Seriti Power (Pty) Ltd.

INTEGRATED WATER AND WASTE MANAGEMENT PLAN FOR NEW LARGO COLLIERY PIT A

New Largo Colliery

41106340-REP00006
OCTOBER 2024

CONFIDENTIAL

Seriti Power (Pty) Ltd.

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Seriti Power (Pty) Ltd.

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New Largo Colliery

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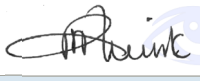
Signature	 Digitally signed by Munnik, Riana (ZARM05140) Date: 14-Oct-24			
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EXECUTIVE SUMMARY

Seriti Power (Pty) Ltd (Seriti) is the current holder of an existing right to mine coal at New Largo Coal Mine. Seriti acquired the New Largo Coal Mine Project from AAIC in August 2018 and has re-evaluated the mine plan in order to meet the coal supply demands of the Kusile Power station, and as a result some changes in both infrastructure and mine scheduling have occurred.

The coal at New Largo will be mined through a series of opencast pits (Pits A, C, D, D-North, F, G, H, and Wilge). The opencast mining activities at New Largo started in 2020 and are planned to continue up until 2055. The Project will consist of contractor operated mining operations, overseen by the owner's team.

The Department of Water and Sanitation (DWS) issued three Water Use Licences (WULs) between 2013 and 2015, (See Appendix A) namely:

- WUL: 04/B20G/ACFGIJ/2538, issued on 31 March 2023 which supersedes the licence dated 11 January 2015 (Integrated WUL) as amended on 25 October 2019 and 29 April 2022;
- WUL: 04/B20G/CI/2246, dated 22 August 2014 (R545 Provincial Road Realignment); and
- WUL: 04/B20F/ACFGI/2310, dated 22 September 2013 (Conveyor).

All the water and waste management infrastructure for the mine has been authorised in these licences. Pit A has been authorised for in-pit disposal of discard. Discard will be placed below in-pit water level.

The mine plan has now been updated and new water uses have been identified in Pit A therefore, an application for water use authorisation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) must be submitted to the Department of Water and Sanitation (DWS).

This particular IWWMP serves as the project specific report which was also developed in support of the water use licence application for the water uses associated with New Largo, Pit A.

WUL 04/B20G/ACFGIJ/2538 authorised the mine to mine some of the wetlands and pans. The 2024 mine plan includes adjustments to the mine plan that now excludes many of the wetlands that would have been lost according to the previous mine plan.

Wetland Consulting Services (Pty.) Ltd. (WCS) was appointed by WSP Africa on behalf of Seriti to update the New Largo Wetland Mitigation and Offset Strategy (Appendix F). A field survey was undertaken in August and September 2022 to collect the required input data for the various wetland assessment updates. Previous wetland delineations were used and only the state and sensitivity of

wetlands were updated as part of this project to reflect the current state. An updated PES assessment was undertaken for all the wetlands within the New Largo Coal Mining Right Area utilizing the WET-Health Version 2 Level 1b assessment methodology (MacFarlane, et al., 2020), which determines the PES of a wetland based on land use within the wetland, a 200m buffer around the wetland, and within its catchment.

The New Largo Wetland Mitigation and Offset Strategy follows the DWS & SANBI (2016) guidelines for calculating wetland offset requirements due to mining impacts. The assessment determined that mining activities would result in the loss of approximately 138.19 ha-eq for water resources and 905.73 ha-eq for ecosystem conservation (Wetland Consulting Services (Pty.) Ltd., 2024).

As part of the study, the following mitigation and offset categories were considered in the revised strategy:

- Category 1: Wetland areas that are not affected by the proposed mining activities within the New Largo Mining Right Area (MRA).
- Category 2: Wetland areas that are partially affected by the proposed mining activities as a result of the loss of catchment area and water inputs. This includes the identification and evaluation of available potential water inputs to mitigate water loss.
- Category 3: Remaining pan cluster within the MRA (New Largo Pan and the southern pan cluster).
- Category 4: Offsite Pans. These initially only included Pans 7 and 8 identified previously at a desktop level, but due to land tenure issues associated with Pan 8 which had to be excluded, was expanded to include additional pans within Seriti's Surface Right Areas (SRA). This included considering pans in Kriel and Middleburg Mine Services (MMS) – Boschmanskrans Section (BMK) SRA, and at Dispatch Rider.

To mitigate these losses, the strategy aims for a 'No Net Loss' or even a 'Net Gain' in functional outcomes. Through rehabilitation, conservation, and protection of targeted wetlands, the offset strategy anticipates achieving anticipated gains per each wetland offset category for Water Resources and Ecosystem Services and Ecosystem Conservation are summarised in the table below:

Overall Offset Requirements		
Requirements	*Functional Targets (ha.eq)*	*Ecosystem Conservation Targets (ha.eq)*
	138.19	905.73
Offset Evaluations		
Categories	*Functional gains (ha.eq)*	*Ecosystem Conservation (ha.eq)*
Category 1	97.76	516.07
Category 2	11.18	44.94
Category 3	5.45	56.10
Category 3 - New Largo Pan	15.02	74.83
Category 4	4.37	123.42
Additional Pans		
Dispatch Rider Pans	8.66	130.10
MMS-BMK Pan	2.39	8.08
Kriel Pans with WWTW	2.07	26.41
TOTAL	*146.89*	*979.95*
(-) Deficit/(+) Surplus)	8.70	74.22

These gains are projected to be realised during the operational phase of mining, assuming successful rehabilitation measures. The strategy focuses on functional offsets which are more difficult to achieve but crucial for maintaining ecosystem services while also contributing to broader ecosystem conservation.

The revised offset strategy balances wetland losses (Category 1) with targeted rehabilitation and conservation efforts, ensuring that mining impacts are countered by long-term ecological gains. This is key to preserving both the hydrological and biodiversity value of wetlands within the New Largo Coal MRA.

Indirect wetland losses (Category 2) due to mining impacts on wetland catchments will be mitigated by supplementing wetland catchment flow with clean water from proposed water treatment facilities. Both onsite pan (Category 3) and offsite pan (Category 4) offsets are proposed.

The strategy now includes rehabilitation and protection of pan wetland habitats to offset functional and ecosystem conservation service losses caused by mining. The offset for the Honingkrantz Pan is calculated at 45.78 ha-eq (Water Resources and Ecosystem Services) and 132.60 ha-eq (Ecosystem Conservation). Category 3 and 4 wetland offsets are expected to compensate for these losses with a combined contribution of 37.95 ha-eq for Water Resources and 418.93 ha-eq for Ecosystem Conservation.

To ensure no net loss of wetland hectare equivalents, the strategy must be implemented in parallel with mining operations. Risks, especially related to the New Largo Pan, must be managed through appropriate monitoring and management measures.

The wetland offset strategy offers multiple benefits, including:

- Long-term wetland protection and stewardship.
- Preservation and enhancement of pan habitats critical to biodiversity.

- Improved water quality and resource management.
- Focused and secure implementation within Seriti's operational scope.
- Support for the restoration of vital ecosystems within the upper Olifants catchment.
- Alignment with Seriti's environmental goals, ensuring a balance between mining activity and long-term sustainability of natural resources.

This strategy emphasizes the conservation of wetlands and pan habitats, contributing to the ecological health of the upper Olifants catchment while aligning with Seriti's environmental stewardship initiatives. Further information related to the Wetland Offsets can be found in Appendix F of this report.

Government Notice 704 was promulgated by the Minister on 4 June 1999 in Government Gazette vol. 408, No. 20119. The GN 704 Regulations were published in terms of Section 26(1), (b), (g) and (i) of the NWA and pertain specifically to water uses for mining and related activities.

In terms of regulation 3 of GNR. 704 the Minister may in writing authorise an exemption from the requirements of regulations 4, 5, 6, 7, 8, 10 or 11 on his or her own initiative or on application, subject to such conditions as the Minister may determine

In terms of the Water Quality Management, Operational Guideline M6.1: Guideline document for the implementation of Regulations on the use of water for mining and related activities aimed at the protection of water resources, an exemption from any requirements of the GNR. 704 regulation imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations.

It further states that the following clause needs to be incorporated into the water use licence: In terms of the conditions of this licence, the Licence Holder is exempted from the clause of the regulations on use of water for mining and related activities aimed at the protection of water resources (GNR. 704).

The DWS required the mine to apply for authorisation of backfill with overburden. A total of ten (10) samples were analysed as per the laboratory programme to classify and assess the waste streams. On waste assessment (GN R. 635 2013) all the samples did not meet the full definition of Type 3 waste, as although one or more constituents exceeded the first total concentration threshold (TC > TCT0), no constituents exceeded the first leachable concentration threshold (LC < LCT0). The overburden samples are therefore conservatively assessed as Type 3 waste per regulation 7(6) of (GN R. 635 2013) but present a leachable constituent risk similar to Type 4 waste.

DWS is requested to exempt New Largo from the requirements of Schedule 4a, 4b,4c, 7a as outlined in the motivation in Table 13: GN 704 Assessment for New Largo.

Contact name Boipelo Tshehla

Contact details +27 11 254-4863 | boipelo.tshehla@wsp.com

ACRONYMS AND ABBREVIATIONS

AAIC	Anglo American Inyosi Coal (Pty) Ltd.
BEE	Black Economic Empowerment
BPG	Best Practice Guideline
CMA	Catchment Management Agency
CoC	Contaminant of Concern
DM	District Municipality
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EC	Electrical Conductivity
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EMS	Environmental Management System
EWR	Ecological Water Requirements
GAA	Golder Associates Africa (Pty) Ltd.
GN704	Government Notice No. 704 of 4 June 1999
ha	hectares
HDSA	Historically Disadvantaged South Africans
HRDP	Human Resources Development Programme
I&AP	Interested and Affected parties
IUA	Integrated Units of Analysis

IWWMP	Integrated Water and Waste Management Plan
LM	Local Municipality
LoM	Life of Mine
MAE	Mean Annual Evaporation
mamsl	Meters above mean sea level
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
mbgl	meters below ground level
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002)
MRA	Mining Right Area
NEMA	National Environmental Management Act (Act 107 of 1998)
NGOs	Non-Governmental Organization
NWA	National Water Act, 1998 (Act 36 of 1998)
PCD	Pollution Control Dam
SHE	Safety, Health, Environment
SHEQ	Safety Health Environment and Quality
SLP	Social and Labour Plan
SS	Suspended solids
SWMP	Storm water management plan
TDS	Total dissolved solids
TOC	Total organic carbon
TSS	Total suspended solids
WC/WDM	Water Conservation and Water Demand Management
WCMR	Waste Classification and Management Regulations

WMA	Water Management Area
WML	Waste Management Licence
WQPL	Water Quality Planning Limits
WTP	Water treatment plant
WUL	Water Use Licence
WULA	Water Use Licence Application

1 INTRODUCTION

Seriti Power (Pty) Ltd (Seriti) is the holder of an existing right to mine coal at New Largo Coal Mine located over various farm portions within the Victor Khanye and eMalahleni Local Municipalities, Mpumalanga Province.

The New Largo Coal Mine was previously owned by Anglo American Inyosi Coal (AAIC). AAIC obtained a mining right for the New Largo Coal Mine through an environmental impact assessment (EIA) process undertaken in terms of the National Environmental Management Act 107 of 1998 (NEMA) and the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA). The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET), now Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (M-DARDLEA), granted AAIC an Environmental Authorisation (EA) in 2012 (Ref. No. 17/2/3N-41). The Department of Mineral Resources (DMR) in 2015 approved the environmental management programme (EMPr) (Ref. No. DMR: 30/5/1/2/2/511MR).

A separate EA (Ref. No. 17/2/3N-13) and waste management licence (WML) (Ref. No. 12/9/11/L952/6) in terms of the NEMWA was obtained for the Phola Kusile coal conveyor, and mine water treatment plant (to treat water from the old underground workings). Furthermore, the Department of Water and Sanitation (DWS) issued three Water Use Licences (WULs) between 2013 and 2015, (See Appendix A) namely:

- WUL: 04/B20G/ACFGIJ/2538, File: 16/2/7/B200/C528 dated 11 January 2015 (Integrated WUL) as amended on 25 October 2019 and 29 April 2022;
- WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C528 dated 22 August 2014 (R545 Provincial Road Realignment); and
- WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/K524 dated 22 September 2013 (Phola – Kusile Conveyor).

Thereafter, AAIC put the New Largo Coal Mine project on hold and submitted requests for extension of the validity of the authorisations to the Regulators. Seriti acquired the New Largo Coal Mine Project from AAIC in August 2018 and has re-evaluated the mine plan to meet the coal quality specifications of the Kusile Power station, and as a result some changes in both infrastructure and mine scheduling have occurred. These changes largely reflect matters of timing, size of the mining fleet and orientation of mining cuts; with a key change in timing relating to the planned commencement of mining of the various pits. Seriti is developing the New Largo mining right into a long-life coal mine with potential to supply coal to the adjacent Kusile Power Station and other Eskom power stations, as well as other markets.

Mining has commenced and WUL: 04/B20G/ACFGIJ/2538 file 27/2/2/B720/37/1 was issued on 31 March 2023, which supersedes the 2015 WUL and its amendments.

The mine plan has now been updated and new water uses have been identified in Pit A therefore, an application for water use authorisation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) must be submitted to the Department of Water and Sanitation (DWS).

New Largo has appointed WSP Group Africa (Pty) Ltd (WSP), an independent environmental assessment practitioner, to undertake the Water Use Licence Application (WULA) application process.

This Integrated Water and Waste Management Plan (IWWMP) serves as the supplementary application report for the Pit A WULA.

1.1 ACTIVITY BACKGROUND

New Largo Colliery is an operational opencast coal mine, mining both the No.4 and the No.2 Coal Seams within the Witbank Coal field of South Africa. Coal has historically been mined within the area by means of underground mining methods and is currently being mined by means of opencast mining methods from the No.4 and the No.2 Coal Seams of the Witbank Coal Field.

