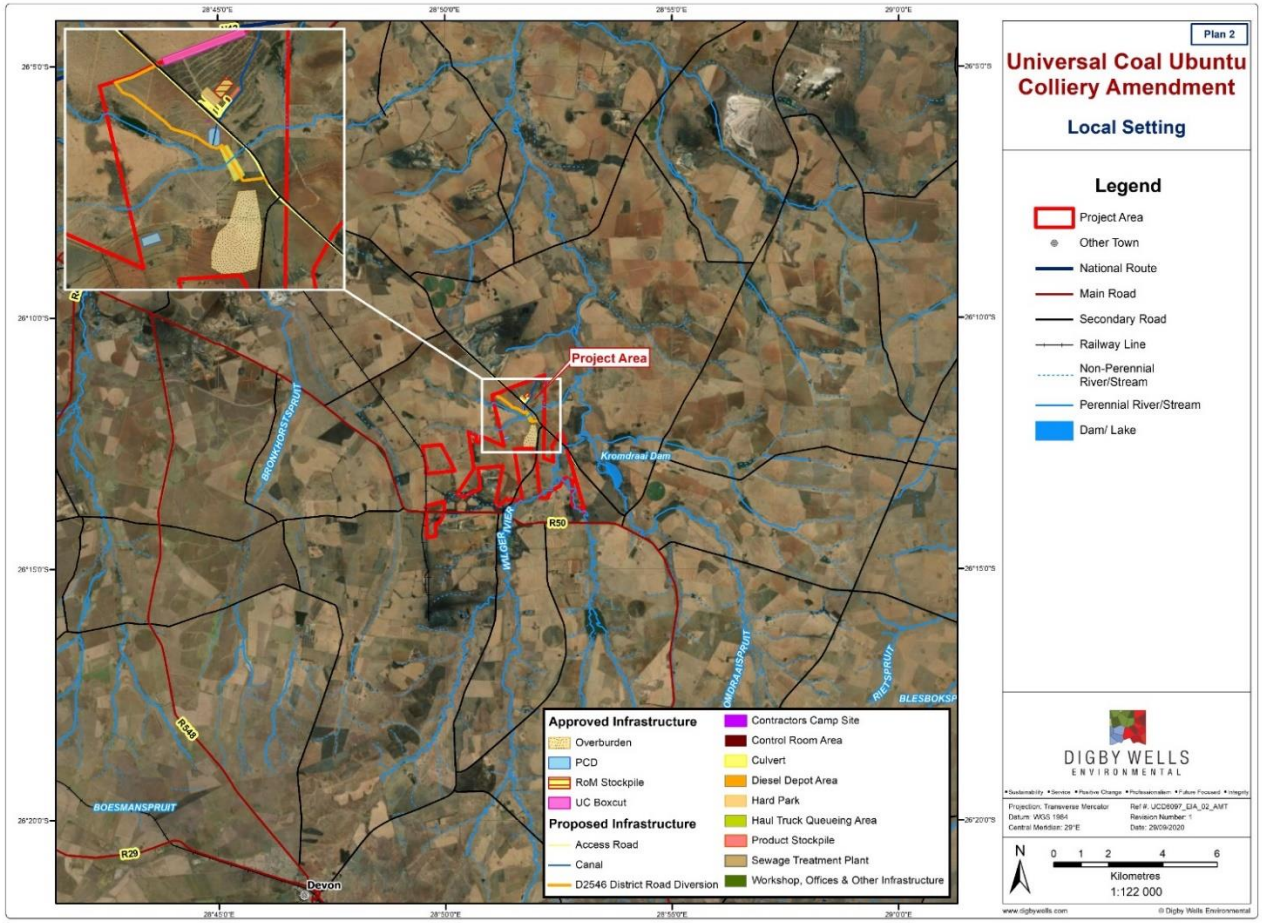

Figure 1-2: Local Setting

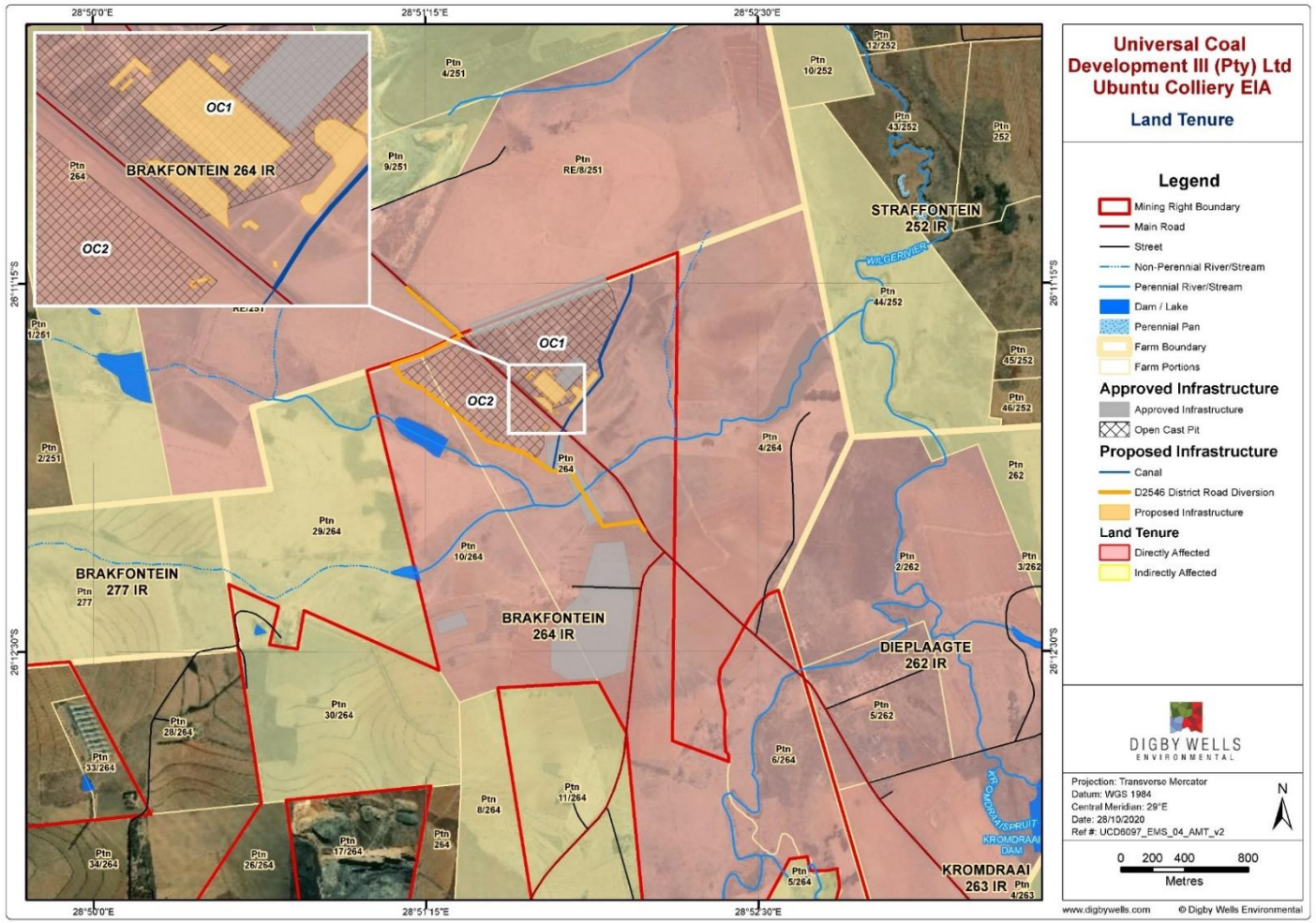

Figure 1-3 Land Tenure in the Project Area

1.2 Mine Plan

A Mining Right was issued to Universal Coal for farm portions 6, 8, 9, 10, 20, 26, 30 and the Remaining Extent of the Brakfontein 264 IR farm. The S4U, S4L and S2 seams from three open pit areas namely OC1, OC2 and OC5, are proposed to be mined. The approved EMP included five open pits, OC1, OC2, OC3, OC4 and OC5. The Department of Water and Sanitation (DWS) recommended that OC3 and OC4 be removed from the mine planning; hence the financial provision was calculated assuming that only OC1, OC2 and OC5 will be mined. Universal Coal have not completely abandoned OC3 and OC4, however should these pits be revisited in future the financial provision will be updated to include these areas.

Open pit mining is approved to take place using a conventional truck and shovel operation, assisted by roll-over dozing, to allow for continuous backfilling and rehabilitation of the mined out area.

A mobile screening facility is utilised to screen the coal from the Run of Mine (RoM) pads, which then is placed on a product stockpile to be dispatched from the mine. Limited surface infrastructure is established to support the mining activities.

The Ubuntu Mine has a gross *in-situ* resource of 26 million tonnes saleable B to A grade steam coal product. The coal can be classified as multi-product coal that is meeting the Richards Bay Coal Terminal (RBCT) minimum specifications. The coal would yield a significant portion of export steam coal. The anticipated Life of Mine (LoM) is close to 22 years.

The purpose of this application is to authorise the establishment of additional infrastructure within the Mining Right Boundary of the Ubuntu Colliery. This include:

- Section 1.2.1 below summarises the approved infrastructure;
- Section 1.2.2 describes the proposed infrastructure that requires authorisation for this application process, and
- Section 1.2.3 provides the Listed and Specified activities per project phase.

The area pertaining to the infrastructure amendments (hereinafter Project Area) is currently approved for opencast mining at the open pit (OC1). The footprint of OC1 will be reduced to accommodate the additional infrastructure as listed below.

1.2.1 Approved Infrastructure

The authorised infrastructure (as per the approved EMP) includes the following:

- Parking and offices;
- Weighbridge;
- Run of Mine (RoM) pads;
- Pollution Control Dams (PCDs);
- Opencast mining;

- Culvert;
- Mine equipment workshop and stores; and
- Wash bay facility.

The original approval did not involve processing infrastructure on site as the coal was planned to be transferred to Kangala Colliery for further processing (including crushing, screening, and washing). This has subsequently proven to be impractical. Crushing, and screening is currently taking place in the approved pit area with a mobile crushing and screening plant.

1.2.2 New Infrastructure (The Project)

Further to on-site crushing and screening, the following new infrastructure requires environmental authorisation (Figure 1-4):

- Guard house and access control gate
- Control room
- Toilet facilities
- Haulage truck queueing area
- Hard park area
- Brake test ramp area
- Diesel depot area
- Product stockpile
- Perimeter fencing
- Crushing facilities and stockpile area
- Diversion of D2546 District road
- LDV and main access road
- Heavy duty truck access road
- Storm water diversion berm/trench
- Access control and boom gate
- Topsoil safety berm
- Lab office
- Sewage Treatment Plant (STP)
- Contractors camp site
- Water Treatment Plant (WTP)
- 45 000 litre silo tank

The following should be further noted pertaining to the above infrastructure:

- The new infrastructure shall be established on environmentally authorised land;
- The WTP will treat borehole water sourced from areas in the project footprint. The treated water will be for domestic use. The daily throughput of the WTP will be 12m^3 p/day; and
- The specific designs for the diversion of district road D2546 will be confirmed. It is proposed to have a reserve of 30 m and length of 2,5 km.

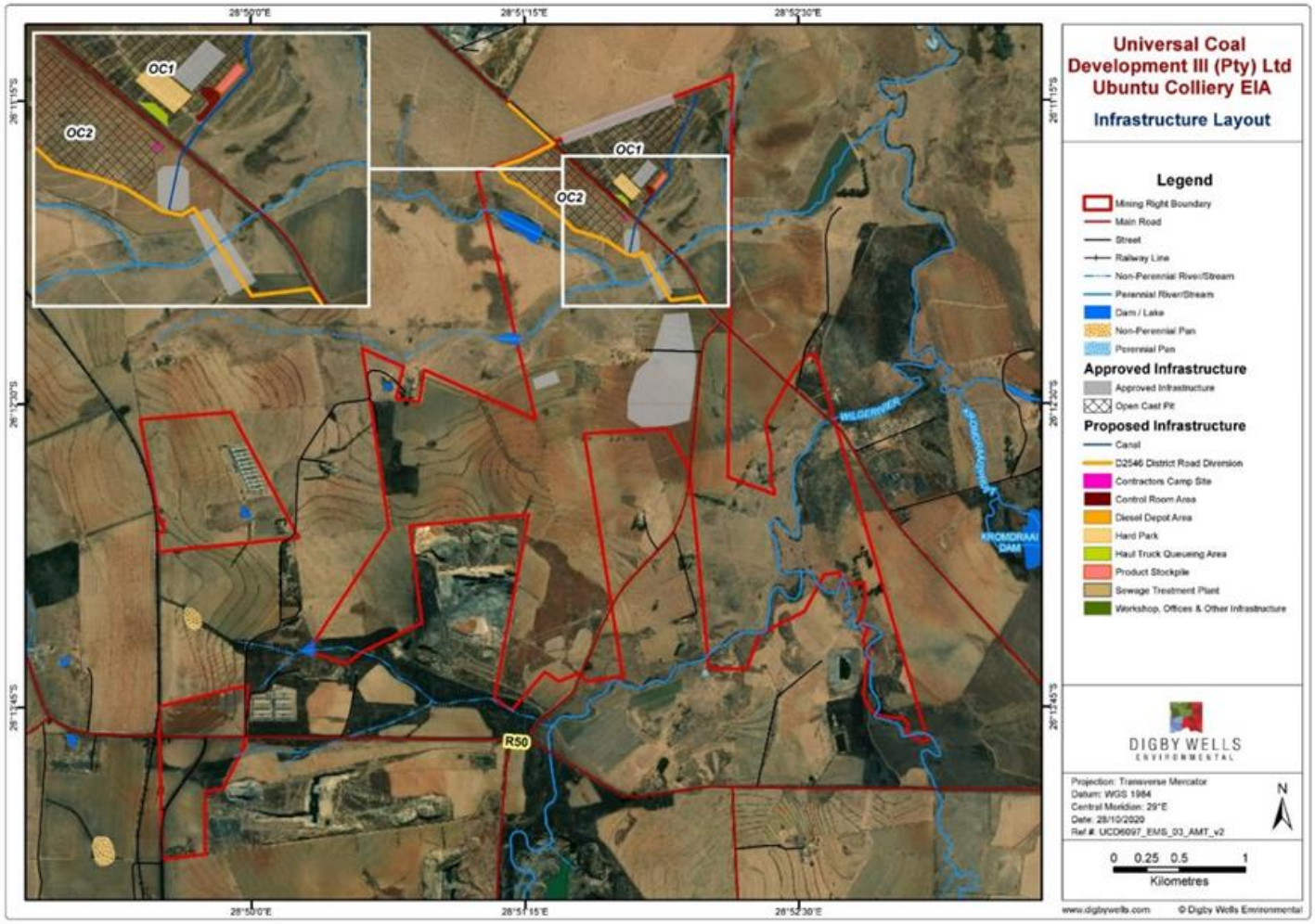

Figure 1-4: New Infrastructure (The Project)

1.2.3 Proposed Activities

The construction, operation and decommissioning phases of the Project shall comprise of the activities in Table 1-2. These Project activities will be used for the Wetland Impact Assessment.