The coal at New Largo will be mined through a series of opencast pits (Pits A, C, D, D-North, F, G, H, and Wilge). The opencast coal mining will also include the reopening of some of the smaller, historic underground mine workings, which were mined as early as 1890. The opencast mining activities at New Largo started in 2020 and are planned to continue up until 2055.

The mine plan has now been updated and new water uses have been identified in Pit A therefore, an application for water use authorisation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) must be submitted to the Department of Water and Sanitation (DWS).

Contact details

The contact details for the mine and associated responsible personnel are provided in Table 1.

Table 1: Details of the proponent – Seriti Power (Pty) Ltd. New Largo mine

Details	Description
Company Name:	Seriti Power (Pty) Ltd.
Company Registration Address:	15 Chaplin, Cnr Oxford and Chaplin Roads, Illovo, 2196
Telephone number:	011 047 7000
Contact Person Details	
Contact person:	Nicola Torley
Telephone:	082 852 9427
Email:	Nicola.torley@seritiza.com

1.2 REGIONAL SETTING AND LOCATION OF ACTIVITY

The Main New Largo resource lies some 30 kilometres west of eMalahleni and 100 kilometres east of Johannesburg in the Mpumalanga Province. The majority of the New Largo Mining Rights Area (MRA) extends from the N4 (Pretoria-Witbank National Road) to the south of the N12 (Johannesburg-Witbank National Road) and is shown on Figure 1. The New Largo mine will be established as the coal supply to Eskom's power stations located in the area, as well other markets.

Pit A is situated to the north of the MRA, adjacent to the Kusile Power Station.

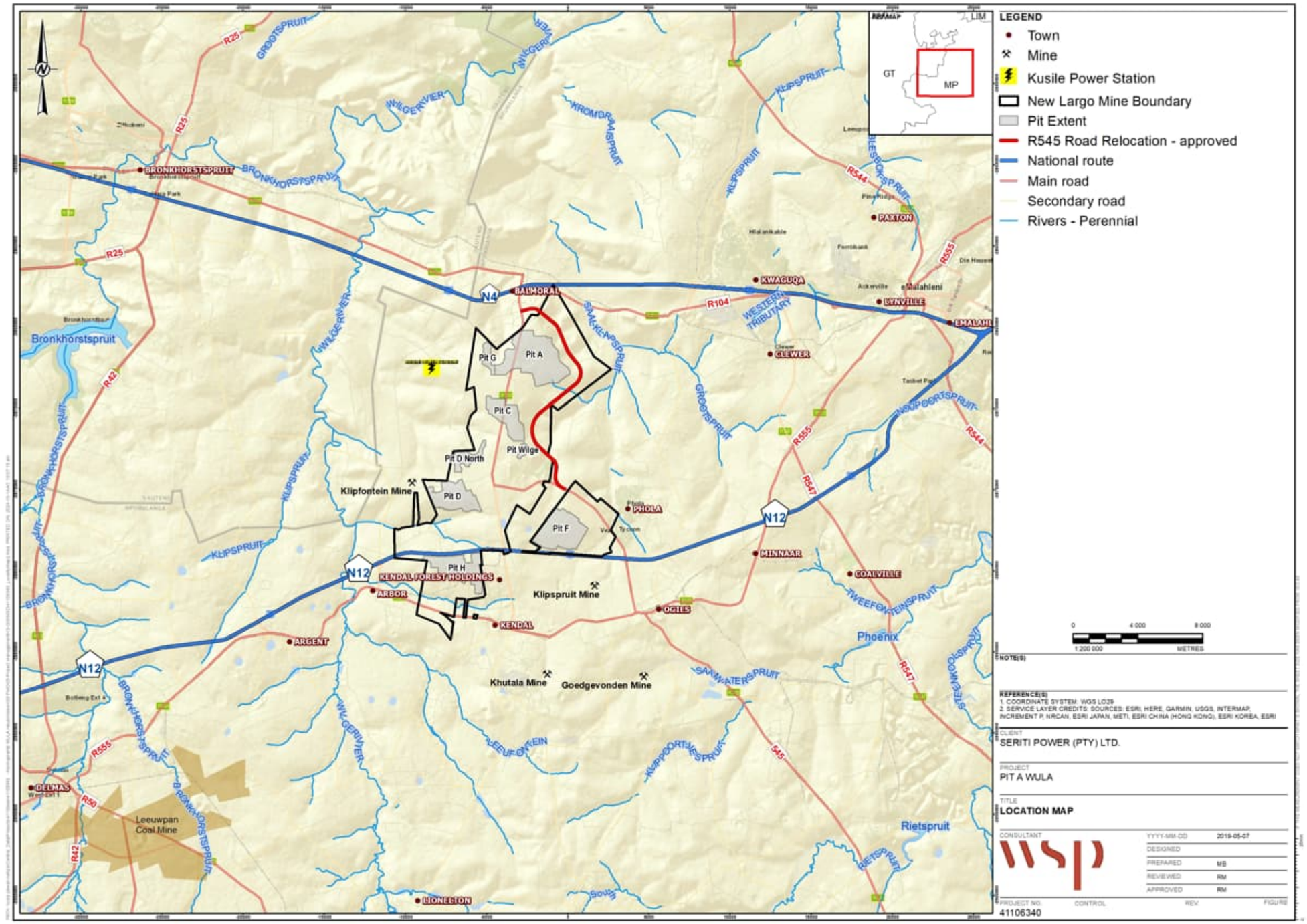


Figure 1: Locality of New Largo in relation to Kusile and other mining operations

1.3 PROPERTY DESCRIPTION

The New Largo properties relevant to Pit A and G are tabulated below (Table 2) and depicted in Figure 3. The properties associated the MRA are illustrated in Figure 3.

Table 2: Pit A and G property information

Farm Name	Portion	Area (ha)	LPI Code	Registered Owner / Company	Title Deed
HONINGKRANTZ 536 JR	0	2257.95	T0JR00000000053600000	Seriti Power (Pty) Ltd	T10424/2019
HONINGKRANTZ 536 JR	1	259.91	T0JR00000000053600001	Seriti Power (Pty) Ltd	T10424/2019
HARTBEESTFONTEIN 537 JR	0	510.53	T0JR00000000053700000	Seriti Power (Pty) Ltd	T10424/2019
KLIPFONTEIN 566 JR	20	25.67	T0JR00000000056600020	Seriti Power (Pty) Ltd	T10424/2019

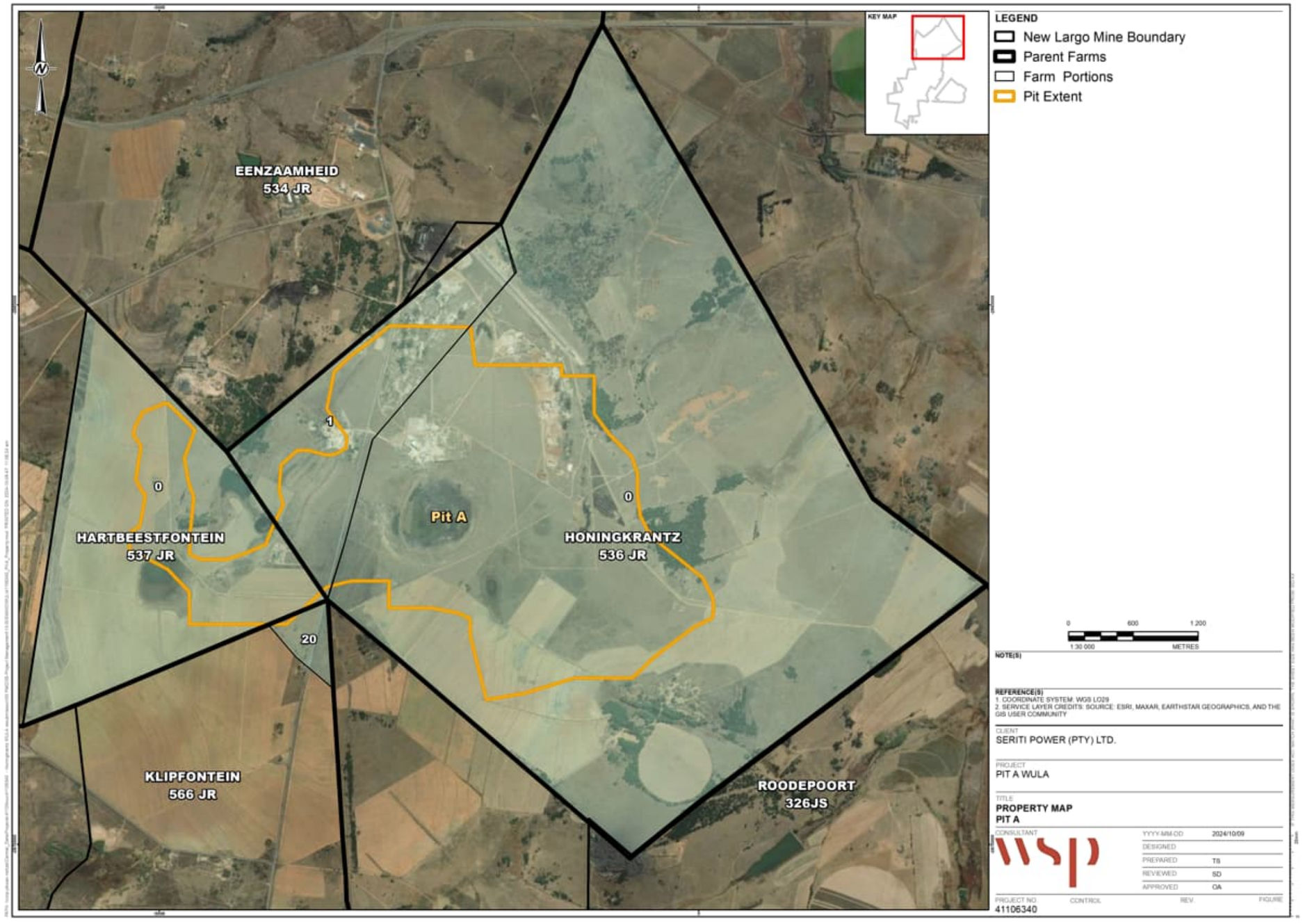


Figure 2: Properties associated with Pit A and G

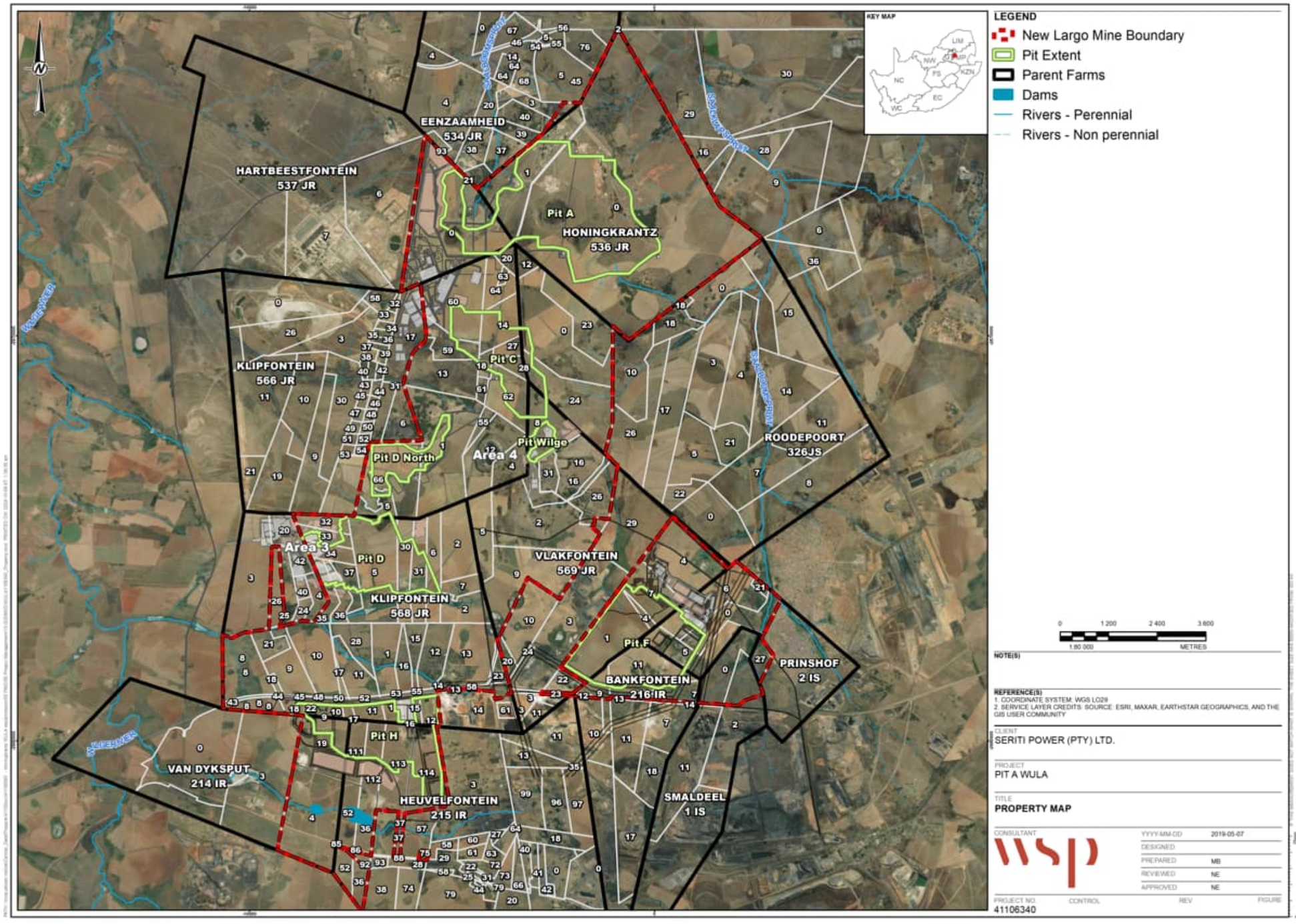


Figure 3: New Largo MRA property map

1.4 PURPOSE OF IWWMP

The Integrated Water and Waste Management Plan (IWWMP) demonstrates that water and waste will be managed on site in an integrated manner and presents a plan of action for management of water and waste related issues will be addressed in a structured and progressive manner. The IWWMP identifies all relevant water and waste challenges and defines knowledge gaps with associated action plans for New Largo.