Table 1-2: Project Phases and Associated Activities

Phase	Activity
Construction	Surface preparation for infrastructure
	Construction of surface infrastructure
Operational	Operation and maintenance of infrastructure
	Use and maintenance of haul roads (incl. transportation of coal to washing plant)
Decommissioning	Demolition and removal of all infrastructure (incl. transportation off site)
	Rehabilitation (spreading of soil, revegetation, and profiling/contouring)
	Installation of post-closure water management infrastructure

2 Details of Author(s)

The following is a list of the Digby Wells staff who was involved in the original compilation and update of the RCP and compilation of the Financial Provision:

- **Kathryn Roy** is the Rehabilitation and Soils Manager. She received a Bachelor of Science in Ecology and Environmental Science and an Honours degree in Environmental Management from the University of Cape Town. She also has received her MSc in Restoration Ecology through the University of KwaZulu-Natal. She joined Digby Wells in February 2016 to form part of the Mine Closure and Rehabilitation Department. Kathryn is responsible for development of site-specific rehabilitation plans, working closely with both the botany and soils specialists in Digby Wells.

  She has also undertaken various wetland and rehabilitation monitoring programmes within the mining and energy production sectors. Kathryn previously worked extensively with alien invasive species removal programmes, ecological restoration

projects and sustainable development programmes within the Government Sector. Her previous experience was gained in the Restoration Ecology Branch at the eThekwini Municipality in Durban.

- **Leon Ellis:** Unit Manager: Mine Closure; completed his BSc. (Hons) in Geography and Environmental Management at the University of Johannesburg (UJ) in 2009. Leon joined Digby Wells in January 2013 and is currently the Manager of the Mine Closure Unit. He is involved in conducting financial provision assessments, environmental risk assessments and mine closure plans. Leon also completed the Environmental Risk Assessment and Management course based on ISO 31000 at the Centre of Environmental Management (North West University) in 2016.
- **Brett Coutts:** Brett Coutts updated the RCP to comply with the Financial Provisioning Regulations, 2015 (GN R1147) and also updated the report for this application. Brett is a Principal Consultant at Digby Wells. He received a Bachelor of Science and Honours degree in Zoology and Environmental Science from the University of Witwatersrand. Brett assists with the management and co-ordination of all relevant studies related to rehabilitation and certain ecological project. This includes the compilation of rehabilitation plans and undertaking of rehabilitation assessments In addition to this, Brett assists within the Biophysical Department with the management of specialist studies that are undertaken by the department and is also responsible for the compilation of the Geographic Information System (GIS) component of Biodiversity Land Management Plans (BLMP) and undertaking ecological assessments.

3 Terms of Reference

The terms of reference for the RCP are discussed below.

3.1 Revise and Update Environmental Risk Report

The Environmental Risk Assessment Report (ERR) must contain information that is necessary to determine the potential financial provision associated with the management of latent or residual environmental risks post-closure. The ERR must address the following key aspects:

- A description of the risk including possible triggers and expected timeframes;
- An assessment of alternatives;
- Costing indicating the quantum of the liability; and
- Monitoring, auditing and reporting requirements.

3.2 Revise and Update Rehabilitation and Closure Plan

The intent of the RCP is to ensure that it is aligned to the ERR and ARP and meets the minimum requirements stipulated by the relevant regulations. In general, the RCP must contain information relating to the following:

- Providing vision, objectives, targets and criteria for final rehabilitation;

- Legal and governance framework;
- Baseline environment, including social context, which will influence the closure objectives and post-mining land use;
- Assessment of post-closure options that are practical and within the socio-economic and environmental opportunities;
- Motivation for the preferred closure option;
- Proposed final land use and mapping;
- On-going research on closure and rehabilitation options;
- Detailed description of assumptions made;
- Stakeholder issues and comments;
- Outline of design principles for closure, including designs and drawings of how the mine will develop, including a schedule of actions for final rehabilitation, which is linked to the mine works programme;
- Risk assessment approach and outcomes and linking this to closure activities;
- Detail on closure actions to mitigate/manage identified risks and describe the nature of residual risks that will need to be managed and monitored post-closure;
- Scheduling, budget, roles and responsibilities to be assigned for final rehabilitation;
- Identification of knowledge gaps and how these will be addressed;
- Detail of full financial provision for the life of the project;
- Information on the organisational capacity to implement the rehabilitation plan;
- Auditable action plan for audits and update of the annual rehabilitation plan;
- Relinquishment criteria for infrastructure; and
- Outline of monitoring, auditing and reporting requirements.

3.3 Annual Rehabilitation Plan

In terms of the new financial provision regulations, an Draft/Framework Annual Rehabilitation Plan (ARP) has been compiled previously, however has not been included at this stage in terms of this project. This plan will be required to be updated for the period 2020/2021 and must be linked to the action plan and schedule contained within the RCP. This report needs to document the progress made regarding rehabilitation for the past 12 months and plan for rehabilitation for the next 12 months. Since Ubuntu has just started operations, there are currently no areas available for rehabilitation, thus costing for such has not been undertaken at this stage and will be undertaken for the next update.

4 Assumptions and Limitations

The RCP is based on the following assumptions and limitations:

4.1 Assumptions

- Information, mitigation measures and recommendations provided in this report are based on the specialist studies completed as part of the EIA and subsequent specialist assessments undertaken for the mine;
- The commitments contained within this report currently exclude any comments or issued raised by Stakeholders and/or Interested and Affected Parties (I&APs); and
- It must be noted that the mining has just started, thus some of the information contained within this report is based as a conceptual level. As the mine progresses and more information becomes available, this report should be updated, thus this report should be considered as a living document and should be reviewed and updated, if required on an annual basis; and
- The RCP and Financial Provision will be updated during the course of 2021 and a consolidated costing will be provided for the existing infrastructure and proposed infrastructure that forms part of the current application;

4.2 Limitations

- Current information available to Digby Wells was used in developing the Plan;
- The information contained within this RCP is based on the layout plans available. If there is a significant change or addition of other infrastructure areas, the Plan will need to be updated to cater for this change;
- This report must be considered as a living document and will be updated as additional information becomes available, and as monitoring and rehabilitation progresses; and
- Vegetation monitoring and maintenance will take place for three years post closure.

5 Legal Requirements

Section 41 (1) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) has been repealed and in terms of Section 24P of the NEMA, as amended, which provides that the holder of a Mining Right (MR) must make financial provision for rehabilitation of negative environmental impacts. The financial provision must guarantee the availability of sufficient funds to undertake the following:

- Rehabilitation of the adverse environmental impacts of the listed or specified activities;
- Rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water;
- Decommissioning and closure of the operations;

- Remediation of latent or residual environmental impacts which become known in the future;
- Removal of building structures and other objects; and/or
- Remediation of any other negative environmental impacts.

In addition to Section 24(P) of NEMA, the Financial Provisioning Regulations were promulgated on the 20 November 2015 (Government Notice No. 1147 published in GG 39425) (GN R1147). For the purposes of this report, the financial provision estimate and respective reports are in line with the requirements of the GN R1147.

In terms of its transitional provisions, the regulations delay the date of having to comply with all provisions of the regulations, until 19 June 2021.

Regulation 11 of the Financial Provisioning Regulations, 2015 (GN R5527) requires a holder of a MR to determine the quantum of the financial provision through detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:

- Annual rehabilitation as reflected in the ARP as per the minimum content prescribed by Appendix 3 of the Regulations;
- Final rehabilitation, decommissioning and closure as reflected in the RCP as per the minimum content prescribed by Appendix 4 of the Regulations; and
- The remediation of latent or residual environmental impacts including but not limited to the pumping and treatment of polluted or extraneous water, as reflected in an ERR, as per the requirements of Appendix 5 of the Regulations.

In addition, the second draft of the proposed changes to the Financial Provision Regulations was published for public comment on 17 May 2019 (GN R667). The proposed revision still requires the financial provision calculation to be based on actual costs and the supporting documentation (i.e. ARP, RCP and ERR) to be compiled. For the purposes of this report, the Financial Provision Regulations (2015) were assumed relevant.

Applicable legislation is outlined in Table 5-1.

Table 5-1: Applicable Legislation

Applicable legislation and guidelines	Details
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	Section 24 of the Constitution states that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that – a) Prevent pollution and ecological degradation; b) Promote conservation; and c) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development
The Conservation of Agricultural Resources, 1983 (Act No. 43 of 1983) (CARA)	The Conservation of Agricultural Resources Act 43 of 1983 states that the degradation of the agricultural potential of soil is illegal; and The Conservation of Agricultural Resources Act 43 of 1983 requires that protection of land against soil erosion and the prevention of water logging and salinization of soils means of suitable soil conservation works to be constructed and maintained.
Mineral and Petroleum Resource Development Act. 2002 (Act No. 28 of 2002) (MPRDA)	The MPRDA sets out the requirements relating to the development of the nation's mineral and petroleum resources. It also aims to ensure the promotion of economic and social development through exploration and mining related activities; Section 41 (1) of Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) has been repealed and in terms of Section 24P in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended which provides that the holder of a mining right must make financial provision for rehabilitation of negative environmental impacts. The financial provision must guarantee the availability of sufficient funds to undertake the- a) Rehabilitation of the adverse environmental impacts of the listed or specified activities; b) Rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water; c) Decommissioning and closure of the operations; d) Remediation of latent or residual environmental impacts which become known in the future; e) Removal of building structures and other objects; and/or f) Remediation of any other negative environmental impacts. In addition to Section 24(P), the Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations were promulgated on the 20 November 2015 (Government Notice No. 1147 published in GG 39425). Regulation 6 of the Financial Provision Regulations requires a holder of a Mining Right to determine the quantum of the financial provision through detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for: a) Annual rehabilitation, as reflected in Annual Rehabilitation Plans (ARPs); b) Final rehabilitation, decommissioning and closure of the mining operations as per the RCPs which includes the findings of the Environmental Risk Assessment Report (ERR); and Remediation of latent or residual environmental impacts as identified in the ERR.
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)	The NEMA, as amended was set in place in accordance with section 24 of the Constitution of the Republic of South Africa. Certain environmental principles under NEMA have to be adhered to, to inform decision making for issues affecting the environment. Section 24 (1)(a) and (b) of NEMA state that: *The potential impact on the environment and socio-economic conditions of activities that require authorisation or permission by law and which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.*

Applicable legislation and guidelines	Details
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA)	NEMBA regulates the management and conservation of the biodiversity of South Africa within the framework provided under NEMA. This Act also regulates the protection of species and ecosystems that require national protection and also takes into account the management of alien and invasive species. This Act works in accordance to the framework set under NEMA. The following regulations which have been promulgated in terms of the NEM:BA are also of relevance: ▪ Alien and Invasive Species Lists, 2014 published (GN R.599 in GG 37886 of 1 August 2014) ; ▪ National Environmental Management: Biodiversity Act, 2004: Threatened and Protected Species Regulations; and ▪ National list of Ecosystems Threatened and in need of Protection under Section 52(1) (a) of the Biodiversity Act (GG 34809, GN R.1002, 9 December 2011).
National Water Act, 1998 (Act No. 36 of 1998) (NWA)	The NWA provides for the sustainable and equitable use and protection of water resources. It is founded on the principle that 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, and that a person can only be entitled to use water if the use is permissible under the NWA.
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA)	According to the NEM: AQA the Department of Environmental Affairs (DEA), the provincial environmental departments and local authorities (district and local municipalities) are separately and jointly responsible for the implementation and enforcement of various aspects of NEM: AQA. A fundamental aspect of the new approach to the air quality regulation, as reflected in the NEM: AQA is the establishment of National Ambient Air Quality Standards (NAAQS) (GN R 1210 of 2009). These standards provide the goals for air quality management plans and also provide the benchmark by which the effectiveness of these management plans is measured.

There are several guideline documents which provide recommendations on how rehabilitation and closure must be undertaken. For the purpose of the plan, the following guideline documents were considered:

- Guidelines for the Rehabilitation of Mined Land. Chamber of Mines of South Africa/ Coaltech. November 2007 (Beukes, Mohr-Swart, & Tanner, 2007);
- Financial Provisions for Rehabilitation and Closure in South African Mining (2012);
- The Anglo Mine Closure Toolbox, Version 2 (Botha, 2013); and
- Best Practice Guidelines (BPGs) series developed by the Department of Water Affairs (DWA) (2007).

5.1 Baseline Environmental Setting

5.1.1 Climate

The Project Area is characterized by a climate that is typical of that of the Mpumalanga climatic zone characterized by warm, rainy summers and dry winters with sharp frost (South African Weather Bureau, 1986). Delmas, which is approximately 16 km away from the proposed Project Area, is generally warm and temperate with an average annual temperature of approximately 15.7°C (Climate-data.org). The climate here is classified as Subtropical highland (Cwb) by the Köppen-Geiger system (Köppen & Geiger, 1936). The mean annual rainfall is approximately 688 mm with the bulk of precipitation being experienced as showers and thunderstorms which fall mainly from October to March. Maximum rain falls occur in November, December and January. Rainstorms are often intense (up to 242 mm can occur in one day) with severe lightning and strong winds, sometimes accompanied by hail. Annual average maximum, minimum and mean temperatures for the Project Area are shown in Figure 5-1.

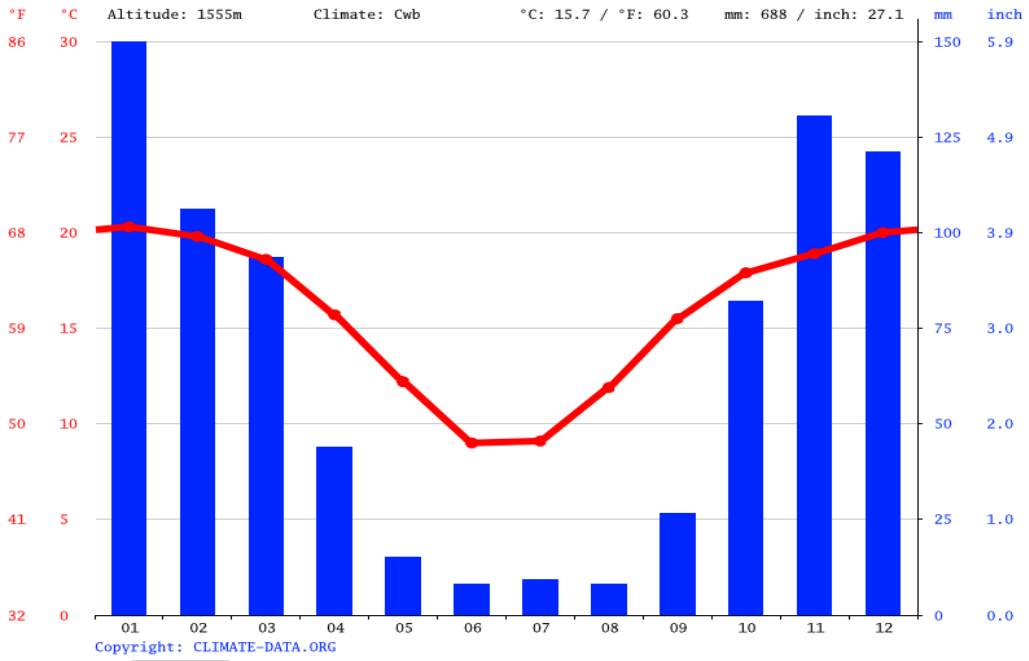

Figure 5-1: Annual Climate Trends in Delmas (Source: Climate-data.org)

5.1.2 Topography

The topography of the Project Area, as depicted in Figure 5-2, ranges from high elevations on the western side of the Project Area to low lying areas in the north, east and south. The area can be described as very uneven slopes with moderate to high undulating grasslands and small depressions scattered throughout the landscape. The elevation of the Project Area ranges from 1 540 to 1 580 metres above mean sea level (m.a.m.s.l.) which equates to a

range of 40 m between the lowest and highest points of elevation within the Project Area. The difference in elevation between these points gives rise to a slope percentage of between 0 and 5.5 (at isolated steeper areas). The average slope percentage for the entire Project Area is approximately 2.5.

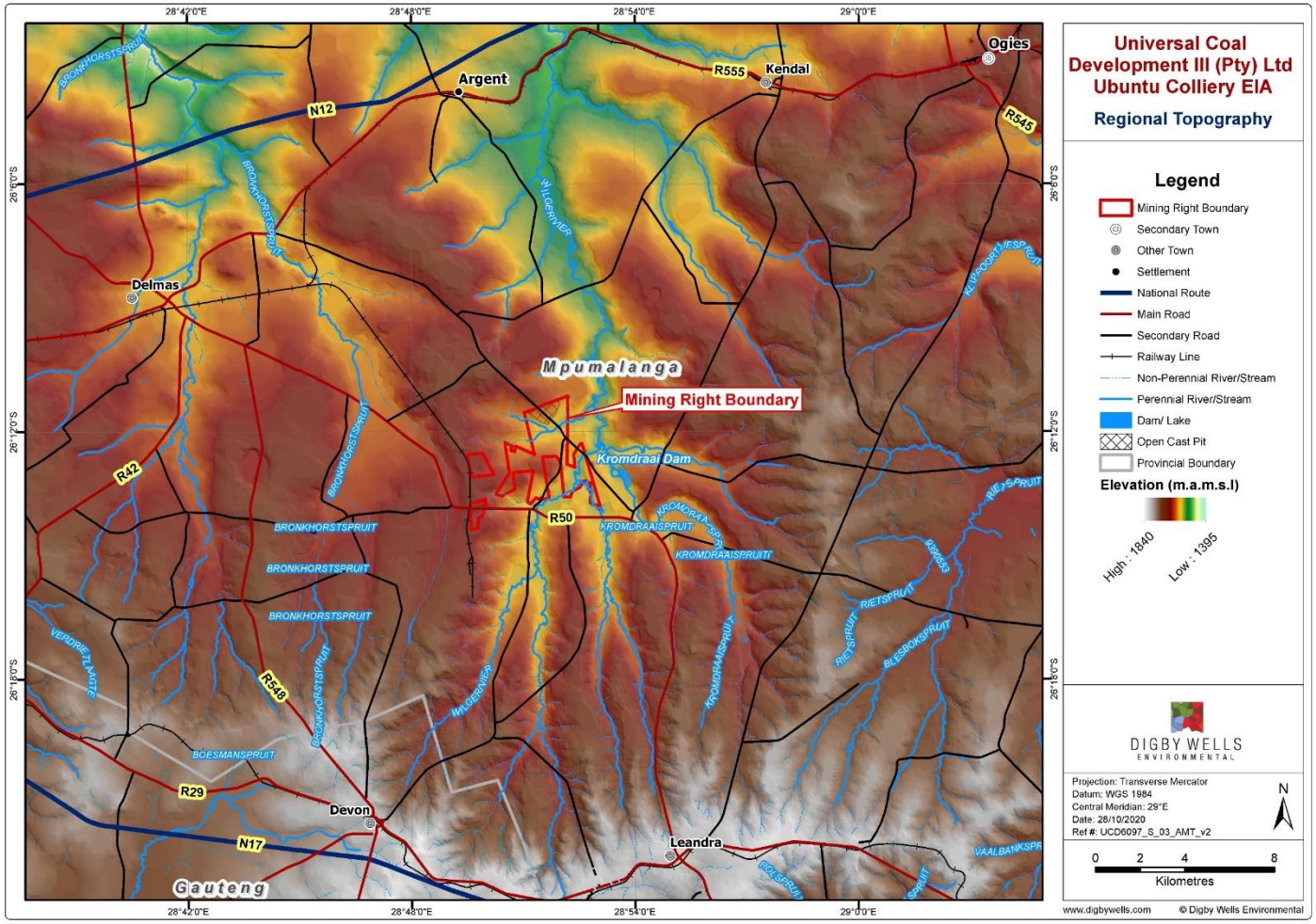

Figure 5-2 Topography of Ubuntu Colliery

5.1.3 Geology

The Project Area is located on the western extent of the Witbank Coalfield, located within the Ecca Group of the Karoo Supergroup.

The Pre-Karoo geology underlying the Witbank Coalfield comprises of the Transvaal Supergroup lithologies and Rooiberg Group felsite. Within the Project Area, dolomite of the Malmani Subgroup (Transvaal Supergroup) was intersected below the Karoo Supergroup sequence. The Malmani Subgroup carbonate sequence developed under a tidal range of paleo-environments ranging from supra-tidal through intertidal to sub-tidal which results in a variety in chert content, intercalated shales and erosional surfaces (Johnson et al, 2006).

The coal containing Vryheid Formation was deposited directly on the uneven pre-Karoo and Dwyka Group lithologies resulting in variations in thickness of the deposit and pinching out of the formation against paleo-highs. The Dwyka Group sedimentary rocks were deposited in glacial environments and comprise predominantly of tillite. The Vryheid Formation was deposited during deltaic to fluvial events with general upward coarsening cycles comprising of shales, siltstones and sandstones. Northern sequences of the Vryheid Formation contain very coarse-grained sandstone deposited by fluvial events. Coal swamps formed in sheltered environments created by the pre-Karoo topography and glacial deposits (Johnson et al, 2006).

The Karoo Supergroup contains extensive dolerite intrusions, which represent the shallow feeder system for the flood basalt eruptions and occur as interconnected networks of dykes and sills (Duncan and Marsh, 2006). These intrusions are important geological structures for diverting and impeding groundwater flow. Sediments in contact with the intrusions become altered by contact metamorphism and are significant for their water bearing properties.

5.1.4 Soils

5.1.4.1 Land Use

The predominant present land use in the region is arable crop production due to the presence of large areas being occupied by high potential soil. Plan 1 contains the land use information. Current land use is estimated at 81% of the available land being used for arable farming and 19% of the total available farmland is un-used due to shallow soils and wetland areas. The area is well serviced by tar roads as well as farm roads.

5.1.4.2 Land Capability

The land capability was determined by assessing a combination of soil type, terrain and climate features. Land capability is defined as the most intensive long-term sustainable use of land under rain-fed conditions (Soil Conservation Service: U.S. Department of Agriculture, 1973; Schoeman, et al., 2000). The dominant land capability class in the Project Area were **Class II** (Arable Land – Intensive Cultivation). A detailed breakdown for the class is given below (Soil Conservation Service: U.S. Department of Agriculture, 1973) (Table 5-2).

Table 5-2: Land Capability Classification of Ubuntu Colliery

Class	Classification	Dominant Limitation Influencing the Physical Suitability for Agricultural Use
II	Arable Land – Intensive Cultivation	Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Class II land capability has some limitations which requires careful conservation practices and soil management, to prevent soil deterioration as well as improving the air-water balance when soils are cultivated. Class II has little limitations regarding cultivation, pastures, range land, woodland or wildlife and the practices are easy to apply. The soils need more management practices than that of Class I soils and may require special soil-conserving cropping system, tillage methods and water control devices.

Deep soils on gentle to moderately steep slopes in the class are subject to erosion and may need management practices such as terracing, contour tillage, water-control devices, crop rotation, stable mulching, fertilizers, lime and strip cropping. The combination of management practices will depend on the climate, soil characteristics, slope and farming system.

5.1.4.3 Land Type and Soils Forms

Existing Land Type and soil data was used to obtain generalised soil patterns and terrain types for the Project Area. Land Type data exists in the form of published 1:250 000 maps. These maps indicate delineated areas of similar climate and pedosystems which includes areas of uniform terrain and soil patterns (Land Type Survey Staff, 1972 - 2006).

Baseline data suggested that the land types for the Project Area are predominantly of the **Ab9** and **Bb3** types. The main land types and dominant soil forms are briefly described below in Table 5-3 as per the Land Type Survey Staff (1972 - 2006).

Table 5-3: Land Type and Dominant Soil Forms

Land Type	Soil Forms	Geology	Characteristics
Ab9	• Cartref • Clovelly • Dundee • Fernwood • Glenrosa • Hutton • Inanda • Katspruit • Kranskop • Magwa • Mispah • Nomanci	Sandstone of the Natal Group, with isolated occurrences of dolerite.	• According to the Land Type Data (1972 - 2006), 85% of the landscape is dominated by crest and mid slope landscape positions; • 65% of the dominant soils occurring in these landscape positions are deep red well drained red and yellow soils occurring in these upper landscape positions; • The soils are predominantly sandy and are apedal (non-structured) in both the A and B horizons;

Land Type	Soil Forms	Geology	Characteristics
	• Oakleaf		• Rooting depth can be limited by a clay layer underneath the yellow soils or parent rock occurring below the B soil horizon; • The A horizon is likely to contain 12-20% clay due to the influence of the dominant sandstone parent material; • The texture represents a sandy loamy textured soil; • Foot slope and valley bottom positions occupy only 15% of the landscape; • Soils present in these landscape positions are dominated by high clay content soils; and • The clay content in the A horizon can be in the order of 50-70%.
Bb3	• Arcadia • Avalon • Estcourt • Hutton • Glencoe • Katspruit • Kroonstad • Mispah • Longlands • Rensburg • Swartland • Valsrivier • Westleigh • Willowbrook	• Shale, sandstone, clay, conglomerate, limestone and marl of the Ecca Group; • Shale and tillite of the Dwyka Formation; • Karoo Sequence; • Dolerite; • Occasional Ventersdorp lava, Witwatersrand quartzite and slate; and • Dolomite.	• Similar to Land Type Ab9, 90% of this land type consists of crest and mid slope landscape positions; • The dominant soils present in crest and mid slope positions are red and to a lesser extent yellow well drained soils; • The influence of parent rock (sandstone parent material) influenced the formation of very sandy non structured (apedal) soil; • The clay content in the A horizon is in the order of 8 – 12%. Soil texture is expected to represent a sandy loam soil; • Smaller areas in the foot slope and valley bottom positions of both the land types present in the Ubuntu Colliery Project Area might contain waterlogged high clay content soils; • These soils owing to their position in the landscape are seasonally or permanently wet; • Where lateral drainage is forced by slope steepness and the presence of underlying impermeable layers on these landscape positions, soils

Land Type	Soil Forms	Geology	Characteristics
			containing an E horizon (evidence of lateral drainage) can occur; and • The occurrence of the G and E subsoil horizons in this landscape, prove that seasonally wet conditions prevail.

These land types indicate the underlying geology consists mainly of sandstone, siltstone and shale. The Ab Land Type is dominated by 30% crest and 55% mid-slope terrain unit positions in the landscape. Other positions in the landscape are foot-slope and valley bottom positions occupying 10% and 5% of the landscape positions respectively. The Bb Land Type is also dominated by similar landscape positions (Land Type Survey Staff, 1972 - 2006).