This particular IWWMP serves as the Pit A project specific report which was also developed in support of the water use licence application for the water uses associated with New Largo, Pit A This report was also developed in support of the following objectives:

- To provide the Department of Water and Sanitation with an overview of the water uses that are being applied for as well as all the relevant specialist studies to aid in the decision making during the application process;
- To identify all the water and waste related impacts, aspects and risks related to the operations with possible mitigation measures;
- To generate an integrated management plan which includes specific measures taken to manage risks associated with water and waste management; and
- To formulate measures, compile strategies and an action plan to address the identified matters of concern and to obtain outstanding information.

From a regulatory perspective, this IWWMP will further provide the DWS and other regulatory authorities with focused and structured information regarding the current and proposed activities and how these activities are expected to influence the receiving environment.

2 CONTEXTUALISATION OF ACTIVITY

2.1 DESCRIPTION OF ACTIVITY

Seriti acquired the New Largo Coal Mine Project from AAIC in August 2018 and has revised the mine plan to meet the coal quality specifications for the Kusile Power Station, and as a result changes in both infrastructure and mine scheduling have occurred. These changes largely reflect matters of timing, size of the mining fleet and orientation of mining cuts; with a key change in timing relating to the planned commencement of mining at the various pits. Seriti intends to develop the New Largo mining right into a long-life coal mine with potential to supply coal to the adjacent Kusile Power Station and other Eskom power stations, as well as other markets.

The mine plan has now been updated and new water uses have been identified in Pit A therefore, an application for water use authorisation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) must be submitted to the Department of Water and Sanitation (DWS).

2.2 EXTENT OF ACTIVITY

The total mining right area is approximately 12 773 hectares (ha), where Pit A is approximately 989 ha.

2.3 KEY ACTIVITY RELATED PROCESSES AND PRODUCTS

The New Largo Mine comprises Pits A, C, D, D North, F, G, H, and Wilge. Pits A and G make up the Main Mine complex. The Project will consist of a contractor operated mining operation, overseen by the owner's team.. Coal will be extracted from the Seam No. 4 and Seam No. 2 by means of a typical truck and shovel operation, although dragline operations could be implemented in future. A total of 179.4Mt ROM coal is scheduled over the 31-year LOM from the four pit areas.

Coal processing

ROM coal will be processed at two separate dense medium separation (DMS) plants to be constructed within the original LoM plan infrastructure footprint for the Main Mine. Each plant will have a capacity of 3 million tonnes per annum (Mtpa). The plants will be equipped with a grizzly, primary crushing, secondary crushing, DMS, spiral and cyclone section, thickener and filter press. The final products will be discharged onto product stockpiles. Kusile product will be loaded onto a conveyor for transportation to the power station.

Processing plant discard will be discharged into a discard bin, from where this material will be collected and disposed of. Discards will be placed back into the opencast pits, as part of the mine's rehabilitation process.

Pit and surface water management

Every pit will have a Pollution Control Dam (PCD) for temporary polluted water storage, called Pollution Water Transfer Dams (PWTDs). In-pit water from rain and groundwater will be collected in an in-pit sump, from where the water will be pumped to the relevant PWTDs. In addition, runoff from the surrounding haul roads will collect in dirty water sumps and be pumped to the PWTDs. A total of eight PWTDs will be located close to the pits, already authorised as per Table 5. PWTDs will have a capacity of 5ML and will be equipped with a silt trap to remove silt from the water before it enters the dam.

Water from the PWTDs and runoff from rainwater in the dirty water areas will be transferred to the authorised PCDs located on the western side of the Main Mine infrastructure complex. Balancing water levels inside the various PCDs will be achieved by means of submersible pumps inside the PCDs.

The PCDs will have an initial capacity of 256 ML for the first phase of construction and the future PCDs will be constructed, up to a capacity of 855ML or as deemed required based on the water balance and storage requirements. The cluster of dams will have a combined capacity of not more than1 200ML, (as currently authorised) ensuring that adequate space is allocated for future requirements. Water from the PCDs will be abstracted for treatment and reuse

Water treatment plant

Water from the PCD will be pumped to the WTP receiving reservoir for treatment in the plant to potable water quality and for re-use or release into the environment as per the current authorisation in the Conveyor WUL. Water from the PCD will be pumped to the plant dam situated next to the Eskom conveyor from where the make-up water for the two processing plants will be pumped. A tanker filling point for use in dust suppression of roads at the PCDs will be available.

The current water balance indicates that water treatment of 4 ML/d will be sufficient for the first phase and requiring an upgrade to 6 ML/d thereafter.

Sewage treatment

The necessary sewage package plants will be installed and operated by each contractor. Some of the treated water will be discharged to the process water tanks and the rest will be pumped to the PCDs. The contractor will be responsible for the removal of the sludge from the sewage plant, as and when required.

2.4 ACTIVITY LIFE DESCRIPTION

The FY2024 mine plans are depicted in Figure 4 and Figure 5.

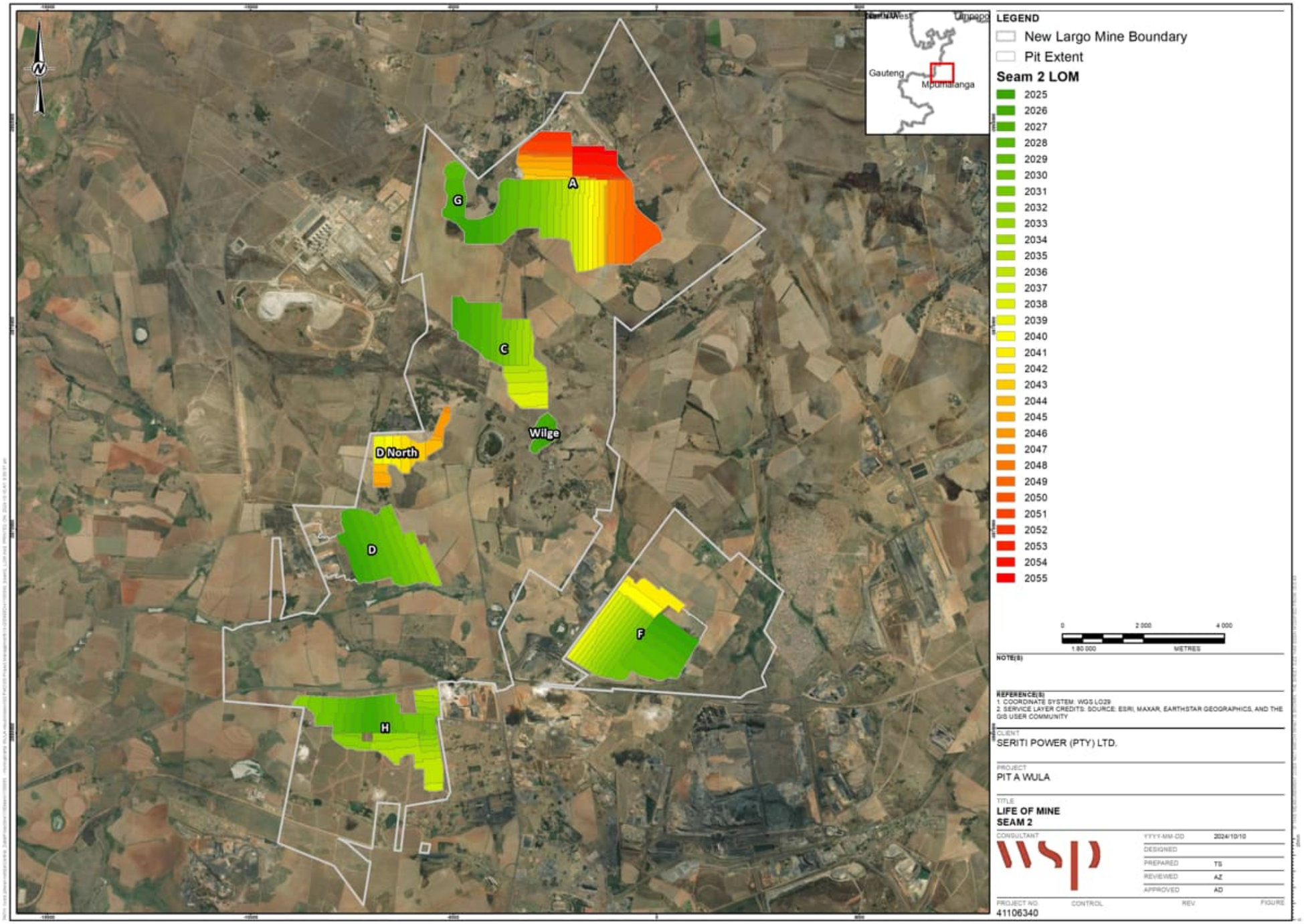


Figure 4: Life of Mine Plan Seam 2

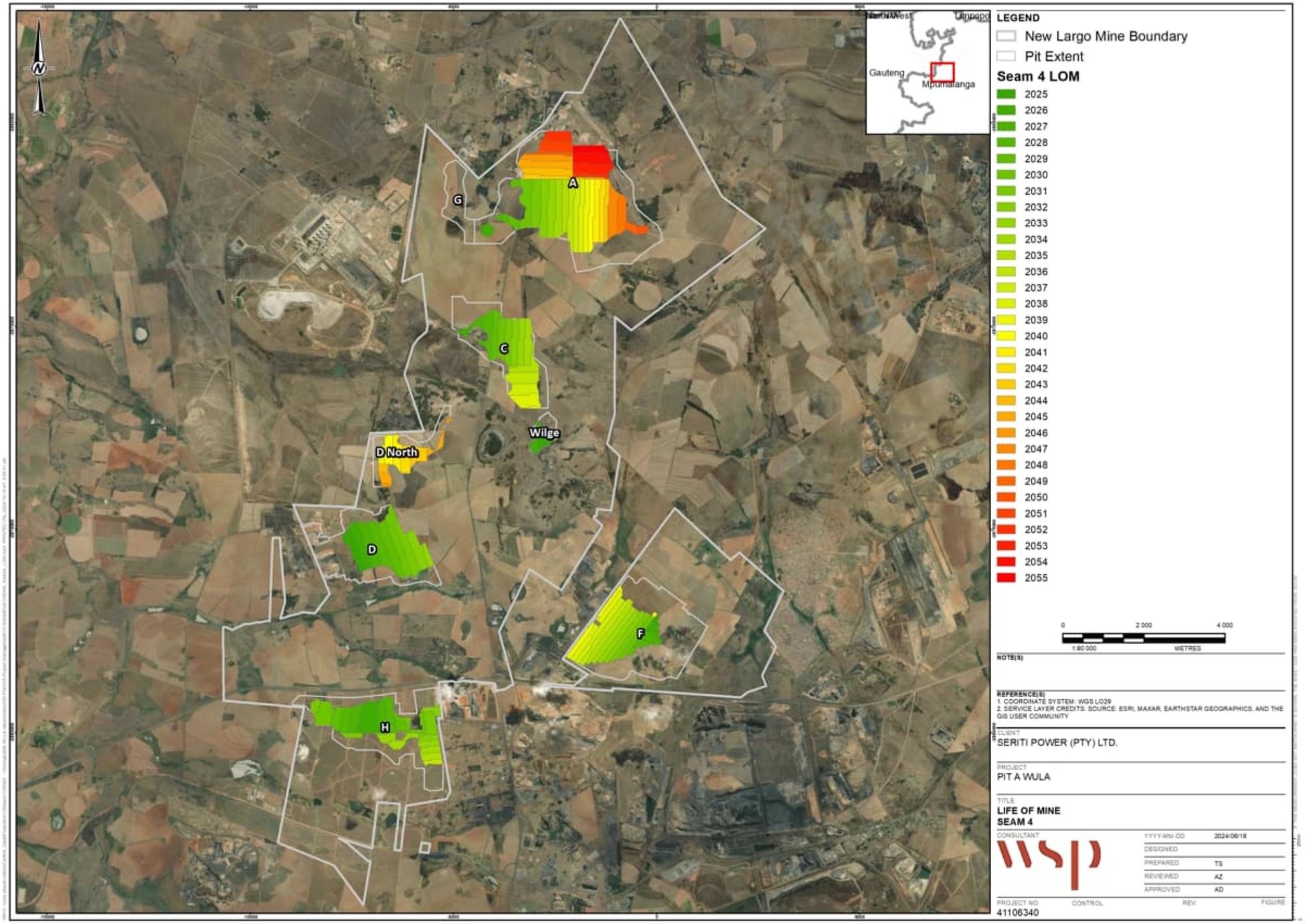


Figure 5: Life of Mine Plan Seam 4

2.5 ACTIVITY INFRASTRUCTURE DESCRIPTION

The infrastructure associated with New Largo mining operations will include:

- Main Mine:
  - Conveyors
  - Northern and southern tips
  - Access roads and parking areas
  - Haul and in-pit roads
  - ROM stockpiles
  - Sub-station
  - Ramps
  - 545 Road Diversion
  - Workshops
  - Fuel Bay
  - Contractors Laydown Area
  - Laboratory
  - Plant Offices
  - Temporary WTP
  - Security building
  - PCDs
  - Mine Offices
  - Change Houses
  - Mine Stores
  - Store Yard
  - Pit Offices
  - Tyre Store / Repair Area
  - Sewage Treatment Plant
  - Canteen
  - Brake Test Ramps
  - Water Bowser Filling Point
  - Training Centre
  - Security Fence
  - Topsoil Stockpile Areas
  - Silt Traps
  - Weighbridge facility
  - Product coal off-loading facility
  - Permanent WTP
  - Coal Processing Plant 2 x DMS
  - Surface Discard Dump (required when Plant is commissioned)

2.6 KEY WATER USES AND WASTE STREAMS

Water uses

New Largo has the following water use licences: (Appendix A)

- WUL: 04/B20G/ACFGIJ/2538, File: 16/2/7/B200/C528 dated 31 March 2023, which supersedes the WUL dated 11 January 2015 as amended.
- WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C528 dated 22 August 2014; and
- WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/K524 dated 22 September 2013.