5.1.5 Surface Water

The Ubuntu Mine falls predominantly within quaternary catchment B20E while a small portion falls within quaternary catchment B20A of the Olifants Water Management Area (WMA 02).

The Project Area is drained by several streams draining from the south to the north. On the south east of the study area are two tributaries, namely the Wilge River and the Kromdraaispruit. There are a number of other non-perennial streams and inland water features within the Project Area, including the Kromdraai Dam and Dieplaagte Dam. The Wilge River eventually drains to the Olifants River further downstream which then drain into the Limpopo River through Mozambique and into the Indian Ocean.

Water quality monitoring has been on going at Ubuntu Colliery. Existing water quality data and reports were provided by Universal Coal. The data was assessed, interpreted and presented to enable the understanding of water quality status for the rivers within and around the Project Area. The surface water quality within the Ubuntu Colliery was benchmarked against the WUL Limits for the Ubuntu Colliery as stipulated in the WUL issued by the DWS with Licence No.: 03/B20E/ABCGIJ/4751 on 22 February 2019 (Table 5-4).

Table 5-4: Ubuntu Colliery WUL Limits for Surface Water Quality

Variable	Limits
pH	6.4 – 9.0
Electrical Conductivity (EC) in mS/m	100
Sulphate (SO4) in mg/l	250 – 400
Chloride (Cl) in mg/l	73
Sodium (Na) in mg/l	140
Magnesium (Mg) in mg/l	45

Variable	Limits
Calcium (Ca) in mg/l	54
Fluoride (F) in mg/l	0.52
Nitrate (NO_3) in mg/l	7.9
Total Alkalinity ($CaCO_3$) mg/l	295

Water quality data for the third quarter of 2019 (i.e. July to September 2019) was reviewed from the surface and groundwater report that was compiled by Digby Wells Environmental (2019). Additionally, the quarterly water quality report compiled by EcoSolve Consulting at the beginning of year 2020 (i.e. January to July 2020) was reviewed as part of the baseline water quality update. The monitoring network within Ubuntu Colliery comprises of 8 surface water quality monitoring points. The monitoring sites were selected in consideration of the proposed mine plan with an objective to intersect both surface and groundwater prior to (upstream) and moving away from a pollution source (downstream). Table 5-5 presents the coordinates of the surface water monitoring points.

Table 5-5: Surface Water Monitoring Sites Coordinates

Sample Name	Latitude	Longitude	Description of localities
UCBSW2	-26.18335	28.94139	Sampled as UCBSW2, bridge within a wetland area. A low flow was observed
UCBSW3	-26.18359	29.06861	At the Dam
UCBSW4	-26.18343	29.03306	Downstream of dam which is situated just outside the northern part of the Ubuntu Colliery Mine
UCBSW8	-26.18350	28.93556	Downstream outside the Ubuntu Colliery Mine boundary on Wilge River. This was observed as a cattle watering point with flowing water
UCBSW10	-26.20009	28.98861	On Wilge River upstream area.
UCBSW11	-26.20019	28.93222	On Kromdraai tributary with flowing water joining Wilge River
UCBSW12	-26.22562	28.836984	Not sampled-ground water pumped to this sampling point for use at nearby chicken farm
UCBSW15	-26.20008	28.86139	Wetland near proposed strip pit mine design, stagnant water was observed

During this baseline water quality investigation, the following was noted about the water quality within Ubuntu Colliery:

- pH was mostly within the WUL Limits, except an exceedance at UCBSW8 in October 2020;
- EC was exceeded at sites UCBSW15, UCBSW11 and UCBSW2, with fluctuations within and beyond the WUL Limits throughout the monitoring period;
- Some exceedances were observed in the Ca, Mg and Na. Some exceedances in Calcium were observed at sites UCBSW11, UCBSW15 and UCBSW10 between December 2018 and November 2019. Magnesium was elevated beyond the WUL Limits at multiple sites, including sites UCBSW2, UCBSW4, UCBSW8, UCBSW10 and UCBSW11 between April and July 2020. Sodium exceedances were observed within site UCBSW2 between June and July 2020;
- Chlorides were exceeded at sites UCBSW2 and UCBSW11 and fluctuated within and beyond the WUL Limits throughout the monitoring period;
- Sulphate was generally within the WUL Limits and was only exceeded at site UCBSW15 in November and December 2018;
- Nitrate was generally within the WUL Limits for most of the monitoring period until exceedances were observed in UCBSW2 in May 2020;
- Fluoride generally fluctuates within and beyond the WUL Limits across all the monitoring sites, with the greatest concentrations being observed at UCBSW15, followed by UCBSW2;

Total alkalinity was mostly within the WUL for all points for most of the monitoring points, except at site UCBSW11, where total alkalinity is commonly elevated beyond the WUL Limit.

5.1.6 Groundwater

The aquifers situated within the Project Area are conceptualised to consist of four units, namely the shallow weathered aquifer, the intermediate fractured aquifer, the Dwyka tillite aquifer and the Malmani dolomite aquifer.

5.1.6.1 Shallow Weathered Aquifer

The weathered material in the shallow weathered aquifer consists mostly of decomposed and highly weathered coarse-grained sandstones, with shales and siltstone.

The sustainability of the shallow weathered aquifer is dependent on seasonal recharge from rainfall. The rainwater infiltrates the soil and a portion of it eventually reaches the saturated zone (effective recharge).

From the five boreholes drilled around the Project Area the weathered aquifer ranges from 6 to 12 metres below ground level (mbgl), averaging at 9 mbgl. The aquifer transmissivity of the weathered material is estimated between 0.5 and 1.5 m²/day (Hodgson and Krantz, 1998).

5.1.6.2 Fractured Aquifer

The fractured aquifer consists of un-weathered sequences of sandstone, siltstone, shale, carbonaceous shale and coal. The pores within these sediments are too well cemented to allow any significant permeation of water. Groundwater movement therefore predominantly occurs along secondary structures such as fractures, cracks and joints within the sediments. However, not all secondary structures within the fractured aquifer are water-bearing. Of all un-weathered sediments in the fractured aquifer, the coal seam often has the highest hydraulic conductivity.

5.1.6.3 Dwyka Tillite

The Dwyka tillite forms a hydraulic barrier between the overlying mining activities and the basement aquifer, due to its low hydraulic conductivity. The aquifer permeability of the Dwyka tillite is estimated to be between 0.0002 and 0.0148 m/d (Hodgson and Krantz, 1998). The thickness of this unit varies from 0.5 to 30 m thick averaging at 8 m.

5.1.6.4 Malmani Dolomite Aquifer

The basement aquifer comprises of Malmani dolomites, characterised as part of the chert bearing to chert poor chemically derived sediments of the Chuniespoort Group. The Chuniespoort Group dolomites represent the most important aquifer in South Africa due to the high storage and permeability characteristics of the rock type. The continuity of the dolomite aquifer is interrupted by vertical to sub-vertical geological structures such as dykes which create low permeability to impermeable compartmental barriers.

Dolomitic areas can have high recharge and significant groundwater flow characteristics (Hodgson and Krantz, 1998; and Barnard, 2000). Unlike most other formations, the groundwater gradient in dolomitic aquifers does not necessarily follow topography. More often than not, it occurs as a nearly horizontal surface indicative of a low hydraulic gradient and permeable formations (Barnard, 2000).

5.1.7 Current Groundwater Conditions

The current groundwater conditions are defined based on the Ecosolve Consulting (2020) monitoring report. These conditions are defined in terms of groundwater quality and groundwater levels. Groundwater Quality

Groundwater quality was benchmarked against the approved standards stipulated in the approved WUL (License number 03/B20E/ABCGIJ/4751) given in Table 5-6.

Table 5-6: WUL Standards for Groundwater Quality

Variables	Groundwater Quality Objectives
pH	6.4 – 9.0
Electrical Conductivity in mS/m (EC)	150
Total Alkalinity in mg/L	260

Variables	Groundwater Quality Objectives
Chloride (Cl) in mg/L	200
Fluoride (F) in mg/L	1.56
Sulphate (SO_4) in mg/L	250 – 400
Nitrate (NO_3) in mg/L	10
Calcium (Ca) in mg/L	150
Magnesium (Mg) in mg/L	45
Sodium (Na) in mg/L	200
Potassium (K) in mg/L	140
Total Suspended Solids (TDS) in mg/L	545
Ortho-Phosphate (PO_4^{3-}) in mg/L	0.128
Iron (Fe)	0.2
Manganese (Mn)	0.11

Water quality for the Project Area is found to be within the WUL standards (Table 5-6) at all groundwater monitoring locations, except for VABH01 in which a bicarbonate concentration of 269 mg/L slightly exceeds the WUL standard (260 mg/L). The slight exceedance is not an environmental concern, additionally, the pH is found neutral for all monitoring locations. The water quality trends for all monitoring sites are observed to be stable. Reference can be made to the Ecosolve Consulting (2020) report for in-depth details.

Groundwater is characterized according to the Piper, Durov, Scholler and Sodium Adsorption Ration (S.A.R) diagrams.

According to the Piper diagram (Figure 5-3) the groundwater found in all the monitoring locations sit within the upper left potion of the diagram, and this groundwater is classified as calcium-chloride water.

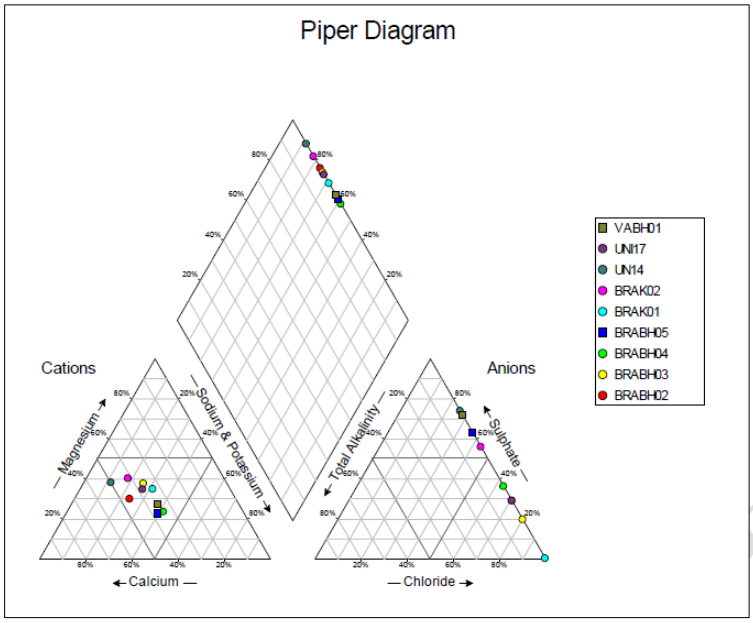

Figure 5-3: Piper Diagram

According to the Durov diagram (Figure 5-4) the groundwater found at the Project Area is dominant in chloride congruent with the Piper Diagram interpretation, additionally a dominance in calcium/magnesium and bicarbonate is observed.

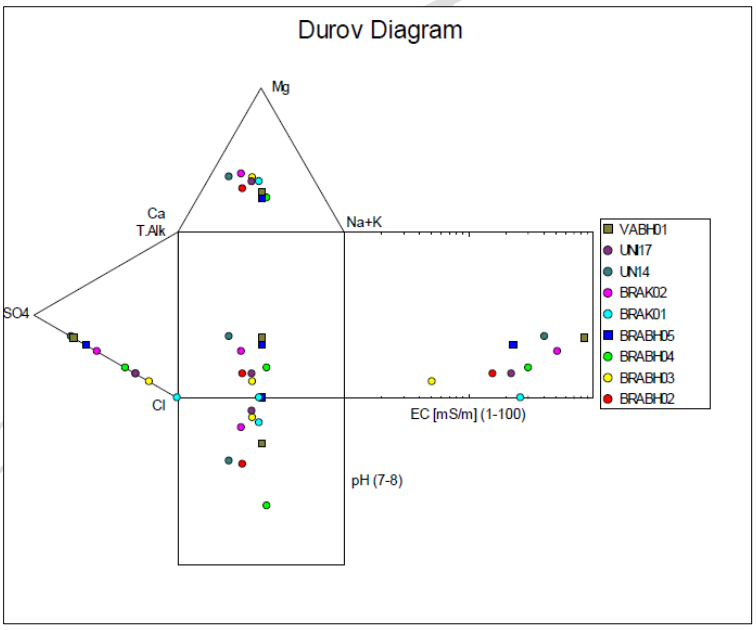

Figure 5-4: Durov Diagram

The SAR diagram is used to determine if water is suitable for irrigation uses. Water with SAR values of 18 and above will result in an excess of sodium in the soil. Water with SAR values of 10 and below is safe and suitable for irrigation. According to the S.A.R diagram (Figure 5-5), the groundwater samples have SAR values that are below 10 which is safe and suitable for irrigation.

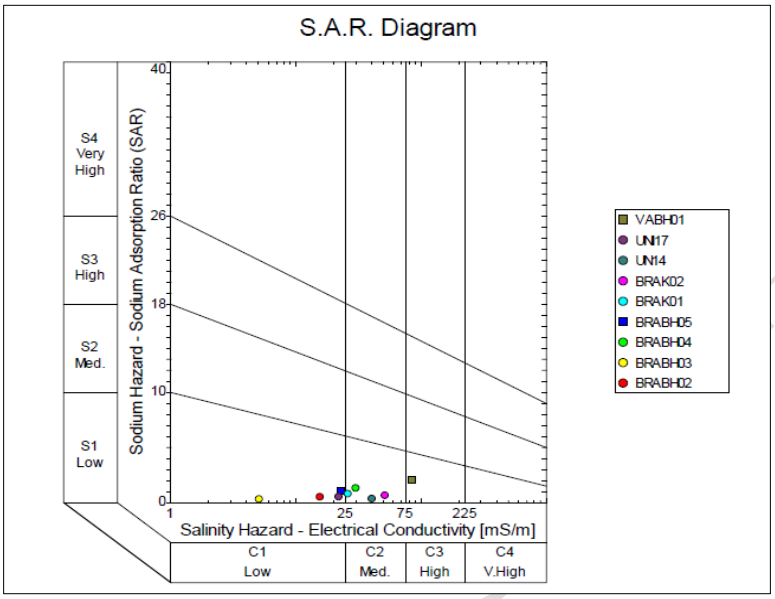

Figure 5-5: S.A.R Diagram

5.1.7.1 Groundwater Levels

The groundwater level depth ranges between 2.24 mbgl at UN17 and 47.97 mbgl at BRAK2. It is observed that the hydraulic head is higher in the southwest and lower in the northeast and the groundwater flow direction is thus derived to generally be from south-west to north-west. The flow direction of the groundwater in the study area correlates with the surface topography as depicted in Figure 5-6. Localised depression of the hydraulic head is due to groundwater abstractions for agricultural irrigations purposes.