WUL: 04/B20G/ACFGIJ/2538, dated 31 March 2023, which supersedes the WUL dated 11 January 2015 as amended

The following water uses have been authorised under this WUL:

- Section 21 (a): Taking water from a water resources;
- Section 21 (c): impeding or diverting the flow of water in a watercourse;
- Section 21 (f): Discharging waste or water containing waste into a water resource;
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse;
- Section 21 (g): disposing of waste in a manner which may detrimentally impact on a water resource; and
- Section 21 (j): removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

WUL: 04/B20F/ACFGI/2310, dated 22 September 2013.

The following water uses have been authorised under this WUL:

- Section 21 (a): Taking water from a water resources;
- Section 21 (c): impeding or diverting the flow of water in a watercourse;
- Section 21 (f): Discharging waste or water containing waste into a water resource;
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse; and
- Section 21 (g): disposing of waste in a manner which may detrimentally impact on a water resource.

WUL: 04/B20G/CI/2246, dated 22 August 2014

The following water uses have been authorised under this WUL:

- Section 21 (c): impeding or diverting the flow of water in a watercourse; and
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse.

Waste streams

Several waste streams will be generated at the various operations, which will be managed in the following groups:

- Domestic Waste:
  - General household waste (incl. plastic);
  - Cans (aluminium);
  - Paper;

- Glass;
- Organic waste;
- Wood products; and
- Perishable produce.

- Hazardous Waste:
  - Hydrocarbons (e.g. used oil, diesel spillage);
  - Batteries;
  - Rubber;
  - Contaminated PPE;
  - Empty grease drums;
  - Empty chemical containers (plastic and glass);
  - Fluorescent tubes;
  - Oil-contaminated soil, paper, plastic, rags;
  - Empty oil drums;
  - E-Waste;
- Mine Waste:
  - Oil/steel contaminated ore;
  - Contaminated (chemical/ hydrocarbon) spillage; and
  - Coal discard material.

2.7 ORGANISATIONAL STRUCTURE OF ACTIVITY

The organisational structure of New Largo is depicted in the figure below.

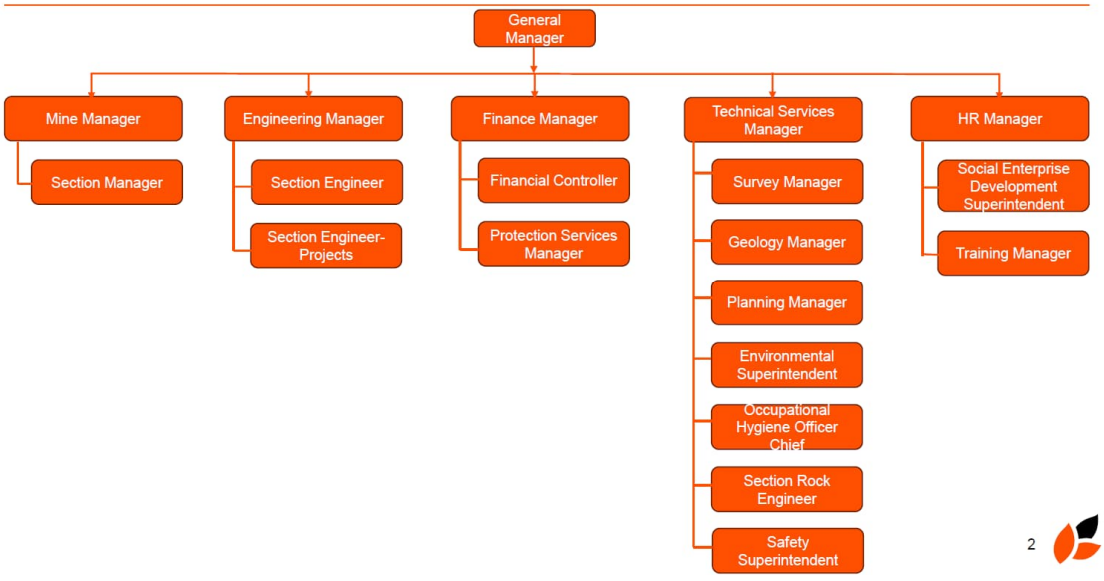


Figure 6: Organogram of New Largo

2.8 BUSINESS AND CORPORATE POLICIES

Seriti acknowledges that creating the culture that is desired and maintaining effective systems requires not only the commitment of top leadership but leadership at all levels and the total involvement of empowered teams and caring individuals. In order to successfully implement the company's organisational strategy, Seriti has developed, implemented, and maintains simple non-negotiable standards for the following (Seriti, 2024):

Safety

- Pursue Seriti's Vision of Zero Harm through proactive risk management and improved use of leading indicators.
- The company's ambition at achieve Zero harm is to have no Fatalities and Life Changing injuries.
- Seriti believes that every incident, injury and/or illness is preventable and learn from incidents to prevent recurrence.
- Provide safe and healthy work conditions and prevent injury by living our values, applying the 6 Essentials to safe production, and upholding the Zivikele Pledges.

Health

- Ensure a healthy and productive workforce through the effective management and monitoring of occupational health risks and employee health status.
- Learn from monitoring occupational exposures and medical surveillance to prevent the occurrence of occupational disease.
- Pursue initiatives to reduce occupational health exposure from project design phase/equipment selection.
- Promote and motivate for wellness and lifestyle change and the management of chronic diseases.
- Delivery of effective Emergency Response Services (ERS) to all operations, prioritizing swift and efficient responses to safeguard the health and safety of the company's workforce.
- Proactively leveraging health technologies to enhance Seriti's occupational health and well-being management.

Environment

- Protect the environment and prevent pollution through sustainable resource use, including the efficient use of energy and water, minimizing waste, and setting suitable environmental objectives.
- Create environmental awareness amongst employees, contractors, customers and identified suppliers to enhance overall performance.
- Continue to be a responsible corporate citizen, participating in relevant forums and agencies involved with the stewardship of natural resources.

3 REGULATORY WATER AND WASTE MANAGEMENT FRAMEWORK

3.1 SUMMARY OF ALL WATER USES

National Water Act, 1998 (Act 36 of 1998) (NWA) and Regulations

Water use is defined broadly in the NWA and includes the following activities as described in Section 21 of the Act:

(a) taking water from a water resource;

(b) storing water;

(c) impeding or diverting the flow of water in a watercourse;

(d) engaging in a stream flow reduction activity contemplated in section 36;

(e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);

(f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;

(g) disposing of waste in a manner which may detrimentally impact on a water resource;

(h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;

(i) altering the bed, banks, course, or characteristics of a watercourse;

(j) removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and

(k) using water for recreational purposes.

In terms of Section 22(1) a person may only undertake the abovementioned water uses if it is appropriately authorised:

22(1) A person may only use water without a licence

- if that water use is permissible under Schedule 1;
- if that water use is permissible as a continuation of an existing lawful use; or
- if that water use is permissible in terms of a general authorisation issued under section 39;
- if the water use is authorised by a licence under this Act; or
- if the responsible authority has dispensed with a licence requirement under subsection (3).

The following water uses are authorised in the integrated WUL 04/B20G/ACFGIJ/2538.

Table 3: Section 21 (a) Taking water from a water resources (WUL: 04/B20G/ACFGIJ/2538)

Purpose	Properties	Total Water	Latitude	Longitude
Intake of water from mine pollution Control dam for treatment and use	Portion 17 of Farm Klipfontein 566 JR	3 612 860 m^3/a	25°56'31.97"S	28°56'05.88"E
Groundwater abstraction from a borehole	Remaining Extent and Portion 4 of Farm Klipfontein 566 JR	1 042 440 m^3/a	25°57'50.28"S	28°57'50.28"E
Abstraction of Groundwater from Pit F Borehole 1	Portion 1 of Farm Vlakfontein 569 JR	12 410 m^3/a	25° 59' 38.8" S	28° 59' 51.3" E
Abstraction of Groundwater from Pit F Borehole 2	Portion 1 of Farm Vlakfontein 569 JR	12 410 m^3/a	25° 59' 41.1"S	28° 59' 51.2" E
Abstraction of Groundwater from Pit H Borehole 1	Portion 75 of Farm Heuvelfontein 215 IR	15 695 m^3/a	26° 1'34.51" S	28°56'41.51"E
Abstraction of Groundwater from Pit H Borehole 2	Portion 36 of Farm Heuvelfontein 215 IR	2 920 m^3/a	26° 01' 27.2" S	28° 55' 46.5" E
Taking water from resource 1	Portion 4 of Farm Van Dyksput 214 IR	15 695 m^3/a	26° 02’ 38.4” S	28° 54' 54.2" E
Taking water from resource 2	Portion 52 of Farm Heuvelfontein 215 IR	2 920 m^3/a	26’ 02' 40.6" S	28° 55' 25.5" E

Table 4: Section 21 (c) and (i) impeding or diverting the flow of water in a watercourse and altering the bed, banks, course, or characteristics of a watercourse; (WUL: 04/B20G/ACFGIJ/2538)

Purpose	Properties	Dimension	Latitude	Longitude
Mining through seepage wetland (W2)	Portion 1 of farm Honingkrantz 536 JR	N/A	25°53’ 57.48’’ S	28° 57’ 54.27’’E
			25°53’ 44.45’’ S	28° 58’ 16.48’’E

Purpose	Properties	Dimension	Latitude	Longitude
			25°54’ 16.89’’ S	28° 57’ 55.36’’E
			25°54’ 13.74’’ S	28° 57’ 49.49’’E
Mining through seepage wetland (W9)	Remaining Extent of Portion 1 and Portion 13 of Farm Roodepoortje 326 JS	NIA	25°56’ 04.36’’ S	28° 58’ 46.79’’E
			25°56’ 08.56’’ S	28° 58’ 44.00’’E
			25°56’ 10.84’’ S	28° 58’ 40.00’’E
			25°56’ 13.50’’ S	28° 58’ 35.00’’E
Mining through seepage wetland (W10)	Remaining Extent of Farm Hartbeesfontein 537 JR	NIA	25°54’ 38.89’’ S	28° 57’ 35.22’’E
			25°54’ 45.28’’ S	28° 57’ 41.15’’E
			25°54’ 57.67’’ S	28° 57’ 25.74’’E
			25°54’ 13.74’’ S	28° 57’ 49.49’’E
Mining through seepage wetland (W11)	Remaining Extent of Farm Hartbeesfontein 537 JR	NIA	25°54’ 50.55’’ S	28° 57’ 01.95’’E
			25°54’ 54.56’’ S	28° 57’ 09.55’’E
			25°55’ 09.02’’ S	28° 57’ 11.05’’E
			25°55’ 08.70’’ S	28° 56’ 56.86’’E
Mining through seepage wetland (W12}	Portion 59 of Farm Klipfontein 566 JR	N/A	25°56’ 23.74’’ S	28° 56’ 57.12’’E
			25°56’ 27.43’’ S	28° 56’ 58.54’’E
			25°56’ 30.98’’ S	28° 56’ 56.32’’E
Mining through seepage wetland (W13)		NIA	25°57’ 14.25’’ S	28° 57’12.95’’ E

Purpose	Properties	Dimension	Latitude	Longitude
	Remaining Extent of Portion1 of Farm Klipfontein 566 JR		25°57’ 09.79’’ S	28° 57’ 01.07’’E
Mining through seepage wetland (W14)	Remaining Extent of Portion 1 and Portion 12 of Farm Klipfontein 566 JR	NIA	25°57’ 38.81’’ S	28° 57’ 34.06’’E
			25°57’ 54.36’’ S	28° 57’ 48.73’’E
			25°58’ 06.73’’ S	28° 57’ 49.75’’E
			25°58’ 01.20’’ S	28° 57’ 22.84’’E
Mining through seepage wetland (W15)	Remaining Extent of Portion 5 of Farm Klipfontein 566 JR	NIA	25°58’ 23.78’’ S	28° 55’ 56.44’’E
			25°58’ 29.59’’ S	28° 55’ 50.28’’E
			25°58’ 38.65’’ S	28° 55’ 55.50’’E
			25°58’ 47.94’’ S	28° 55’ 48.82’’E
			25°58’ 56.44’’ S	28° 55’ 54.08’’E
			25°59’ 00.39’’ S	28° 55’ 34.02’’E
			25°58’ 53.65’’ S	28° 55’ 20.84’’E
			25°58’ 45.92’’ S	28° 55’ 32.52’’E
Mining through seepage wetland (W16)	Portion 34 of Farm Klipfontein 568 JR	NIA	25°59’ 03.75’’ S	28° 54’ 56.97’’E
			25°59’ 07.37’’ S	28° 55’ 09.37’’E
			25°59’ 18.57’’ S	28° 55’ 16.61’’E
			25°59’ 16.42’’ S	28° 55’ 02.57’’E
Mining through seepage wetland (W18)		N/A	25°59’ 21.46’’ S	28° 56’ 19.62’’E