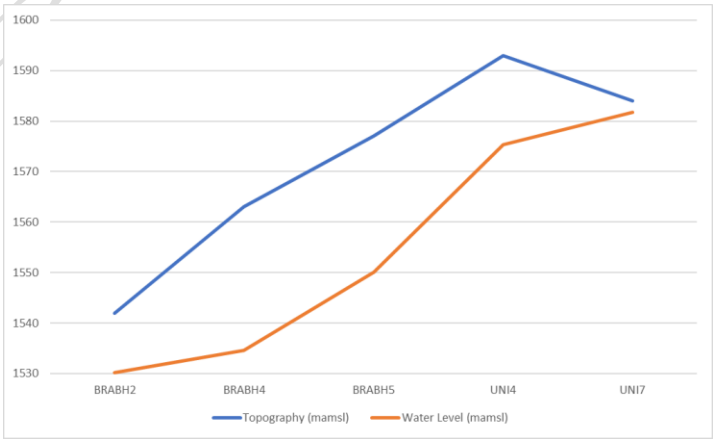

Figure 5-6: Correlation between Groundwater Level and Topography

5.1.8 Fauna and Flora

The Fauna and Flora Assessment Report (Digby Wells, 2012) states that the primary land-use in the study areas was found to be agriculture however, the study area still consists of natural grassland that has not been affected by agriculture. These natural grassland areas are restricted to the vicinity of the drainage lines, and accompanying low lying valley bottom wetlands and hill slopes.

During the dry season field survey 80 plant species were recorded. The dry season is typically not ideal for a biodiversity surveys as most vegetation is dormant and thus many animal species are not active. It must also be noted that certain areas of the study area had been burnt prior to the dry season sampling taking place. During the field surveys 69 plant species were recorded. The recorded grass species represented pioneer, subclimax and climax species and the areas were all in different states of succession, with some areas supporting climax species. The stages of succession of the various areas were dependent on the severity of disturbances such as ploughing and invasion of alien plant species.

Furthermore, the study area also supported alien invasive plant species, such as *Datura stramonium*, *Bidens Formosa* and *Tagetes minuta*. The tree component will, if uncontrolled, alter the landscape and introduce bush encroachment to the grasslands.

The mammal species observed during the field work were very limited, this was expected as the animal diversity and richness is a function of the available habitat and the level of threats present. A Serval (*Leptailurus serval*), a Red Data Status mammal considered to be Near Threatened, was sighted in the project area. The presence of both these factors was evident as far as animal numbers where concerned. Forty-eight bird species were recorded. The animal species that were observed in the project area are adaptable species and although they will move out of the area during construction of the power station, by increasing the natural flora diversity during rehabilitation, one will have a natural influx of these animals, with smaller animals such as insects moving into the area first, followed by birds, frogs and reptiles. During this dry season survey two amphibian species were observed.

From the investigations performed during this assessment it was found that misuse and degradation has taken place in the study area, predominantly from agricultural and mining activities. From a flora perspective the surrounding land use and management measures employed by land owners had a substantial impact on the species richness and abundance in the study area. From a fauna perspective very few species were encountered, with no large mammal species encountered, mostly due to increased threats, and degraded and a shrinking habitat.

5.1.9 Aquatics

The Wilge River and the Kromdraaispruit are the two main watercourses associated with the proposed Project Area. The Wilge River however lies adjacent to the Project location, whilst the Kromdraaispruit joins the Wilge River at a downstream point. Several unnamed tributaries adjacent to project location drain into the Wilge River. Table 5-7 outlines the desktop aquatic-

related data obtained for the Wilge River B20E-01383 Sub-Quaternary Reach (SQR) (DWS, 2014).

Table 5-7: Desktop Aquatic Data Pertaining to the Wilge River

SQR Code/Aquatic Component	B20E-01383
Ecological Category	**C**
Category Description	Moderately Modified
Ecological Importance (EI)	High
Ecological Sensitivity (ES)	High

According to the desktop data obtained for the Wilge River B20E-01383 SQR (DWS, 2014), the reach appears to be in a Moderately Modified state (i.e. Ecological Category C). Mining, game reserves and agricultural land uses are present in the upper reaches of the Wilge River associated with the Project Area. According to the DWS (2014), impacts associated with mining and agricultural activities such as roads, low-water crossings, water abstraction/increased flows, irrigation, exotic vegetation, vegetation removal, erosion and sedimentation appear to be affecting the current aquatic ecology associated with the Wilge SQR (DWS, 2014).

Both Ecological Importance and Ecological Sensitivity of the Wilge River SQR has been classified as “High”. It is expected to contain approximately 30 macroinvertebrate taxa as well as nine indigenous fish species, all of which are Least Concern (LC) in terms of their IUCN conservation status

5.1.10 Wetlands

The majority of the proposed mining area is located on the eastern side of the watershed separating the Wilge and Bronkhorstspruit Rivers.

The wetland areas are situated in the middle reaches of the Wilge River catchment. The upper Wilge catchment has been allocated a PES of ‘modified’, based on medium confidence. The upper also plays an important role in the Tugela-Vaal-Inter-Basin transfer scheme, and water quality is affected by this.

The wetlands in the study area are linked to perched aquifers and surface water flow. Five different hydro-geomorphic (HGM) types of natural wetland systems occur within the proposed Ubuntu mining area. The five HGM units include:

- Seasonal pan wetland;
- Isolated hillslope seepage wetlands;
- Hillslope seepage wetlands connected to a watercourse;
- Valley bottom wetlands with a channel; and
- Floodplain.

5.2 Baseline Socio-Economic Setting

In 2007, an estimated 50 500 people resided in the Victor Khanye Local Municipality (VKLM) which is a 10% decrease from the estimated population in 2001. During the same period of time, the district municipality experienced about a 20% increase in population, mostly attributable to the Emalahleni Local Municipality whose population almost doubled. Only 4% of the district municipality's population resides in the VKLM, translating into just more than 15 000 households. The study area has a relatively young population, with about one-third of individuals being under 15 years of age.

6 Closure Design Principles

6.1 Closure Vision, Objectives and Targets

Closure and rehabilitation is a continuous series of activities that begin with planning prior to the project's design and construction, and end with achievement of long-term site stability and the establishment of a self-sustaining ecosystem. Not only will the implementation of this concept result in a more satisfactory environmental conclusion, but it will also reduce the financial burden of closure and rehabilitation.

The preliminary closure objectives for the Ubuntu Mine are as follows, as defined in the EMPr:

- Return land, mined by open pit methods, as far as possible to a land capability to that which existed prior to mining and that the management level required to utilise the rehabilitated land is within the means of the farmer who uses it;
- Ensure that as little water as possible seeps out of the various sections of the mine and where this is unavoidable, ensure that the water is contained or treated if the volume is significant and if it does not meet statutory water quality requirements;
- Remove mine infrastructure that cannot be used by a subsequent land owner or a third party. Where buildings can be used by a third party, arrangements will be made to ensure their long-term sustainable use;
- Clean up all dump and loading areas and rehabilitate these as far as possible to a land capability to that which existed prior to mining.
- Follow a process of closure that is progressive and integrated into the short and long term mine plans and that will assess the closure impacts proactively at regular intervals throughout project life;
- Implement progressive rehabilitation measures, beginning during the construction phase wherever possible;
- Leave a safe and stable environment for both humans and animals and make their condition sustainable;
- To prevent any soil and surface/groundwater contamination by managing all water on site;

- Comply with local and national regulatory requirements;
- Form active partnerships with local communities to take care of management of the land after mining, where possible; and
- To maintain and monitor all rehabilitated areas following re-vegetation or capping (placement of a layer of material, e.g. clay or sandstone, which prevents/limits capillary movement of water between soil and pollution source).

Rehabilitation and closure objectives have been tailored to the project at hand. The RCP aims to assist Universal Coal in carrying out successful rehabilitation of the Ubuntu Mine.

6.2 Preferred Closure Action for the entire Mining Right

Based on the type of mining (open pit mining) and the associated latent risks that could occur post closure, the following recommendations have been made as a result of the outcomes of the ERR conducted:

- Decant mine water should be collected before it joins the streams; treated and thereafter, if the quality is acceptable, re-introduced into the streams;
- Piezometers should be installed in Wetlands 1, 2, 3 and 4 to monitor the water levels in the wetlands during mining;
- Shallow monitoring boreholes, with maximum depth of 10 m, should be drilled in close proximity of the wetlands for monitoring of groundwater levels and the surface water/ groundwater interaction pre- and during mining; and
- Update the numerical model and decant rates annually for the first 5 years with the monitoring data.

The following mitigation measures are proposed to minimise the risk of the contamination plume negatively impacting the natural environment:

- A slurry wall is proposed between OC2 and the adjacent valley bottom wetland to limit the ingress of groundwater from the wetland into the pit;
- Wetland offset is proposed for the hillslope seepage wetlands in the immediate north and west of OC5. The use of slurry walls may not be sufficient to limit the impact of OC5 on these wetlands;
- Post-closure water levels in OC1 should be managed so that its stays below 1547 mamsl (decant elevation), to prevent the flow to decant water to Wetland 1. At OC2, the water should be managed below 1541 mamsl, to manage the impact of decant into Wetland 2, and At OC5, the water should be managed below 1557 mamsl, to manage the impact of decant in Wetland.
- Options are to limit water ingress at the open pits through selective spoil handling during backfilling, effective rehabilitation and vegetation; minimisation of erosion, the

installation of contour berms, the use of final voids, connection of pits to create on decant point, and selection of a decant catchment;

- Desalination is a final option after all other possibilities to minimise the excess mine water have been exhausted;
- Monitoring of groundwater water levels and mine inflow rates; and
- Update numerical model and decant rates annually as information becomes available.

6.2.1 Research

It is advised that during the operational phase of the mine, that periodic monitoring of both groundwater and surface water quality is undertaken and that this information is utilised to update the Numerical Groundwater Models, allowing trends to be determined. This will enable the mine to determine the best practicable options that could be considered for post closure treatment of water.

7 Proposed Final Post-Mining Land Use

When considering the allocation of land for development and in deciding applications for planning permission affecting agricultural land, the agricultural implications must be considered together with the environmental, cultural and socio-economic aspects. In particular, prime quality land should normally be protected against permanent development or irreversible damage.

Consideration of land use alternatives is one of the cornerstones of community planning. Land use decisions must be evaluated in terms of sustainability, broadly defined as balancing environmental, economic and social equity concerns. The primary land use categories that encompass basic functions are residential, commercial, industrial, recreational, institutional, and agricultural uses. Land use is determined by a number of factors. These include climate, resources, population growth, economic activity and topography. When considering a new development for an area, it is required that other land use alternatives are considered to ensure that the development is justified and viable. In the project area, present land use includes agriculture and residential.

Areas where infrastructure is proposed to be located will be the areas where the current land use will be impacted upon. For these areas it is recommended that the mine rehabilitate the areas back to grazing or similar (Figure 7-1), as these areas are expected to be relatively small in size.

The end land use for the areas associated with the open pit mining activities will most likely be rehabilitated or converted into in-pit lakes as per the preferred closure option.

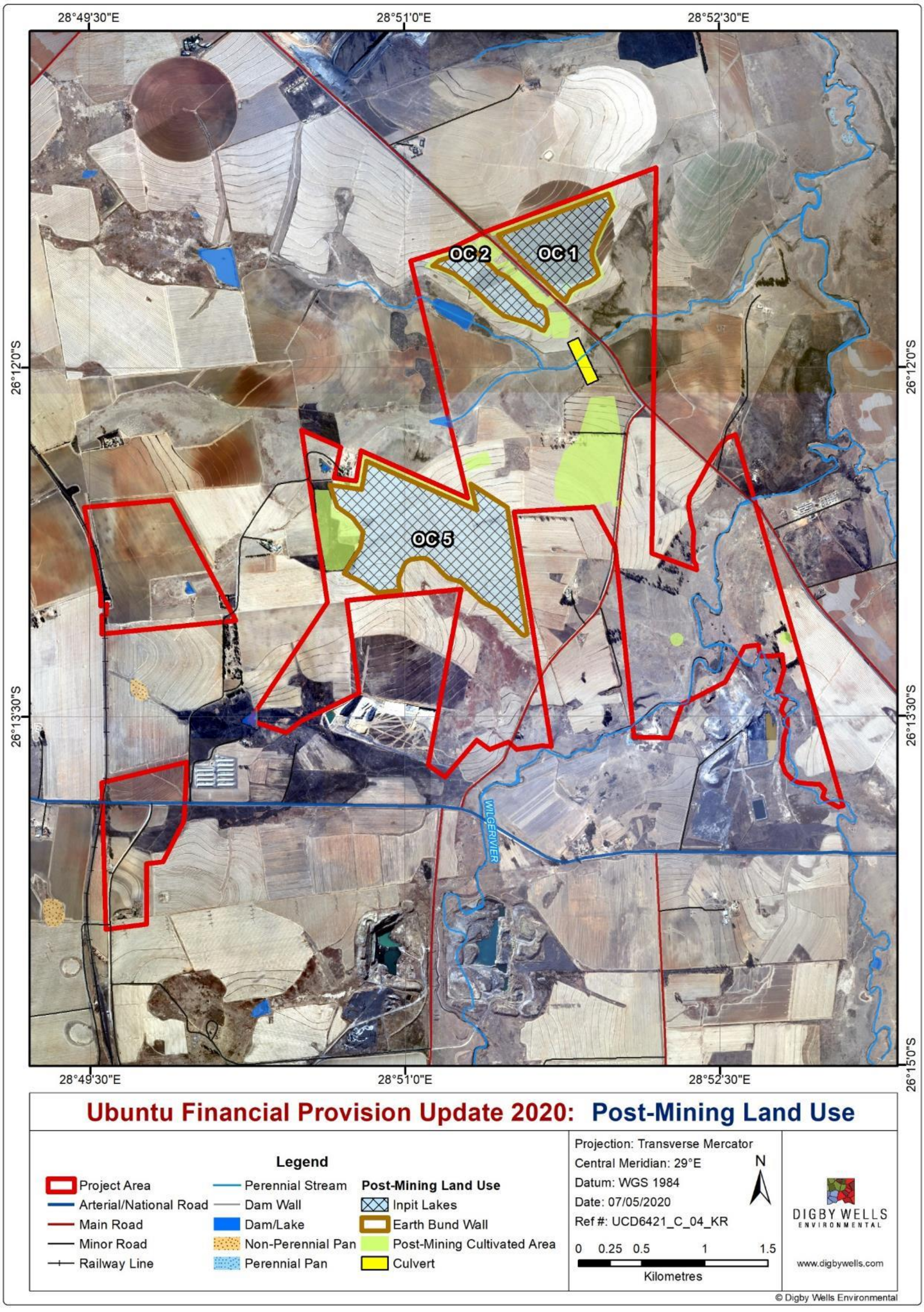

Figure 7-1: Proposed Final Post-Mining Land Use

8 Risk Assessment

Information presented below has been summarised from the previous ERR, that was undertaken in 2020.