Purpose	Properties	Dimension	Latitude	Longitude
	Remaining Extent of Portion 6 and Portion 31 of Farm Klipfontein 568 JR		25°59’ 21.09’’ S	28° 56’ 40.24’’E
			25°59’ 26.66’’ S	28° 56’ 38.21’’E
Mining through seepage wetland (W19)	Remaining Extent of Portion 2 and Portion 9 of Farm Vlakfontein 569 JR	N/A	25°58’ 35.39’ S	28° 58’ 29.19’’E
			25°58’ 43.49’’ S	28° 58’ 33.14’’E
			25°59’ 15.92’’ S	28° 58’ 13.74’’E
			25°58’ 58.37’’ S	28° 57’ 50.04’’E
			25°58’ 32.15’’ S	28° 58’ 00.36’’E
Mining through seepage wetland (W20)	Portion 7 of Farm Klipfontein 568 JR	NIA	25°59’ 49.36’’ S	28° 56’ 50.86’’E
			25°59’ 53.75’’ S	28° 57’ 23.54’’E
			25°59’ 54.99’’ S	28° 56’ 51.28’’E
Mining through seepage wetland (W21)	Portion 9 and 10 of Farm Vlakfontein 569 JR	N/A	25°59’ 43.92’’ S	28° 57’ 59.69’’E
			25°59’ 48.52’’ S	28° 57’ 52.82’’E
			25°59’ 58.47’’ S	28° 57’ 52.32’’E
Mining through seepage wetland (W22)	Portion 9 Farm Vlakfontein 569 JR, Portion 10 Farm Vlakfontein, Portion 7 Farm Klipfontein 568 JR and Portion 13 of Farm Klipfontein 568 JR	N/A	26°00’ 06.30’’ S	28° 57’ 48.37’’E
			26°00’ 21.73’’ S	28° 57’ 40.60’’E
			26°00’ 08.46’’ S	28° 57’ 18.19’’E
			25°59’ 55.87’’ S	28° 57’ 30.93’’E
Mining through seepage wetland (W23)	Portion 13 of Farm Klipfontein 568 JR	NIA	26°00’ 11.74’’ S	28° 57’ 11.79’’E

Purpose	Properties	Dimension	Latitude	Longitude
			26°00’ 23.23’’ S	28° 57’ 16.13’’E
			26°00’ 32.04’’ S	28° 57’ 10.64’’E
			26°00’ 20.43’’ S	28° 56’ 57.80’’E
Mining through seepage wetland (W24)	Portion 12,13,14,15 and 16 of Farm Klipfontein 568 JR	N/A	26°00’ 57.04’’ S	28° 56’ 44.74’’E
			26°00’ 55.55’’ S	28° 57’ 23.56’ E
Mining through seepage wetland (W25)	Portion 11 and 17of Farm Klipfontein 568 JR	N/A	26°01’ 27.90’’ S	28° 54’ 47.11’’E
			26°01’ 23.39’’ S	28° 54’ 59.86’’E
			26°01’ 33.01’’ S	28° 55’ 02.01’’E
			26°01’ 30.67’’ S	28° 55’ 11.56’’E
			26°01’ 39.25’’ S	28° 55’ 23.05’’E
			26°01’ 47.03’’ S	28° 55’ 08.30’’E
			26°01’ 48.24’’ S	28° 55’ 23.85’’E
			26°01’ 53.32’’ S	28° 55’ 25.23’’E
Mining through seepage wetland (W26)	Portion 75 of Farm Heuvelfontein 215 IR	N/A	26°02’ 16.12’’ S	28° 56’ 30.66’’E
Mining through seepage wetland (W27)	Portion 37 of Farm Heuvelfontein 2151R	N/A	26°02’ 19.35’’ S	28° 56’ 08.76’’E
Mining through seepage wetland (W28)	Remaining Extent of Farm Bankfontein 216 IR	N/A	26°01’ 00.37’’ S	28° 58’ 43.80’’E
			26°00’ 58.62’’ S	28° 59’ 10.02’’E
			26°00’ 54.71’’ S	29° 00’ 17.08’’E

Purpose	Properties	Dimension	Latitude	Longitude
			26°00’ 29.62’’ S	29° 00’ 41.60’’E
			26°00’ 28.60’’ S	29° 01’ 05.61’’E
			26°00’ 24.16’’ S	29° 01’ 09.52’’E
			26°00’ 21.38’’ S	29° 01’ 09.74’’E
			26°00’ 17.05’’ S	29° 00’ 57.88’’E
Construction of conveyor between Tip 1 and Tip 2	Remaining Extent Portion 13 of Farm Klipfontein 566 JR	Not designed yet	25°56’ 55.49 ‘’S	28° 56’ 32.70’’E
Construction of admin area pollution control dam in a portion of a wetland (PCD1)	Remaining Extent of Farm Hartbeesfontein 537 JR	N/A	25°54’ 52.92 ‘’S	28° 57’ 00.82’’E
Construction of pollution control dam (Pit water transfer dam 3) in a portion of wetland (PWTD3)	Remaining Extent of Farm Hartbeesfontein 537 JR	N/A	25°55’ 01.82 ‘’S	28° 57’ 05.99’’E
Construction of pollution control dam (Pit water transfer dam 4) on an edge of wetland (PWTD 4)	Remaining Extent of Portion 13 of Farm Klipfontein 566 JR and Portion 59 of Farm Klipfontein 566 JR	N/A	25°56’ 23.43 ‘’S	28° 56’ 43.43’’E
Construction of pollution control Dam (Pit water transfer Dam 5) within wetland (PWTD 5)	Remaining Extent of Portion 1 of Klipfontein 566 JR	N/A	25°57’ 08.36 ‘’S	28° 56’ 51.97’’E
Construction of Haul road across watercourse (HRC1)	Portion 1 of Farm Honingkrantz 536 JR	3 X 2 500 X 1 500 box culverts	25°54’ 12.28 ‘’S	28° 57’ 45.77’’E
Construction of Haul road across watercourse (HRC2)	Portion 1 of Farm Honingkrantz 536 JR	2 X 2 500 X 1 500 box culverts	25°54’ 21.46 ‘’S	28° 57’ 33.55’’E

Purpose	Properties	Dimension	Latitude	Longitude
Construction of Haul road across watercourse (HRC3)	Remaining Extent of Farm Hartbeesfontein 537 JR	1 X 2 500 X 1 500 box culverts	25°54’ 35.60 ‘’S	28° 57’ 23.86’’E
Construction of Haul road across watercourse (HRC4}	Portion 59 of Farm Klipfontein 566 JR	3 X 2 500 X 1 500 box culverts	25°56’ 33.29 ‘’S	28° 56’ 50.01’’E
Construction of Haul road across watercourse (HRC5)	Remaining Extent of Portion 13 of Farm Klipfontein 566 JR	2 X 1 500 X 900 box culverts	25°56’ 56.64 ‘’S	28° 56’ 48.27’’E
Construction of Haul road across watercourse (HRC6)	Remaining Extent of Portion 13 of Farm Klipfontein 566 JR	2 X 1 500 X 900 box culverts	25°57’ 01.00 ‘’S	28° 57’ 05.20’’E
Construction of Haul road across watercourse (HRC7}	Remaining Extent of Portion 13 of Farm Klipfontein 566 JR	2 X 1 500 X 900 box culverts	25°57’ 07.28 ‘’S	28° 57’ 03.59’’E
Construction of Haul road across watercourse (HRC8)	Remaining Extent of Portion 1 of Farm Klipfontein 566 JR	4 X 3 000 X 1 200 box culverts	25°57’ 16.00 ‘’S	28° 56’ 57.33’’E
Construction of Haul road across watercourse (HRC9)	Remaining Extent of Portion 1 of Farm Klipfontein 566 JR	2 x 900 mm diameter pipes	25°57’ 40.30 ‘’S	28° 56’ 39.32’’E
Construction of Haul road across watercourse (HRC10)	Remaining Extent of Portion 1 of Farm Klipfontein 566 JR	2x 900 mm diameter pipes	25°57’ 45.69 ‘’S	28° 56’ 36.34’’E
Construction of Haul road across watercourse (HRC11)	Portion 66 of Farm Klipfontein 566 JR	2 x 900 mm diameter pipes	25°57’ 50.94 ‘’S	28° 56’ 34.59’’E

Purpose	Properties	Dimension	Latitude	Longitude
Construction of Haul road across watercourse (HRC12)	Portion 66 of Farm Klipfontein 566 JR	2 x 900 mm diameter pipes	25°57’ 52.39 ‘’S	28° 56’ 31.45’’E
Construction of Haul road across watercourse (HRC13)	Portion 66 of Farm Klipfontein 566 JR	2 x 900 mm diameter pipes	25°57’ 52.56 ‘’S	28° 56’ 27.14’’E
Construction of Haul road across watercourse (HRC14)	Portion 66 of Farm Klipfontein 566 JR	2 x 900 mm diameter pipes	25°57’ 52.70 ‘’S	28° 56’ 22.83’’E
Construction of Haul road across watercourse (HRC15)	Portion 66 of Farm Klipfontein 566 JR	2 X 1 800 X 1 200 box culverts	25°57’ 58.33 ‘’S	28° 55’ 50.58’’E
Construction of Haul road across watercourse (HRC16)	Portion 66 of Farm Klipfontein 566 JR	2 X 1 800 X 1 200 box culverts	25°58’ 14.72 ‘’S	28° 55’ 38.89’’E
Construction of Haul road across watercourse (HRC17)	Portion 66 of Farm Klipfontein 566 JR	4 X 1 800 X 1 500 box culverts	25°58’ 34.64 ‘’S	28° 55’ 26.23’’E
Develop a borrow pit partially in a wetland (BP1)	Remaining Extent of Portion 13 of Farm Klipfontein 566 JR	N/A	25°56’ 46.46’’ S	28° 56’ 25.38’’E
			25°56’ 43.62’’ S	28° 56’ 47.44’’E
			25°56’ 51.10’’ S	28° 57’ 06.87’’E
			25°56’ 56.98’’ S	28° 56’ 50.59’’E
Develop a borrow pit on edge of wetland (BP2)	Remaining Extent of Portion 1 of Farm Klipfontein 566 JR	N/A	25°56’ 58.70’’ S	28° 56’ 33.54’’E
			25°57’ 14.35’’ S	28° 56’ 41.86’’E

Purpose	Properties	Dimension	Latitude	Longitude
			25°57’ 29.90’’ S	28° 56’ 34.09’’E
			25°57’ 13.45’’ S	28° 56’ 27.67’’E
Develop a borrow pit partially in a wetland (BP3)	Portion 12, 4 and Remaining Extent Portion 1 of Farm Klipfontein 566 JR	N/A	25°57’ 35.18’’ S	28° 57’ 52.05’’E
			25°57’ 41.53’’ S	28° 57’ 57.91’’E
			25°57’ 47.40’’ S	28° 57’ 50.36’’E
			25°57’ 41.43’’ S	28° 57’ 44.27’’E
Construction of parking area and haul road to discard dump in portion of wetland	Remaining Extent of Farm Hartbeesfontein 537JR	N/A	25°56’ 58.70’’ S	28° 56’ 33.54’’E
			25°57’ 14.35’’ S	28° 56’ 41.86’’E
			25°57’ 29.90’’ S	28° 56’ 34.09’’E
			25°57’ 13.45’’ S	28° 56’ 27.67’’E
Pit F proximity of mining and related infrastructure to the regulated area of a watercourses	Portion 6 of Prinshof 2 IS; Portion 1 and Portion 4 of Farm Vlakfontein 569 JR; and Portion 11 of Farm Bankfontein 216 IR	960 Ha	26° 00' 15.4" S	29° 01' 3.10" E
			26° 0' 42.9" S	28° 58' 45.4" E
			26° 0' 56.5" S	29° 0' 17.00" E
			25° 59' 4.4" S	29° 0' 00.00" E
Pit H proximity of mining and related infrastructure to the regulated area of a watercourses	Portion 12 and Portion 18 of Farm Klipfontein 568 JR; Portion 57 and Portion 75 of Farm Heuvelfontein 215 IR; and Portion 4 of Farm Van Dyksput 214 IR	790 Ha	26° 2' 32.1" S	28° 56' 42.4" E
			26° 1' 7.3" S	28° 56' 34.9" E
			26° 1' 11.2" S	28° 54' 30.9" E
			26° 2' 2.2" S	28° 54' 42.7" E

Table 5: Section 21 (g) disposing of waste in a manner which may detrimentally impact on a water resource (WUL: 04/B20G/ACFGIJ/2538)

Purpose	Properties	Capacity	Latitude	Longitude
Settling Dam 1 for storing water from Borrow Pit 1	Farm Klipfontein 566 JR Portion 6; Farm Hartbeesfontein 537 JR	35 770 m^3/a	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Settling Dam 2 for storing water from Borrow Pit 2	Farm Klipfontein 566 JR Portion 6; Farm Hartbeesfontein 537 JR	35 770 m^3/a	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Bulk Water Dam 1 (BW1), raw water for use as process water at the coal washing plant	Farm Klipfontein 566 JR Portion 6; Farm Hartbeesfontein 537 JR	10Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Pollution water transfer Dam 1 (PWTD 1) for water management system	Farm Hartbeesfontein 537 JR	5Ml	25°54'19.01"S	28°57'23.99"E
			25°54'19.94"S	28°57'26.23"E
			25°54'21.99"S	28°57'25.18"E
			25°54'21.05"S	28°57'22.91"E

Purpose	Properties	Capacity	Latitude	Longitude
PWTD 2 for water management system	Farm Hartbeesfontein 537 JR	5Ml	25°54'33.95" S	28°7'14.29"E
			25°54'34.88"S	28°57'16.53"E
			25°54'36.93"S	28°57'15.49"E
			25°54'39.24"S	28°57'13.21"E
PWTD 3 for water management system	Farm Hartbeesfontein 537 JR	5Ml	25°5'00.53"S	28°57'04.97"E
			25°55'00.88"S	28°57'07.45"E
			25°55'03.11"S	28°57'07.01"E
			25°55'02.76"S	28°57'04.58"E
PWTD 4 for water management system	Portion 59 and Remaining Extent/13 Farm Klipfontein 566 JR	5Ml	25°56'21.85"S	28°56'43.28''E
			25°56'23.30"S	28°56'45.20''E
			25°56'25.01"S	28°56'43.57''E
			25°56'23.58"S	28°56'41.68''E
PWTD 5 for water management system	Remaining Extent Portion 1 Farm Klipfontein 566 JR	5Ml	25°57'06.80"S	28°56'51.64" E
			25°57'08.06"S	28°56'53.72" E
			25°57'09.92" S	28°56'52.30" E
			25°57'08.67" S	28°56'50.25" E
PWTD 6 for water management system	Remaining Extent Portion 1 Farm Klipfontein 566 JR	5Ml	25°57'27.74" S	28°56'37.71" E
			25°57'29.03" S	28°56'39.76" E

Purpose	Properties	Capacity	Latitude	Longitude
			25°57'30.89" S	28°56'38.33" E
			25°57'29.58" S	28°56'36.30" E
PWTD 7 for water management system	Portion 66 Farm Klipfontein 566 JR	5Ml	25°57'43.89" S	28°55'49.85" E
			25°57'43.89" S	28°55'50.82" E
			25°57'46.82" S	28°55'48.49" E
			25°57'44.76" S	28°55'47.54" E
PWTD 8 for water management system	Portion 66 Farm Klipfontein 566 JR	5Ml	25°58'27.36" S	28°55'19.74" E
			25°58'28.27" S	28°55'22.03" E
			25°58'30.33" S	28°55'20.99" E
			25°58'29.44" S	28°55'18.73" E
Pollution Control Dam 1 (Admin area PCD) for water management system	Farm Hartbeesfontein 537 JR; Farm Klipfontein 566 JR	15Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Pollution Control Dam 2 (PCD at Tip 2) for water management system	Remaining Extent of Portion 1 Farm Klipfontein 566 JR	10Ml	25°57'05.82"S	28°56'33.89" E
			25°57' 08.75"S	28°56'38.10" E
			25°57'11.65" S	28°56'37.77" E
			25°57'12.30" S	28°56'35.19" E

Purpose	Properties	Capacity	Latitude	Longitude
PCD3 (Plant area PCD) for water management system	Remaining Extent of Hartbeesfontein 537 JR; Farm Klipfontein 566 JR	36Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
PCD4 (Balancing Dam at waste treatment plant) for water management system	Farm Hartbeesfontein 537 JR Portion 6; Klipfontein 566 JR	100Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
1 200 Ml Dewatering Reservoir for water management system	Farm Hartbeesfontein 537 JR Portion 6; Klipfontein 566 JR	1200Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Final Void Dam (in-pit water storage in Final Void Dam)	Farm Hartbeesfontein 537 JR; Farm Klipfontein 566 JR	1000Ml	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
PCD at discard dump	Portion 59 & 60 Farm Klipfontein 566JR	5Ml	25°56'26.98" S	28°57'06.41" E
			25°56'28.76" S	28°57'07.71" E

Purpose	Properties	Capacity	Latitude	Longitude
			25°56'29.76" S	28°57'06.04" E
			25°55'27.98" S	28°57'04.74" E
Discard dump	Farm Hartbeesfontein 537 JR: Farm Klipfontein 566JR	When required	25°53'40.63"S	28°56'38.04"E
			25°53'43.84"S	28°58'16.79"E
			25°58'29.21"S	28°57'11.29"E
			25°58'8.14"S	28°55'44.97"E
Dust Suppression on haul roads and stockpiles	Hartbeesfontein 537 JR; Farm Klipfontein 566 JR; Farn Klipfontein 568 JR; Farm Vlakfontein 569 JR; Prinshof 2 IS	219 000 m^3/a	25°53'42.19"S	28°56'37.56"E
			26° 0'34.50"S	29° 0'42.04"E
			26° 0'39.98"S	28°56'32.82"E
			25°57'51.71"S	28°55'45.19"E
			25°55'3.19"S	28°56'23.48"E
			25°57'5.52"S	28°59'16.87"E
			25°58'57.90"S	28°54'55.55"E
In-pit discard disposal	Compartment 1: Remaining extent of Farm Honingkrantz 536 JR; Portion 12, remaining extent/1,23/1 & 24/1 Farm Roodepoortje 326 JS; Portion 62 Farm Klipfontein 566 JR; Remaining Extent of Portion 8/2Farm Vlakfontein 569 JR	3.7 000 000 tonnes	25° 53' 27.910" S	28° 58' 59.170" E
			25° 55' 11.080" S	29° 0' 4.370" E
			25° 55' 56.450" S	28° 58' 43.230" E
			25° 57' 22.910" S	28° 58' 17.890" E
			25° 57' 20.040" S	28° 57' 56.200" E

Purpose	Properties	Capacity	Latitude	Longitude
			25° 55' 22.700" S	28° 58' 18.090" E
			25° 53' 41.676" S	28° 58' 36.768" E
In-pit discard disposal	Compartment 2: Portion 2, 5, 9 & Remaining extent of Farm 8/2 & 16/8 Farm Vlakfontein 569 JR; Portion 55/1, 12/4, Remaining Extent 1, remaining Extent 4 & Portion 66 Farm Klipfontein 566 JR, Portion 2,5,6,7,12,13,15,16,23,30,31,32,33,34,35 & 36 Farm Klip	3.7 000 000 tonnes	25° 57' 25.760" S	28° 58' 19.440" E
			25° 57' 57.580" S	28° 58' 42.550" E
			25° 59' 22.130" S	28° 58' 52.760" E
			26° 0' 44.650" S	28° 57' 47.610" E
			26° 0' 49.220" S	28° 56' 42.980" E
			25° 59' 37.210" S	28° 55' 11.960" E
			25° 58' 59.440" S	28° 54' 55.070" E
			25° 58' 46.890" S	28° 55' 29.030" E
			25° 58' 10.880" S	28° 55' 47.190" E
			25° 57' 22.440" S	28° 58' 0.480" E
			25° 57' 32.830" S	28° 58' 29.710" E
In-pit discard disposal	Compartment 3: Remaining Extent, Portion 5, Remaining Extent of Portion 6 Farm Prinshof 2 IS; Portion 7/4, Remaining/1 and Remaining Extent/1/1 Farm Vlakfontein 569 JR	3.7 000 000 tonnes	25° 59' 39.010" S	28° 59' 32.070" E
			26° 0' 22.820" S	29° 1' 7.780" E
			26° 0' 53.650" S	29° 0' 30.340" E
			26° 0' 59.550" S	28° 59' 59.290" E
			26° 0' 54.070" S	28° 59' 37.580" E

Purpose	Properties	Capacity	Latitude	Longitude
			26° 0' 43.950" S	28° 58' 38.560" E
Overburden Stockpile	Remaining Extent of Farm Hartbeesfontein 537 JR	2.5 million BCMs	25° 53' 45.060" S	28° 56' 40.870" E
			25° 54' 52.850" S	28° 56' 49.000" E
			25° 54' 11.340" S	28° 56' 43.810" E
			25° 54' 54.650" S	28° 56' 47.430" E
			25° 54' 57.270" S	28° 56' 39.880" E
			25° 54' 46.780" S	28° 56' 29.850" E
			25° 54' 18.780" S	28° 57' 19.450" E
ROM Coal Stockpile	Portion 60 Farm Klipfontein 566 JR	480000 tons/a	25° 55' 34.550" S	28° 56' 47.170" E
			25° 55' 52.560" S	28° 56' 54.860" E
			25° 55' 55.930" S	28° 56' 51.790" E
			25° 55' 37.750" S	28° 56' 38.230" E
Emergency ROM Stockpile (EROM 1)	Portion 60 Farm Klipfontein 566 JR	60 000 tons	25° 55' 44.110" S	28° 57' 2.720" E
			25° 55' 47.110" S	28° 57' 14.750" E
			25° 55' 53.820" S	28° 57' 12.570" E
			25° 55' 50.970" S	28° 57' 0.650" E
Emergency ROM Stockpile (EROM 2)	Remaining Extent Portion 1 and Remaining Extent Portion 13 of Farm; Klipfontein 566 JR	60 000 tons	25° 56' 55.810" S	28° 57' 8.500" E
			25° 56' 58.780" S	28° 57' 13.560" E

Purpose	Properties	Capacity	Latitude	Longitude
			25° 57' 9.490" S	28° 57' 6.400" E
			25° 57' 6.590" S	28° 57' 1.180" E
Pit H Conservancy tank	Portion 75 of the Farm Heuvelfontein 215 IR	16 425 m³/a	26° 01'36.44"S	28°56'40.73"E
			26° 01'36.46"S	28° 56'41.04"E
			26° 01'36.77"S	28° 56'41.01 "E
			26° 01'36.75"S	28° 56'40.70"E
			26° 01'36.61 "S	28° 56'40.87"E
Pit H Eastern Pollution Control Dam	Portion 12 of the Farm Klipfontein 568 JR	Capacity = 45 000 m³ Volume = 158 410 m³/a	26° 01'36.44"S	28°56'40.73"E
			26° 01'36.46"S	28° 56'41.04"E
			26° 01'36.77"S	28° 56'41.01 "E
			26° 01'36.75"S	28° 56'40.70"E
			26° 01'36.61 "S	28° 56'40.87"E
Pit H Western Pollution Control Dam	Portion 18 of the Farm Klipfontein 568 JR	Capacity = 65 000 m³ Maximum volume = 3 672 265 m³/a	26°01'10.17"S	28°56'36.27"E
			26' 01'9.70"S	28'56'39.02"E
			26° 01'10. 93"S	28'56'39.27"E
			26' 01'11.38"S	28'56'36. 53"E
			26' 01'10.55"S	28'56'37. 64" E
Pit H Dust suppression			26° 01'12.09"S	28° 56' 42.4"E

Purpose	Properties	Capacity	Latitude	Longitude
	Portion 12 & Portion 18 of the Farm Klipfontein 568 JR; Portion 57 & Portion 75 of the Farm Heuvelfontein 215 IR; and Portion 4 of the Farm Van Dyksput 214 IR	517935 m^3/a	26° 01'10.23"S	28° 54'34.011"E
			26° 01'11.05"S	28° 54' 35.01"E
			26° 01'12.91"S	28° 54'33.15"E
			26° 01'11.57"S	28° 54'33.57"E
Pit H In-pit mineral residue disposal	Portion 16 & Portion 18 of the Farm Klipfontein 568 JR; Portion 75 of the Farm Heuvelfontein 215 IR; and Portion 4 of the Farm Van Dyksput 214 IR;	2628000 Tpa	26° 02' 32.1" S	28° 56' 42.4" E
			26° 01'07.30"S	28° 56' 34.9" E
			26° 01'11.20"S	28° 54' 30.9" E
			26° 02'02.20"S	28° 54' 42.7" E
			26° 01'37.82"S	28° 55' 36.37" E
Pit F Dust suppression	Portion 6 of the Prinshof 2 IS; Portion 1 & 4 of Farm Vlakfontein 569 JR; and Portion 11 of Farm Bankfontein 216 IR	225 935 m^3/a	25° 59' 3.6" S	29° 00' 00.6" E
			26° 00' 15.3" S	29° 01' 01.0" E
			26° 00' 57.4" S	29° 00' 16.3" E
			26° 00' 40.8" S	28° 58' 41.8" E
Pit F Pollution Control Dam (East)	Portion 6 of the Prinshof 2 IS	Capacity = 160 000 m^3	25' 59' 55.4" S	29' 00' 50.9" E
			25° 59' 48.2" S	29' 00' 50.3" E
			25° 59' 48.6" S	29' 00' 54.4" E
			26' 00' 2.4" S	29' 0' 51.5" E
			26° 00' 1.4" S	29' 00' 47.4" E

Purpose	Properties	Capacity	Latitude	Longitude
Pit F Pollution Control Dam (West)	Portion 1 of the Farm Vlakfontein 569 JR	Capacity = 20 000 m³	25’ 59' 35.5" S	28’ 59' 49.2” E
			25' 59' 34.2” S	28’ 59’ 49.3" E
			25’ 59’ 35.5" S	28’ 59’ 50.5" E
			25’ 59' 36.7" S	28’ 59' 49.2" E
			25’ 59' 35.6" S	28’ 59' 47.6" E

Table 6: Section 21 (j) removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people (WUL: 04/B20G/ACFGIJ/2538)

Purpose	Properties	Capacity (m^3/a)	Latitude	Longitude
Dewatering of Borrow Pit 1	Remaining Extent of Farm Hartbeesfontein 537 JR	35 770	25°54’59.99’’S	28°57’11.52’’E
Dewatering of Borrow Pit 2	Portion 59 and 60 of Klipfontein 566 JR	35 770	25°56’11.30’’S	28°56’57.60’’E
Progressive dewatering of New Largo Pit D	Remaining Extent and Portion 4 of Farm Klipfontein 566 JR	1 042 440	25°59’00.49’’S	28°55’03.01’’E
Progressive dewatering of New Largo Main Mine via Borehole 1	Remaining Extent and Portion 1 of Klipfontein 566 JR	1 042 440	25°57’26.29’’S	28°57’14.15’’E
Progressive dewatering of New Largo Main Mine via Borehole 2	Remaining Extent and Portion 1 of Klipfontein 566 JR	1 042 440	25°58’02.35’’S	28°56’43.94’’E
Progressive dewatering of New Largo Main Mine via Borehole 3	Portion 66 of Farm Klipfontein 566 JR	1 042 440	25°58’3.53’’S	28°56’06.38’’E