8.1 Methodology

Risk assessment is the overall process of risk identification, risk analysis and risk evaluation. A baseline hazard identification and risk assessment (HIRA) was completed as part of the financial provision update. The baseline HIRA is based on a qualitative method. The following process steps were taken:

- A general discussion on hazards and "driving forces" was used to determine things that could "go wrong" during the mine closure;
- The boundaries of the project were defined;
- Areas within the mining area were defined;
- For each of the areas in the process:
  - Potential unwanted events were identified;
  - Current controls for each unwanted event were identified and recorded;
  - The most likely severity, should the event occur, and likelihood of the event occurring were then estimated;
  - Based on this, the level of risk was estimated using the risk matrix; and
  - For the Highly and Extremely Intolerable events, additional "controls" were recommended to reduce the level of risk.

The four levels of risks are classified as shown in Table 8-1 below.

Table 8-1: Risk Levels

Colour	Descriptor	Action	Sign-off
	Extremely Intolerable	Immediate Action	Top Management
	Highly Intolerable	Short term action required	Senior Management
	ALARP[1]	Heightened Action	Section Manager
	Maintain	Ensure levels of control	Supervisor

[1] As low as reasonably practicable

8.2 Risk Analysis Results

Potential unwanted events for and during mine closure were identified and discussed. All unwanted events are discussed in detail in the Environmental Risk Report.

Seventeen unwanted events were identified. These unwanted events were ranked for risk based on the maximum reasonable severity should they occur and the likelihood of that specific severity/consequence occurring. This analysis was firstly done assuming that no controls are in place (i.e. the raw risk) and secondly considering current controls were in place and effective (i.e. residual risk).

Four of the unwanted events were ranked as extremely intolerable, five as highly intolerable, five as ‘As Low as Reasonably Practical’ (ALARP) and three ranked maintain.

A summary of the highest ranked risks are given Table 8-2 below.

Table 8-2: Summary of Potential Extremely and Highly Intolerable Risks (Raw Risk)

Area	Hazard	Discussion	Primary Risk Category	Risk Rank
Open Pit Area - OC5	Groundwater - Decant.	Open pit OC5 is predicted to decant approximately 200 m from Wetland 4. The water level in OC52 would have to rise by 55 m before decant occurs. Predicted to occur between 32 and 35 years after closure, at rates of 250 and 313 m³/d.	Natural Environment	Extremely Intolerable
Open Pit Area - OC1	Groundwater - Decant.	Open pit OC1 is predicted to decant approximately 100 m from Wetland 1. The water level in OC1 would have to rise by 62 m before decant occurs. Predicted to decant between 31 and 34 years after mine closure, at a rate between 78 and 97 m³/d.	Natural Environment	Extremely Intolerable
Open Pit Area - OC2	Groundwater - Decant.	Open pit OC2 is predicted to decant into Wetland 2. The water level in OC2 would have to rise by 49 m before decant occurs. Predicted to occur 30 to 33 years after mine closure, at rates between 87 and 109 m³/d.	Natural Environment	Extremely Intolerable
Open Pit Area - OC5	Groundwater - Pit inflows.	If these inflows contributed to groundwater dependent ecosystems, they will no longer be available to provide groundwater seepage to hillslopes wetlands or base flow toward rivers and valley bottom wetlands.	Natural Environment	Extremely Intolerable

Area	Hazard	Discussion	Primary Risk Category	Risk Rank
General	Potential inadequate budget for the rehabilitation of the mine.	Failure to rehabilitate and close the mine sustainably.	Natural Environment	Highly Intolerable
Open Pit Area - OC1	Groundwater - Pit inflows.	If these inflows contributed to groundwater dependent ecosystems, they will no longer be available to provide groundwater seepage to hillslopes wetlands or base flow toward rivers and valley bottom wetlands.	Natural Environment	Highly Intolerable
Open Pit Area - OC2	Groundwater - Pit inflows.	If these inflows contributed to groundwater dependent ecosystems, they will no longer be available to provide groundwater seepage to hillslopes wetlands or base flow toward rivers and valley bottom wetlands.	Natural Environment	Highly Intolerable
General	Possibility of not implementing the final Land Use Plan for the disturbed areas.	Loss of biodiversity, increased soil erosion, increased siltation of rivers etc.	Natural Environment	Highly Intolerable
General	Potential negative impact on biodiversity.	Failure of re-established vegetation on rehabilitated areas. Loss of biodiversity, increased soil erosion, increased siltation of rivers etc.	Natural Environment	Highly Intolerable

9 Closure Environmental Management Plan

The main aim in developing the RCP is to minimise and mitigate the impacts caused by mining and industrial activities and to restore land back to a satisfactory standard. It is best practice to develop the RCP as early as possible so as to ensure the optimal management of rehabilitation and closure issues that may arise. It is critical that a mine's RCP is defined and understood from before mining progresses and is complimentary to the objectives and goals set. The rehabilitation actions for the particular infrastructure are detailed and separated into phases. Table 9-1 details actions required during the construction phase, Table 9-2 details actions required during the operational phase and Table 9-3 those actions required during the decommissioning and closure phase of the project.

Table 9-1: Rehabilitation Actions for Construction Phase

Construction Phase		
Aspect	**Actions**	**Description**
Land Preparation	Plan footprint disturbance	Minimise the area to be occupied by infrastructure. This should be clearly defined and demarcated.
	Impact on sensitive landscapes	Care should be taken around sensitive landscape areas to ensure that impacts to them are none to minimal e.g. wetlands/pans/riverine areas. Construction crews should restrict their activities to planned areas.
	Remove vegetation	Remove vegetation and trees only where necessary: clearing must only comprise of bushes and trees larger than 1 m.
Stripping	Soil stripping	The soil must be stripped according to best practice.
Stockpiling	Soil stockpiling	The soil must be stockpiled according to best practice. This must be done as close as possible to the areas that will be progressively rehabilitated.
Alien Species	Remove alien vegetation	Alien invasive species must be removed.

Table 9-2: Rehabilitation Actions for Operational Phase

Operational Phase		
Aspect	**Actions**	**Description**
Operational Activities	Impact on areas	Ensure crews restrict their activities to planned areas. Clean and dirty water separation and management is mandatory.
Open Pit	Concurrent rehabilitation of open pits	Concurrent rehabilitation of the open pits should be done as per the Ubuntu Mine EMPR. Best practice methods should be utilized during the concurrent rehabilitation
Pollution Control Dam	Desilt PCD	Desilting of the PCD should be done continuously throughout operations.
Alien Species	Remove alien vegetation	Alien invasive species must be removed.

Table 9-3: Rehabilitation Actions for Closure, Decommissioning and Rehabilitation Phase

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
Workshops, Offices and other Infrastructure	Remove infrastructure (Ooffices, administration buildings and workshops)	The re-usable items should be removed from the site; Remaining structures should be demolished to 1 m below surface and the demolition rubble removed; and Soil should be tested for contamination. If contamination is discovered, this soil should be removed and disposed of in the appropriate waste disposal facility.
	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.
Diesel Bay	Remove contamination	All contamination should be removed during operation.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
	Remove and dispose concrete	Demolish concrete bund wall and dispose of contaminated material at a hazardous waste facility.
	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.
Access and Service Roads	Post closure roads	Roads that can and will be used for rehabilitation/monitoring or by other users post-closure should be left *in situ*.
	Demolish weighbridge	Demolish weighbridge and dispose the waste at a general waste facility.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
(with weighbridge)	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.
Overburden	Overburden	Utilise overburden material as backfill to fill the open pits.
	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; and Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion;
	Care and maintenance	Ensure robust care and maintenance plans.
Open pit Mining areas and Wetlands	Backfill final void	The final void should be sloped and backfilled with overburden up to 40% of the total pit void area and to a depth of the corresponding decant elevation of the individual pit.
	Earth bund wall	Construct a earth bund wall with overburden on the perimeter of each in pit lake, as a safety measure with thorny vegetation will be constructed.
	Care and maintenance	Long term management of the rehabilitated open pit areas will be required via contractual agreements with land owners.
	Wetland rehabilitation	Rehabilitation specifications and goals will need to be set for wetland rehabilitation as well as arable land rehabilitation
	Wetland trail plots	Trail plots will have to be established to determine wetland rehabilitation and crop production rates on rehabilitated land and to set specific criteria and methodologies for how this land will be prepared and used.
Run of Mine (ROM) pads	Remove contaminated material	Remove contaminated coal veneer on ROM pads and dispose at hazardous waste facility.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
	Demolish retaining wall	Demolish concrete retaining wall and reshape the material behind the retaining wall.
	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; and Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.
(PCD)	Desilting	Desilt the pollution control dam.
	Remove liner	Remove HDPE liner and dispose of at a hazardous waste facility.
	Breach dam wall	Breach pollution control dam walls.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; and Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Replace topsoil	Appropriate topsoil sourced from the topsoil stockpiles should be replaced to a minimum thickness of 300 mm on the rehabilitated areas.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.
Site fencing	Remove fence	Fencing should be removed and disposed.
	Rip soil	Soil should be ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.

Closure, Decommissioning and Rehabilitation Phase		
Aspect	**Actions**	**Description**
Topsoil Berms	Reshape	Once the site has been cleared the exposed underlying materials should be reshaped to create a gently sloping, free-draining topography; and Re-instate natural drainage lines to limit erosion and sediment build up within local river courses.
	Rip and fertilize topsoil	Topsoil should be fertilised and ripped to reduce compaction.
	Reseed/Vegetate	Reseed with grasses and improve species diversity by planting species. Additionally, replant species that were relocated due to mining construction.
	Remove alien vegetation	Alien invasive species must be removed.
	Restrict access to rehabilitated areas	Restrict access of people/machinery/vehicles/grazing animals on newly rehabilitated land to allow regeneration of vegetation and reduce erosion.
	Care and maintenance	Ensure robust care and maintenance plans.

10 Threats, Opportunities and Uncertainties

The following has been identified, with respect to threats opportunities and uncertainties with respect to the compilation of this plan to define any additional work that is needed in order to reduce the level of uncertainty:

- The information that was utilised to formulate this report was based on desktop information, baseline information gathered by specialists and predictive modelling. Based on the current level of information available the following additional work should be undertaken:
    - Ongoing surface water and groundwater quality monitoring during the operational LoM in order to determine trends overtime and to monitor changes in water quality to determine if the mine is impacting the nearby water resources;
    - The sampling results should be utilised to update the Numerical Model, initially undertaken, in order to refine the model and more accurately predict post closure impacts based on actual data obtained during the operational phase;
    - Ongoing engagement with communities surrounding the area, with respect to the closure vision of the mine and tacking these issues into account when closure is being considered;
    - Compliance to Water Use Licence Conditions and ensuring activities are approved and done in accordance with approved authorisations,
    - Skill development training for employees and engagement with employees to ensure that when closure is reached and downscaling and retrenchment of staff occurs that all are aware of the process and that people have the required skills in order to find alternative employment; and
    - Adopting closure recommendations as identified in the respective specialist reports, with particular emphasis on social, water and biodiversity related aspects.

10.1 Relinquishment Criteria

Relinquishment requires formal acceptance from the regulatory authority to ensure that all obligations associated with closure are achieved, prior to a closure certificate being issued. To achieve relinquishment, criteria need to be set, measured and met for all parties to understand what needs to take place to obtain a closure certificate. This provides all parties involved in the process a target that needs to be achieved and sets the standards that closure and rehabilitation are measured against. Table 10-1 below provides the respective environmental relinquishment criteria.