Purpose	Properties	Capacity (m^3/a)	Latitude	Longitude
Progressive dewatering of New Largo Main Mine via Borehole 4	Portion 2 of Farm Vlakfontein 569 JR	82 800	25°58’38.21’’S	28°58’09.77’’E
Progressive dewatering of New Largo Main Mine via Borehole 5	Portion 2 of Farm Vlakfontein 569 JR	82 800	25°59’05.74’’S	28°58’40.51’’E
Progressive dewatering of New Largo Main Mine via Borehole 6	Portion 5 of Farm Vlakfontein 569 JR	82 800	25°58’46.58’’S	28°57’20.34’’E
Groundwater abstraction from Pit F	Portion 5 and Portion 1 of Farm Vlakfontein 569 JR;	82 800	26°01’08.36’’S	28°59’28.78’’E
Groundwater abstraction	Portion 9 of Farm Vlakfontein 569 JR	82 800	25°59’49.60’’S	28°57’48.83’’E
Dewatering of Pit H in a progressive manner	Portion 16 & Portion 18 of Farm Klipfontein 568 JR; Portion 75 of Farm Heuvelfontein 215 IR; Portion 4 of Farm Van Dyksput 214 IR	10000	26° 01' 15.2" S	28° 56' 24.6" E
			26° 02' 33.9" S	28° 56' 37.5" E
			26° 01' 14.0" S	28° 54' 42.2" E
			26° 01' 46.2" S	28° 54' 51.2" E
			26° 01' 37.82" S	28° 55' 36.37" E
Dewatering of Pit F in a progressive manner	Portion 1 of Farm Vlakfontein 569 JR	726 715	26° 00'17.06"S	28° 59'46.36"E

Table 7: Section 21 (f) discharging waste or water containing waste into a water resource (WUL: 04/B20G/ACFGIJ/2538)

Water use description	Property (is)	Volume (m^3/a)	Latitude	Longitude
Pit F - Discharge from the wastewater treatment plant into an unnamed Tributary of the Saalboomspruit River	Portion 1 of the Farm Vlakfontein 569 JR	22 265	25° 59' 32.8" S	28° 59' 50.9" E
Pit H - Discharge from the wastewater treatment plant into an unnamed Tributary of the Wilger River	Portion 12 of the Farm Klipfontein 568 JR	16 425	26° 01' 09.3" S	28° 56' 39.7" E

Table 8: Section 21 (a) Taking water from a water resources (WUL: 04/B20F/ACFGI/2310)

Activity	Properties	Total Volume (m^3/a)	Latitude	Longitude
Abstraction from old underground workings, this water will be treated in a water treatment plant. Abstraction will take place via 3 boreholes.	Klipfontein 566 JR, Portion 4 RE	144000 Borehole 1	25° 57' 57.800" S	28° 57' 51.100" E
Abstraction from old underground workings, this water will be treated in a water treatment plant. Abstraction will take place via 3 boreholes.	Klipfontein 566 JR, Portion 1 RE	144000 Borehole 2	25° 57' 33.800" S	28° 57' 14.100" E
Abstraction from old underground workings, this water will be treated in a water treatment plant. Abstraction will take place via 3 boreholes.	Klipfontein 566 JR, Portion 1 RE	144000 Borehole 3	25° 58' 9.900" S	28° 56' 43.900" E
Abstraction of water from 3 farm dams for construction purposes.	Hartbeestfontein 537 JR, RE	58400 DAM 1	25° 54' 52.800" S	28° 57' 36.600" E

Activity	Properties	Total Volume (m^3/a)	Latitude	Longitude
Abstraction of water from 3 farm dams for construction purposes.	Hartbeestfontein 537 JR, RE	58400 DAM 2	25° 54' 51.100" S	28° 57' 0.500" E
Abstraction of water from 3 farm dams for construction purposes.	Klipfontein 566 JR, Portion 59	58400 DAM 3	25° 56' 15.800" S	28° 56' 43.200" E
Abstraction of water from a spring for potable use	Hartbeestfontein 537 JR, RE	21 900	25° 54' 52.800" S	28° 57' 36.600" E

Table 9: Section 21 (c): impeding or diverting the flow of water in a watercourse and Section 21 (i): altering the bed, banks, course or characteristics of a watercourse (WUL: 04/B20F/ACFGI/2310)

Activity	Properties	Heigh (m)	Width (m)	Length (m)	Latitude	Longitude
Phola-Kusile Conveyor watercourse crossing 1: Crossing of a wetland	Klipfontein 568 JR, Portion 2 RE crossing of a wetland	2.2	16	66	26° 0' 51.400" S	28° 56' 40.300" E
Phola-Kusile Conveyor watercourse crossing 2: Crossing an unnamed tributary of Wilge River	Klipfontein 568 JR, Portion 1 RE crossing of a wetland	2.2	16	271	26° 0' 42.700" S	28° 56' 14.800" E
Phola-Kusile Conveyor watercourse crossing 3: Crossing a wetland associated with Holfonteinspruit	Klipfontein 568 JR, Portion 36 RE crossing of a wetland	2.2	16	140	26° 0' 2.400" S	28° 55' 25.900" E
Phola-Kusile Conveyor watercourse crossing 4: Crossing Klipfonteinspruit	Klipfontein 566 JR, Portion 66 RE crossing of a wetland	2.2	16	140	25° 58' 15.800" S	28° 55' 14.100" E

Activity	Properties	Heigh (m)	Width (m)	Length (m)	Latitude	Longitude
Phola-Kusile Conveyor watercourse crossing 5: Crossing Klipfonteinspruit	Klipfontein 566 JR, Portion 42 RE crossing of a wetland	2.2	16	271	25° 56' 59.500" S	28° 55' 57.400" E
Phola-Kusile Conveyor watercourse crossing 7: Crossing a wetland	Klipfontein 566 JR, Portion 58 RE crossing of a wetland	2.2	16	40	25° 55' 42.500" S	28° 55' 47.600" E
Service Road 1 crossing: Crossing a wetland associated with Saalklapspruit	Klipfontein 568 JR, Portion 12 RE crossing of a wetland	0.5	4	66	26° 0' 42.700" S	28° 56' 14.800" E
Service Road 2 crossing: Crossing unnamed tributary of Wilge River	Klipfontein 568 JR, Portion 1 RE crossing of a wetland	0.5	4	499	26° 0' 42.700" S	28° 56' 14.800" E
Service Road 3 crossing: Crossing unnamed tributary of Wilge River	Klipfontein 568 JR, Portion 36 RE crossing of a wetland	0.5	4	271	26° 0' 2.400" S	28° 55' 25.900" E
Service Road 4 crossing: Crossing unnamed tributary of Wilge River	Klipfontein 568 JR, Portion 36 RE crossing of a wetland	0.5	4	140	25° 58' 15.800" S	28° 55' 14.100" E
Service Road 5 crossing: Crossing unnamed tributary of Wilge River	Klipfontein 566 JR, Portion 17/13 RE crossing of a wetland	0.5	4	140	25° 57' 1.500" S	28° 56' 9.400" E
Service Road 7 crossing: Crossing unnamed tributary of Wilge River	Klipfontein 566 JR, Portion 58 RE crossing of a wetland	0.5	4	40	25° 55' 42.500" S	28° 55' 47.600" E
Mobile treatment plant treated water release point, which may have an impact on the river	Klipfontein 566 JR, Portion 17/13	-	-	-	25° 56' 29.2" S	28° 56' 10.4" E

Table 10: Section 21 (g): disposing of waste in a manner which may detrimentally impact on a water resource. (WUL: 04/B20F/ACFGI/2310)

Activity	Waste Description		Operational Storage Capacity (m^3/a)	Latitude	Longitude
Coal transfer Evaporation dam 1	Capture dirty runoff as a result of dust suppression from transfer station footprint area	Bankfontein 216 IR, RE	300	26° 03' 16.6" S	28° 59' 52.5" E
Coal transfer Evaporation dam 2		Bankfontein 216 IR, Portion 7	250	26° 01' 53.4" S	28° 59' 46.6" E
Coal transfer Evaporation dam 3		Klipfontein 568 JR, Portion 14 RE	140	26° 01' 08.3" S	28° 57' 31.2" E
Coal transfer Evaporation dam 4		Klipfontein 568 JR, Portion 13	320	26° 00' 56.3" S	28° 57' 32.5" E
Coal transfer Evaporation dam 5		Klipfontein 568 JR, Portion 33	90	25° 58' 52.1" S	28° 54' 46.0" E
Coal transfer Evaporation dam 6		Hartbeesfontein 537 JR, RE	270	25° 55' 25.7" S	28° 56' 29.9" E
Coal transfer Evaporation dam 7		Hartbeesfontein 566 JR, Portion 58	400	25° 55' 53.2" S	28° 55' 43.6" E
Brine disposal facility	Storage of the brine that will be generated during the treatment process	Klipfontein 566 JR, Portion 17/13	5 Ml or $5000m^3/a$	25° 56' 31.7" S	28° 56' 15.7" E

Activity	Waste Description		Operational Storage Capacity (m^3/a)	Latitude	Longitude
Gypsum waste storage facility	Storage of the Gypsum cake that will be generated during the treatment process	Klipfontein 566 JR, Portion 17/13	7 300 tons	25° 56' 33”1" S	28° 56' 11.2" E
Pre-treatment storage facility	Decant water stored before it is sent to the mobile treatment plant	Klipfontein 566 JR, Portion 17/13	1 277 500	25° 57' 23.8" S	28° 57' 03.8” E

Table 11: Section 21 (g): disposing of waste in a manner which may detrimentally impact on a water resource. (WUL: 04/B20F/ACFGI/2310) (Dust Suppression)

Waste Description	Volume (m^3)	Properties	Latitude	Longitude
Dust suppression on Coal Transfer Station Evaporation dam 1	26072	Bankfontein 216 IR, Portion RE	26° 3' 16.600" S	28° 59' 52.500" E
Dust suppression on Coal Transfer Station Evaporation dam 2	26072	Bankfontein 216 IR, Portion 7	26° 1' 53.400" S	28° 59' 46.600" E
Dust suppression on Coal Transfer Station Evaporation dam 3	26072	Klipfontein 568 JR, RE portion 14	26° 1' 8.300" S	28° 57' 31.200" E
Dust suppression on Coal Transfer Station Evaporation dam 4	26072	Klipfontein 568 JR, portion 13	26° 0' 56.300" S	28° 57' 32.500" E
Dust suppression on Coal Transfer Station Evaporation dam 5	26072	Klipfontein 568 JR, Portion 33	25° 58' 52.100" S	28° 54' 46.000" E
Dust suppression on Coal Transfer Station Evaporation dam 6	26072	Hartbeesfontein 537 JR, RE	25° 55' 25.700" S	28° 56' 29.900" E
Dust suppression on Coal Transfer Station Evaporation dam 7	26072	Hartbeesfontein 566 JR, Portion 58	25° 55' 53.200" S	28° 55' 43.600" E
	Total: 182 504			

Waste Description	Volume (m^3)	Properties	Latitude	Longitude
Dust suppression using treated water from the sewage treatment	1960	Hartbeesfontein 537 JR, Portion 6 and RE; Klipfontein 568 JR, Portion 13, 14 and 32; Bankfontein 216 IR, RE and Portion 7	26° 3' 16.600" S	28° 59' 52.500" E
			26° 1' 53.400" S	28° 59' 46.600" E
			26° 1' 8.300" S	28° 57' 31.200" E
			26° 0' 56.300" S	28° 57' 32.500" E
			25° 58' 52.100" S	28° 54' 46.000" E
			25° 55' 25.700" S	28° 56' 29.900" E
			25° 55' 53.200" S	28° 55' 43.600" E

Section 21 (f): Discharging waste or water containing waste into a water resource ((WUL: 04/B20F/ACFGI/2310)

The licence authorises the discharge to an unnamed tributary of the Klipfonteinspruit of a maximum quantity of 1 277 500 m^3/a of treated mine water per annum.