Table 10-1: Environmental Relinquishment Criteria

Environmental Aspect	Closure criteria	Monitoring Requirement	Reporting Requirement
Biodiversity	Establishment of vegetation that has a basal cover of 15% and that is self-sustaining and can be measured over a 3-5 year period, indicating that natural succession has established.	Vegetation monitoring and rehabilitation monitoring.	Biodiversity
Wetlands	Monitoring of wetland areas to ensure that impacts to wetlands are minimised as far as possible and consideration with potential improvements that can be undertaken to uplift and enhance wetlands.	Monitoring of PES and EIS twice a year.	Wetlands
Groundwater	Groundwater qualities need to comply with the qualities as stipulated in the Water Use Licence Application and the appropriate Department of Water Affairs and South African National Standards.	Monthly and Quarterly Reports	Monitoring Reports
Surface Water	Surface water qualities need to comply with the qualities as stipulated in the Water Use Licence Application and the appropriate Department of Water Affairs and South African National Standards.	Monthly and Quarterly Reports	Monitoring Reports
Soil, Land Capability and Land Use	Post land use mining assessment to determine status of rehabilitated areas with respect to soil quality and that rehabilitated areas have	Soil chemistry and physical properties analysis to determine soil quality.	Results of soil quality report and erosion monitoring report.

Environmental Aspect	Closure criteria	Monitoring Requirement	Reporting Requirement
	been rehabilitated to an agreed upon land use. In addition to the above, inspections should be undertaken to identify areas of erosion and that erosion measures have been constructed.		
Air Quality	Dust and PM_{10} must comply with the minimum standards and limits as set by the National Environmental Management Air Quality Act and applicable regulations and guidelines.	Monthly and Quarterly Reports	Monitoring Reports
Social	Engagement with stakeholders and employees regarding closure related aspect and formulisation of a retrenchment and downscaling policy demonstrating training initiatives and skills development assisting in employees being upskilled, which would help in individuals being able to seek for alternative employment at the time of closure	Engagement, training and skills development policies.	Records of correspondence, training matrices and records of training.

11 Preliminary Mine Closure Schedule

The mine closure schedule needs to be linked to the closure cost assessment and forecast that is undertaken for each year of mining. The schedule should take into account areas that become available for rehabilitation and costs should be provided to undertake such rehabilitation.

The mine closure schedule addresses the timing of rehabilitation and closure activities performed during the decommissioning and post-closure phases for the proposed operation.

Areas might become available during the construction phase where rehabilitation can be undertaken, such as the construction laydown areas, once construction is complete.

Presented below is a high level schedule of closure related aspects that should be undertaken either during the LoM and/or during the decommissioning phase:

- Annual review and update of the RCP;
- Five years prior to mine closure, start engaging with stakeholders and employees regarding mine closure;
- The decommissioning phase is expected to take between one and two years with rehabilitation expected to take another three years after decommissioning to complete; and
- Post closure monitoring and maintenance.

12 Organisational Capacity

12.1 Organisational Structure

When fully operational, the mine will have a workforce of approximately 171 persons. Of these, 16 will be directly employed by the mine, and the remainder by contractors.

12.2 Responsibilities

The proposed employment structure for the mine can be seen below in Figure 12-1.

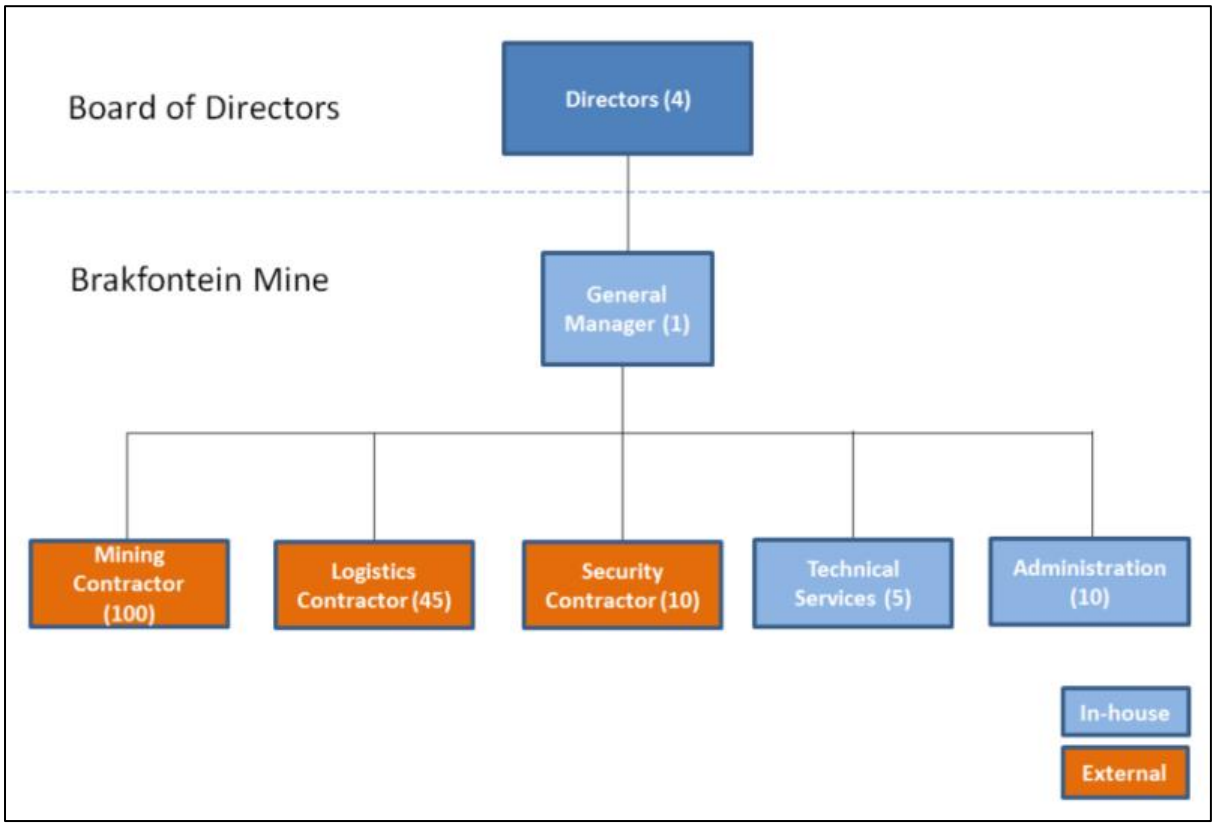

Figure 12-1: Proposed Employment Structure

12.3 Training and Capacity Building

The description of the positions requiring certificates of competency are listed below:

- Mine Manager;
- Receptionist;
- Mine and Production Geologist;
- SHEC and Safety Manager;
- Financial and Cost Accountant;
- Sales and Account Manager;
- Artisan – Millwright; and
- Tally clerks.

The mine will implement a skills development plan.

12.4 Business and Corporate Polices

Universal Coal is an ASX-listed emerging thermal and coking coal development and production company with five primary projects in Southern Africa. Universal Coal's assets are

near-term, low-cost, high-margin in South Africa's major coalfields, with a reported (JORC (Joint Ore Reserves Committee) compliant) gross *in-situ* coal resource of over 819 Mt. Supported by an experienced board and management team, Universal Coal recognises that it is accountable to a broad range of stakeholders, and is committed to promoting sustainable development in and around its operations.

12.4.1 Universal Coal's Commitments

Universal Coal is committed to good corporate governance and ethical business practice, ensuring that there are appropriate governance structures, policies and practices in place, and Universal Coal complies with all relevant legislation and regulations. Universal Coal will implement appropriate risk management processes, from the beginning of exploration projects, through the development and construction phases, and into production, and ensure that these include the identification and mitigation of sustainable development risks.

12.4.2 Human Rights and Equal Opportunity

Universal Coal upholds the basic human rights of its employees, and entrench a respect for human rights, customs and values into the policies and practices of the company.

12.4.3 Health and Safety

Ensuring the safety and health its employees and contractors is Universal Coal's priority. Universal Coal implements appropriate risk management systems and provides appropriate training and protective equipment to its employees.

Universal Coal also places an emphasis on a healthy lifestyle after work. As a result, when operational, the mine will implement a comprehensive AIDS awareness programme by means of workforce education and training; a HIV Voluntary Counselling and Testing Campaign; funding mechanisms; benefit administration; primary care wellness programmes and expert treatment programs.

12.4.4 Environment

Universal Coal understands that mining has an impact on the environment. Universal Coal agrees to undertake the necessary impact assessments, to develop the necessary systems and practices to mitigate our impact during the entire lifecycle of our operation, and to assess its performance on an ongoing basis. Universal Coal recognises that they operate in an environment of scarce resources and will endeavour to optimise their use. Universal Coal will pay particular attention to the preservation of biodiversity and appropriate land use planning, both during and after the period of operation.

12.4.5 Social Development

Universal Coal is committed to making a meaningful impact on the people in the regions which they operate, economically and socially. Universal Coal will recruit and develop employees from the communities in which Universal Coal is located as far as this is possible and provide

training and development to assist them to build life-long careers. Universal Coal will contribute to projects that support the social and economic upliftment of communities in which they operate, based on a thorough understanding of local needs.

12.4.6 Stakeholder Engagement

Universal Coal is committed to engaging with their stakeholders, and to regular and transparent communication. Universal Coal considers its stakeholders to include its investors, employees, the authorities and other government agencies, civil society, communities, business partners and suppliers and service providers. Universal Coal recognises that by engaging with these groups, the company enhances its understanding of their perspectives and recognises that without these interactions we would not be able to achieve its goal of developing sustainably and contributing constructively to society. As a consequence, UCD III endeavours to engage regularly, purposefully and aspire to create beneficial outcomes for all stakeholders as a result of Universal Coal's operations.

13 Financial Provision

Digby Wells calculated the financial provision for the Ubuntu Mine according to Regulation 6 of the Financial Provision Regulations (2015) which prescribe the minimum content requirements.

The financial provision was compiled in accordance with the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine as published by the DMRE (previously known as the DMR, dated January 2005. The provision was updated in May 2020 and the annual update will shortly commence. Based on this costing has been provided for the proposed new infrastructure as part of the current application process, however the costing that was also undertaken during May 2020 has also been provided.

13.1 Financial Provision Methodology

The DMRE calculation model was compiled using Microsoft Excel. The standard DMRE unit rates were escalated with CPI from 2005 to 2020. The mining area was then classified with a risk rating table as specified in the DMRE guidelines.

13.2 Assumptions

The financial provision calculation considered the following assumptions:

- All access roads will be constructed no wider than 8 m;
- All workshops and offices will be constructed of steel structures and material;
- The road crossings, weigh bridge, diesel bay (with exception of the diesel tanks) and culverts will be constructed of concrete;
- No underground mining will take place;

- The concrete culverts will remain post closure to ensure a stable landform of the river banks and surrounding areas;
- The concrete will only be demolished up to 1000 mm below natural ground level;
- All measurements were measured from conceptual mine plans by Digby Wells. Selective quantities were used from Universal Coal's mining right documentation and mine works program. Digby Wells recommends that once the first year of mining has taken place and final plans are available, the financial provision calculation be updated;
- The clearance of vegetation, the stripping of topsoil, subsoil and excavation of overburden has been accounted for under operational costs, to avoid double accounting during the financial provision calculation;
- It is assumed that rehabilitation of open pit areas will be undertaken concurrently during the operational phase;
- At LoM it was assumed that OC1 an OC2 would have been completely rehabilitated and only OC5 would require final void rehabilitation;
- The final pit voids at LoM will be used as a decant management strategy. Areas where concurrent rehabilitation has taken place will be contoured to create a final void that covers at least 40 % of the pit area at the corresponding decant elevation of the pit;
- A earth bund wall with thorny vegetation will be constructed on the perimeter of each in pit lake, as a safety measure;
- Costs for majority of the proposed infrastructure have already been included in the previous cost assessment, thus only the additional infrastructure which was not considered in the previous costing will need to be provided for. The annual closure cost update still needs to be undertaken, at which stage a consolidated costing will be provided;
- All temporary structures will be removed from site prior to closure (e.g. Mobile crushers, containers etc.);
- The overburden dumps will be used for concurrent rehabilitation of the open pits. The remaining material will be consolidated and rehabilitated as well as the footprints;
- All topsoil berms will be used to rehabilitate the disturbed areas and where structures were removed. Only the footprint areas of these berms will require rehabilitation;
- All fences will be removed at end of life;
- All pollution control dams are HDPE lined and it was assumed that 150mm silt will require removal over 40 % of the dam area;
- General surface rehabilitation must involve the shaping of the surface topography to match the surrounding landscape and 300mm of topsoil, where available, needs to be added to the site. During the process of shaping the landscape, drainage lines must be

properly reinstated into the topography. Any heaps of excess material also need to be removed so that effective re-vegetation can take place;

- Three years after closure have been assumed to be adequate for monitoring and maintaining vegetation established on rehabilitated areas;
- A 12 % allowance has been included for Preliminary and General (P&Gs). These fees account for the costs required to manage the closure and rehabilitation process as well as provide personnel to monitor and maintain the rehabilitated areas after closure;
- A 10 % contingency has been included as there is always the possibility that areas have been left out of the financial provision assessment or that areas may have been overlooked;
- The financial provision is based on the latest mine plans and information received from Universal Coal; and
- The financial provision has been calculated for end of life of mining.

13.3 Financial Provision Summary

The financial provision considered the financial provision regulations (2015) using the DMRE Guidelines for Calculating the Quantum of Financial Provision (using 2019 rates escalated from 2005).

A summary of the calculated financial provision is presented in Table 13-1 below dated May 2020 and a new provision for the additional infrastructure has been included dated January 2020. According to the DMRE method of calculation, the cost for rehabilitation and closure of the mine for unscheduled closure is **R 14,729,425,** as of May 2020 (Incl. VAT) (Table 13-1). The additional infrastructure will require an additional amount of **R 791,537** (Incl. VAT), refer to Table 13-2 for furtehr detail.

Table 13-1: Ubuntu Mine Financial Provision Summary (Unscheduled Closure – May 2020)

Class A (High Risk)		Unit:	A	B	C	D	E=A*B*C*D
Component	Description:		Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant & related structures (incl. overland conveyors & Power lines)	m^3	0.00	R 15.81	1.00	1.00	R 0
2 (A)	Demolition of steel buildings & Structures	m^2	195.06	R 220.30	1.00	1.00	R 42,971
2 (B)	Demolition of reinforced concrete buildings & structures	m^2	624.25	R 324.65	1.00	1.00	R 202,661
3	Rehabilitation of access roads	m^2	11154.00	R 39.42	1.00	1.00	R 439,708
4(A)	Demolition & rehabilitation of electrified railway lines	m	0.00	R 382.62	1.00	1.00	R 0
4(B)	Demolition & rehabilitation of non-electrified railway lines	m	0.00	R 208.70	1.00	1.00	R 0
5	Demolition of housing &/or administration facilities	m^2	0.00	R 440.59	1.00	1.00	R 0
6	Opencast rehabilitation including final voids & ramps	ha	9.42	R 224,238.95	**1.00**	1.00	R 2,112,191
7	Sealing of shafts, adits & inclines	m^3	0.00	R 118.26	1.00	1.00	R 0
8(A)	Rehabilitation of overburden & spoils	ha	0.00	R 153,975.86	1.00	1.00	R 0
8(B)	Rehabilitation of processing waste deposits & evaporation ponds (basic, salt producing waste)	ha	0.00	R 191,774.16	1.00	1.00	R 0
8(C)	Rehabilitation of processing waste deposits & evaporation ponds (acidic, metal-rich waste)	ha	2.76	R 557,003.05	**1.00**	1.00	R 1,539,334
9	Rehabilitation of subsided areas	ha	0.00	R 128,931.60	1.00	1.00	R 0

Class A (High Risk)		Unit:	A	B	C	D	E=A*B*C*D
Component	Description:		Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
10	General surface rehabilitation	ha	32.74	R 121,974.86	1.00	1.00	R 3,992,874
11	River diversions	ha	0.00	R 121,974.86	1.00	1.00	R 0
12	Fencing	m	3484.13	R 139.13	1.00	1.00	R 484,763
13	Water management	ha	9.42	R 46,378.27	**1.00**	1.00	R 436,854
14	2 to 3 years of maintenance & aftercare	ha	46.03	R 16,232.40	1.00	1.00	R 747,236
15(A)	Specialist studies	m	0.00	R 0.00	1.00	1.00	R 0
							R 9,998,592
Weighting Factor 2 (step 4.4)			**1.05**			**Sub Total 1**	**R 10,498,522**
				Preliminary and General	12.00	% of Sub Total 1	**R 1,259,822.60**
				Contingency	10.00	% of Sub Total 1	**R 1,049,852.16**
						Sub Total 2	**R 12,808,196**
						VAT (15%)	**R 1,921,229**
						GRAND TOTAL Incl. VAT	**R 14,729,426**

Table 13-2: Ubuntu Mine Financial Provision Summary (Additional infrastructure – January 2021)

Class A (High Risk)		Unit:	A	B	C	D	E=A*B*C*D
Component	Description:		Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant & related structures (incl. overland conveyors & Power lines)	m^3	0.00	R 15.81	1.00	1.00	R 0
2 (A)	Demolition of steel buildings & Structures	m^2	840.99	R 220.30	1.00	1.00	R 185,267
2 (B)	Demolition of reinforced concrete buildings & structures	m^2	0.00	R 324.65	1.00	1.00	R 0
3	Rehabilitation of access roads	m^2	0.00	R 39.42	1.00	1.00	R 0
4(A)	Demolition & rehabilitation of electrified railway lines	m	0.00	R 382.62	1.00	1.00	R 0
4(B)	Demolition & rehabilitation of non-electrified railway lines	m	0.00	R 208.70	1.00	1.00	R 0
5	Demolition of housing &/or administration facilities	m^2	0.00	R 440.59	1.00	1.00	R 0
6	Opencast rehabilitation including final voids & ramps	ha	0.00	R 224,238.95	**1.00**	1.00	R 0
7	Sealing of shafts, adits & inclines	m^3	0.00	R 118.26	1.00	1.00	R 0
8(A)	Rehabilitation of overburden & spoils	ha	0.00	R 153,975.86	1.00	1.00	R 0
8(B)	Rehabilitation of processing waste deposits & evaporation ponds (basic, salt producing waste)	ha	0.00	R 191,774.16	1.00	1.00	R 0
8(C)	Rehabilitation of processing waste deposits & evaporation ponds (acidic, metal-rich waste)	ha	0.00	R 557,003.05	**1.00**	1.00	R 0
9	Rehabilitation of subsided areas	ha	0.00	R 128,931.60	1.00	1.00	R 0
10	General surface rehabilitation	ha	2.55	R 121,974.86	1.00	1.00	R 310,695
11	River diversions	ha	0.00	R 121,974.86	1.00	1.00	R 0
12	Fencing	m	0.00	R 139.13	1.00	1.00	R 0
13	Water management	ha	0.00	R 46,378.27	**1.00**	1.00	R 0

Class A (High Risk)		Unit:	A	B	C	D	E=A*B*C*D
Component	Description:		Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
14	2 to 3 years of maintenance & aftercare	ha	2.55	R 16,232.40	1.00	1.00	R 41,347
15(A)	Specialist studies	m	0.00	R 0.00	1.00	1.00	R 0
							R 537,309
Weighting Factor 2 (step 4.4)			**1.05**			**Sub Total 1**	**R 564,175**
			Preliminary and General	12.00	% of Sub Total 1		**R 67,700.99**
			Contingency	10.00	% of Sub Total 1		**R 56,417.50**
						Sub Total 2	**R 688,293**
						VAT (15%)	**R 103,244**
						GRAND TOTAL Incl. VAT	**R 791,537**

Digby Wells recommends that when the first year of mining has taken place, that a detailed financial provision calculation is completed. In addition, it is recommended that the financial provision be annually updated as per the requirements of NEMA and GN R1147.

14 Monitoring, Auditing and Reporting

The liability figures need to be updated on an annual basis. This will ensure that all costs become more accurate over time and will reflect current market conditions. Regular audits should be undertaken by an accredited auditing firm.

14.1 Monitoring Plan

The physical aspects of rehabilitation should be carefully monitored during the operational phase as well as during the establishment of the desired final ecosystem.

The following items should be monitored continuously:

- Alignment of actual final topography to agreed planned landform;
- Depth of topsoil stripped and placed;
- Chemical, physical and biological status of replaced soil;
- Erosion status;
- Surface drainage systems and surface water quality;
- Groundwater quality at agreed locations;
- Vegetation basal cover;
- Vegetation species diversity;
- Faunal re-colonisation (Sherman and pitfall trapping); and
- Proportion of mined land that has been fully rehabilitated.

Monitoring and maintenance of vegetation should take place three years after rehabilitation has been completed. Monitoring of surface and groundwater resources should take place on a quarterly basis for three years after rehabilitation has been completed.

14.2 Auditing plan

The auditing requirements have been summarised in Table 14-1 below.

Table 14-1: Monitoring Plan and Audit Requirements

Aspect	Activities	Impacts requiring monitoring programmes	Functional requirements for monitoring	Roles and responsibilities (For the execution of the monitoring programmes)	Monitoring and reporting frequency and time periods for implementing impact management actions	Type of Requirement (Monitoring, Auditing and/or Reporting)
Soil	Post-closure	Erosion; Loss of soil fertility and soil depth;	The rehabilitated area must be assessed for erosion, fertility and soil depth. All these must meet the Chamber of Mines Guidelines	The soils must be assessed by a soil specialist yearly (during the dry season so that recommendations can be implemented before the start of the wet season) so as to correct any nutrient deficiencies;	Erosion: Bi-annual (twice a year) Fertility and depth: Annually (during the growing season and at least one month after rain has fallen)	Monitoring
Wetlands	Construction, Operation, Decommissioning and Post Closure	Impacts to wetlands	Monitoring of the Present Ecological State (PES) and the Ecological Importance and Sensitivity (EIS)	Qualified Wetlands Specialist	Bi-Annually	Monitoring
	Construction				Weekly/ 2 weeks	Monitoring

Surface water	Operation	Water quality and quantity.	Monitor the impact of the coal mining, coal waste and its subsequent infrastructure through the continuous analyses of water quality and quantity.	Samples should be collected by an independent surface water consultant, using best practice guidelines and should be analysed by a SANAS accredited laboratory.	Monthly, where negative impacts are detected (spillage) frequency to be increased to weekly	
	Decommissioning				Weekly	
Groundwater	All activities	Groundwater quality	Monitoring boreholes that intercept groundwater prior to and moving away from a pollution source and to intercept water levels at select intervals away from a well field used for water supply.	Samples should be collected by an independent qualified hydrogeologist, using best practice guidelines and should be analysed by a SANAS accredited laboratory.	Quarterly	Monitoring and Reporting
	All activities	Groundwater levels	Groundwater levels must be recorded using an electrical contact tape or pressure transducer, to detect any changes or trends in groundwater elevation and flow direction.		Quarterly	Monitoring and Reporting
Aquatic Biomonitoring	Operational and Post-closure	In situ water quality constituents;	Determine the current state of the aquatic ecosystem through the measurement of	Environmental manager to contract an accredited aquatic ecologist.	Bi-annual (twice a year)	Monitoring and Reporting

		Habitat integrity; Aquatic macro-invertebrates; Fish assemblages; and Riparian vegetation.	physical and biological properties.			
Fauna and Flora	Fauna All activities	Mammals; Birds; Herpetofauna; and Invertebrates.	Compare the most recent biophysical environment information with previous studies prior to construction. Thereafter a comparison between these two data sets will be used to identify trends, positive or negative.	Environmental Manager	Every two seasons, or every two years.	Monitoring
	Flora All activities	Species richness; Medicinal species; Alien invasive species; Red data and Protected plant species.		Environmental Manager	Quarterly monitoring for two years	Monitoring
Noise	Construction and operation	Noise disturbance	Ambient noise Levels should be sampled in terms of the following parameters: ▪ The A-weighted equivalent sound pressure level (LAeq)	Environmental Coordinator	Monitoring to be conducted on a quarterly basis during construction. Thereafter monitoring should be on a bi-annual	Monitoring and Reporting

			for duration not less than 30 minutes per monitoring point; and ▪ Measurements to be taken during both daytime (06:00 to 22:00) and the night time (22:00 to 06:00).		basis throughout the life of mine	
Dust	Operation and decommissioning	Air pollution/quality	Dust monitoring using the ASTM Method. Monitoring must meet the South African National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) Dust Control Regulations (2013).	A designated air quality officer to collect data/analyse and reporting to regulatory authorities on compliance.	Monthly	Monitoring
Audit Reports	Auditing against the conditions outlined within the approved EMP and EA (EMP Performance Assessment)	EMP Conditions	To determine compliance to EMP conditions	Environmental Officer/Independent Third Party	Annual Performance Assessment	Audit Report
	Annual update of financial provision	Financial Provision Update	To ensure that the mine is compliant with the financial provision regulations and	Environmental Officer/Independent Third Party	Annually and must be audited by an	Financial Provision Report

			that there is sufficient funding provided by the mine for closure and rehabilitation cost and meets the requirements as stipulated in Regulation 11 (1) of the New Financial Provision Regulations.		independent auditor.	submitted to the DMRE

14.3 Motivation for Amendments

No motivation for amendments to the final RCP have been made as a result of the previous auditing period as this is a Greenfield site and no construction has taken place as yet.

14.4 Stakeholder Participation

No stakeholder issues or comments have informed this RCP as it has not been presented for comments at this stage of the proposed project.

15 Recommendations

Closure and rehabilitation is a continuous series of activities that begin with planning prior to the project's design and construction, and end with achievement of long-term site stability and the establishment of a self-sustaining ecosystem. Not only will the implementation of this concept result in a more satisfactory environmental conclusion, but it will also reduce the financial burden of closure and rehabilitation. Rehabilitation and closure objectives have been tailored to the project at hand with the objective of assisting Universal Coal in carrying out successful rehabilitation.

It is recommended that the following actions be undertaken

- Adequate planning and action plans put in place (storm water management, waste management, engineering designs and rehabilitation);
- The financial provision should be updated according to the Mining Work Programme (MWP), should there be significant changes to the MWP once the mining operations commence. The changes might have a significant impact on the financial provision estimate;
- Complete a detailed material balance to ensure enough material is available to rehabilitate all the disturbed areas, or to establish if material will need to be imported, resulting in cost implications;
- The groundwater model must be regularly updated to ensure current and relevant information is available to implement the most suitable management strategies for the mitigation of negative impacts;
- Maintain a database reflecting market related Preliminary and General percentages for all projects in anticipation of potential amendments to this aspect of GN R.1147;
- Develop an optimised post mining landform design informed by the ground water modelling and post closure water balance to ensure that free draining areas and in-pit evaporative areas can be constructed accurately;

- Conduct predictive landform modelling to integrate the remaining mining and backfilling activities as far as possible to limit expensive rehandling;
- Utilise the post landform design elevations to manage concurrent pit backfilling once there is sufficient space within the pit;
- As mining commences and progresses, it is in Universal Coal's best interest to review and revise the final pit design periodically to establish if the final design is still relevant, practical, and the most cost-effective solution. In addition to this it is recommended that a final landform design assessment be conducted and that concurrent rehabilitation is aligned to such plan;
- Monitoring of surface and groundwater at monitoring points needs to be undertaken to ensure the correct management strategies are adopted when mining commences;
- The financial provision estimate needs to be updated on an annual basis as a requirement of the NEMA. This will ensure that all costs become more accurate over time and will reflect current market conditions; and
- Regular audits should be undertaken by a soil scientist during the soil stripping process. This will guarantee that soil is stripped and stockpiled correctly.

16 References

Digby Wells, 2021: Scoping Report for the Proposed Additional Infrastructure at the Universal Coal Development III (Pty) Ltd, Ubuntu Colliery, Nkangala, Mpumalanga Province.

Digby Wells, 2013: Environmental Impact Assessment Report for the Proposed Brakfontein Colliery.

Digby Wells, 2012: Conceptual Rehabilitation Plan for the Proposed Ubuntu Colliery.

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Digby Wells, 2015: Groundwater Report for the Ubuntu Colliery Groundwater Model update.

Digby Wells, 2012: Soil Assessment for the Ubuntu Colliery Project.