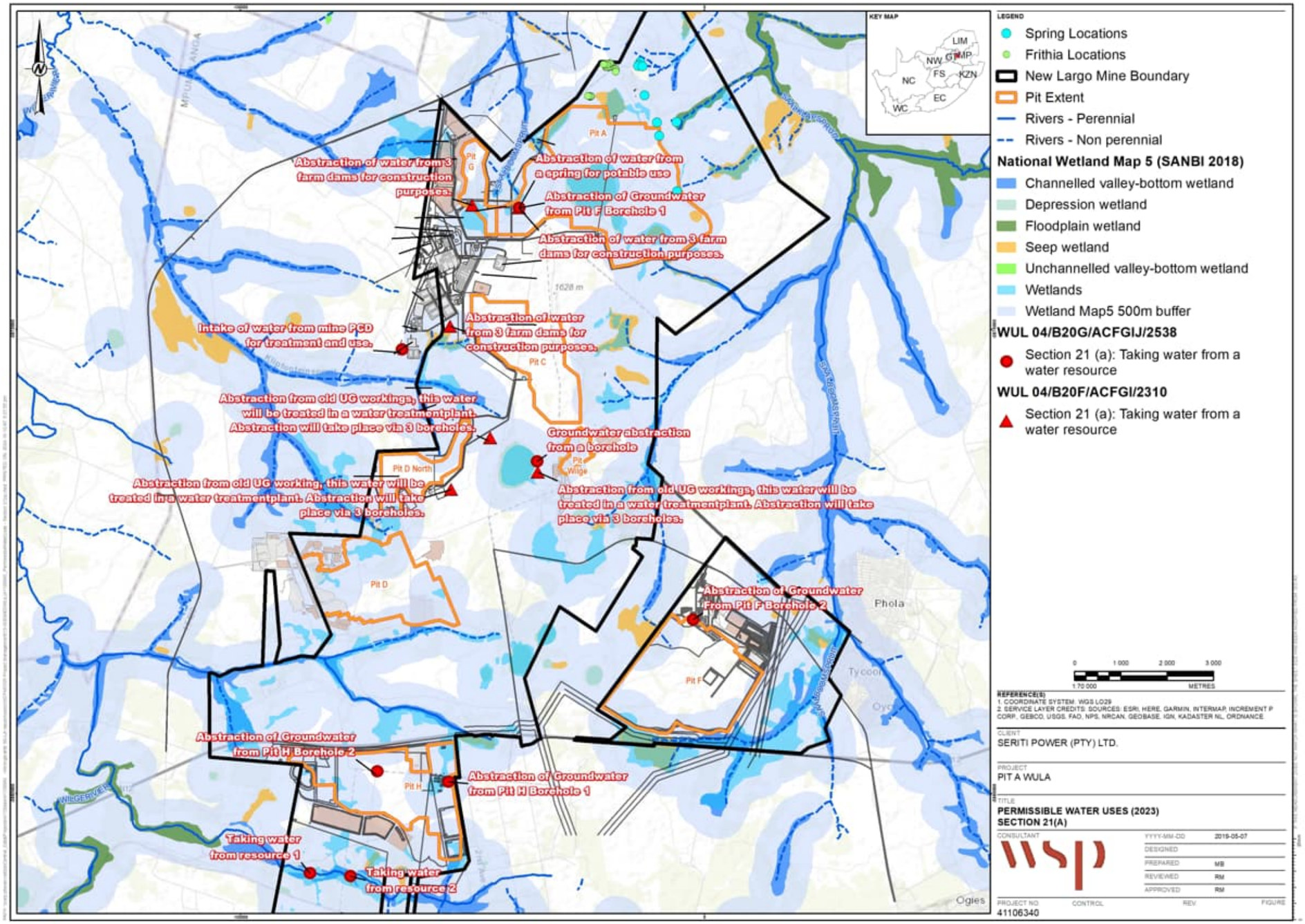


Figure 7: Section 21 (a) - WUL 04/B20G/ACFGIJ/2538 and WUL 04/B20F/ACFGI/2310

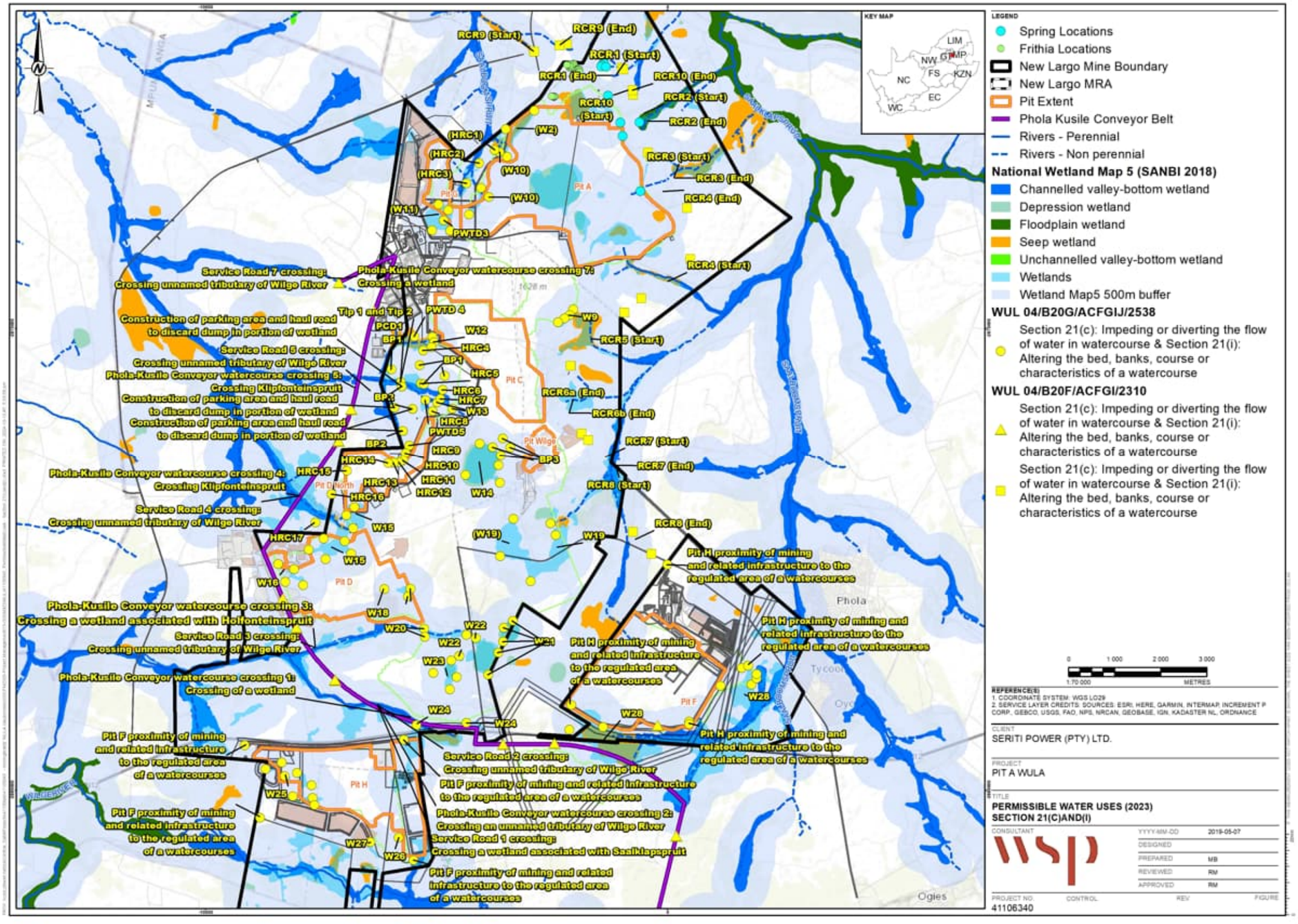


Figure 8: Section 21 (c) and (i) - WUL 04/B20G/ACFGIJ/2538 and WUL 04/B20F/ACFGI/2310

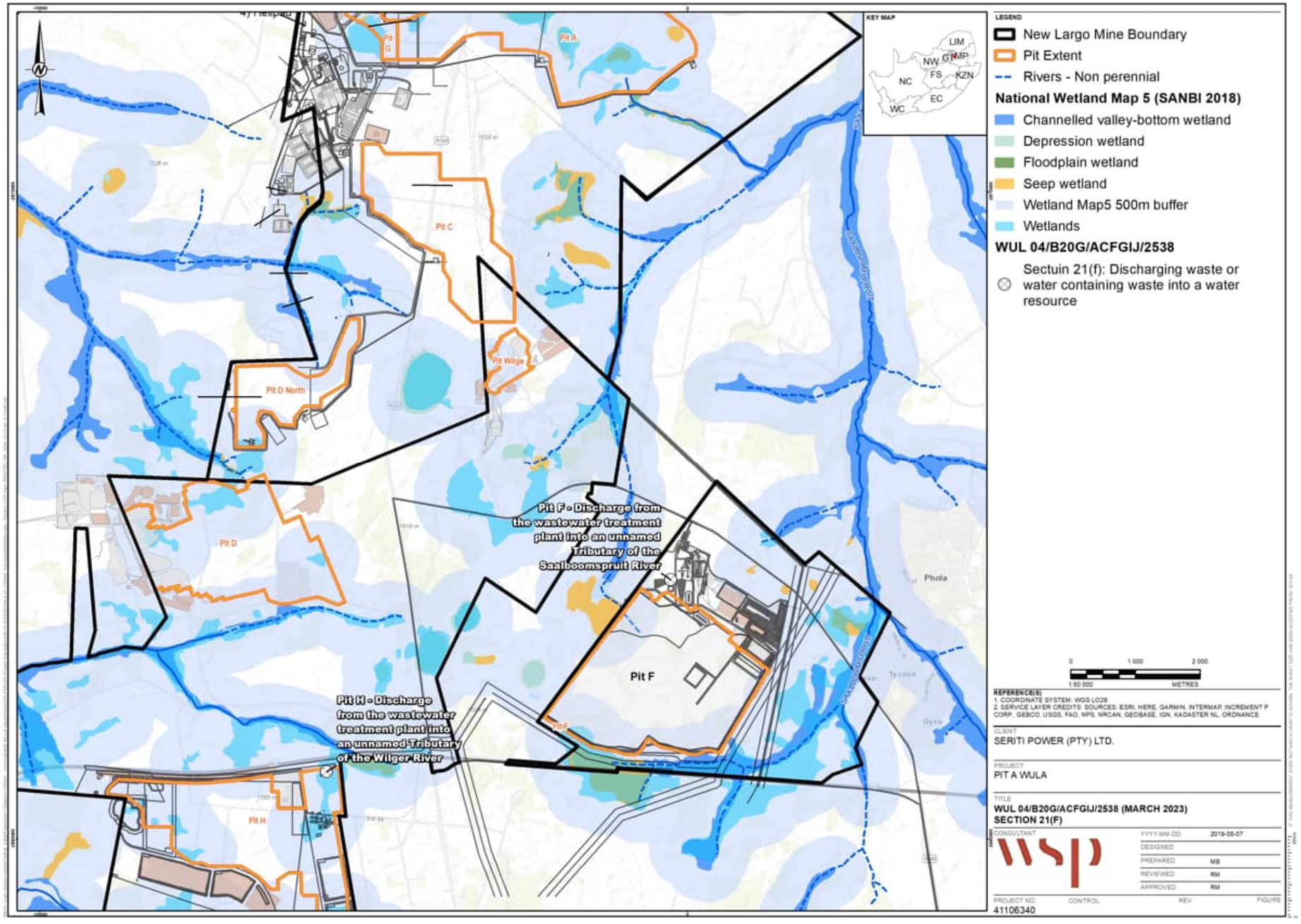


Figure 9: Section 21 (f) - WUL 04/B20G/ACFGIJ/2538

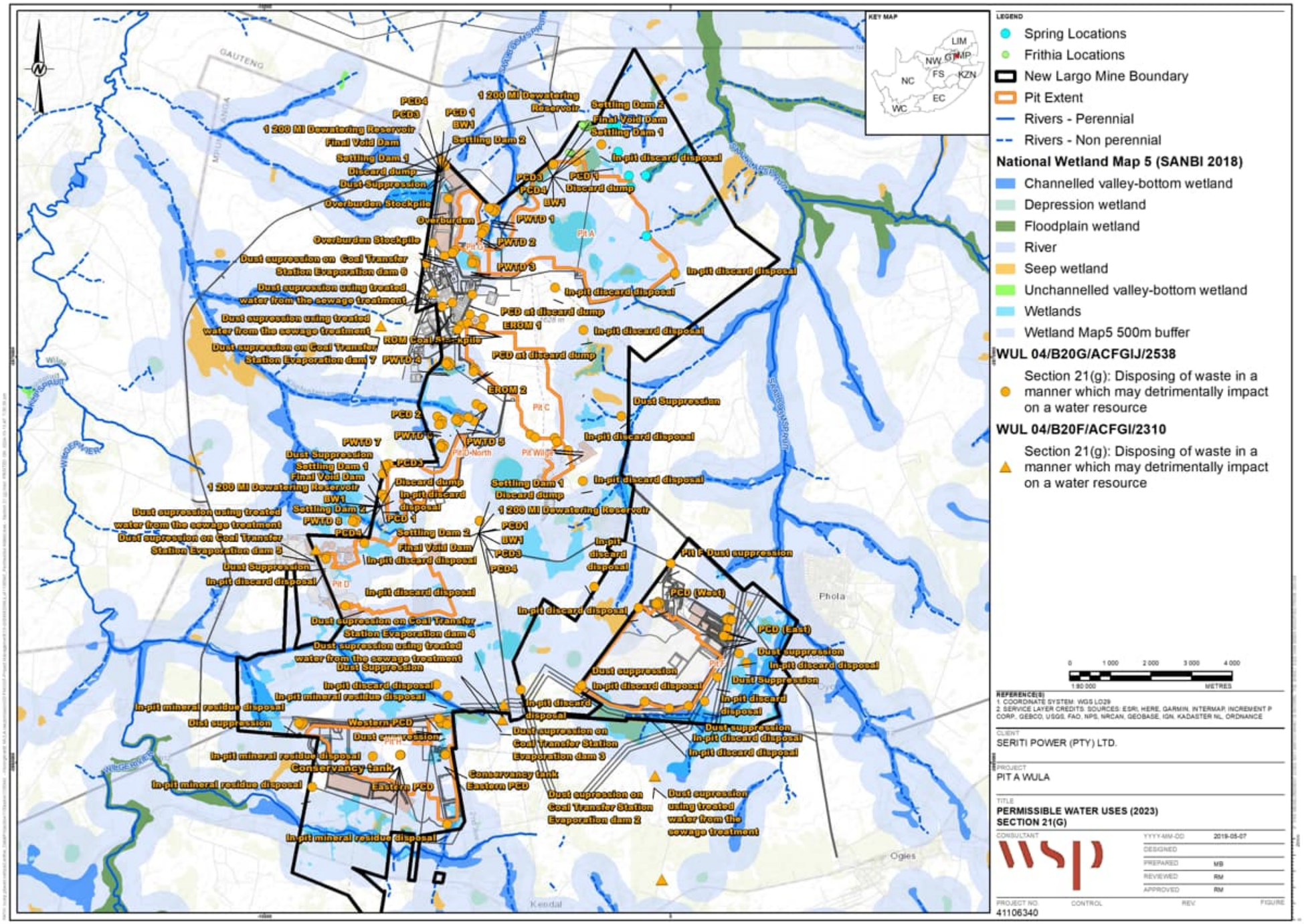


Figure 10: Section 21 (g) - WUL 04/B20G/ACFGIJ/2538 and WUL 04/B20F/ACFGI/2310

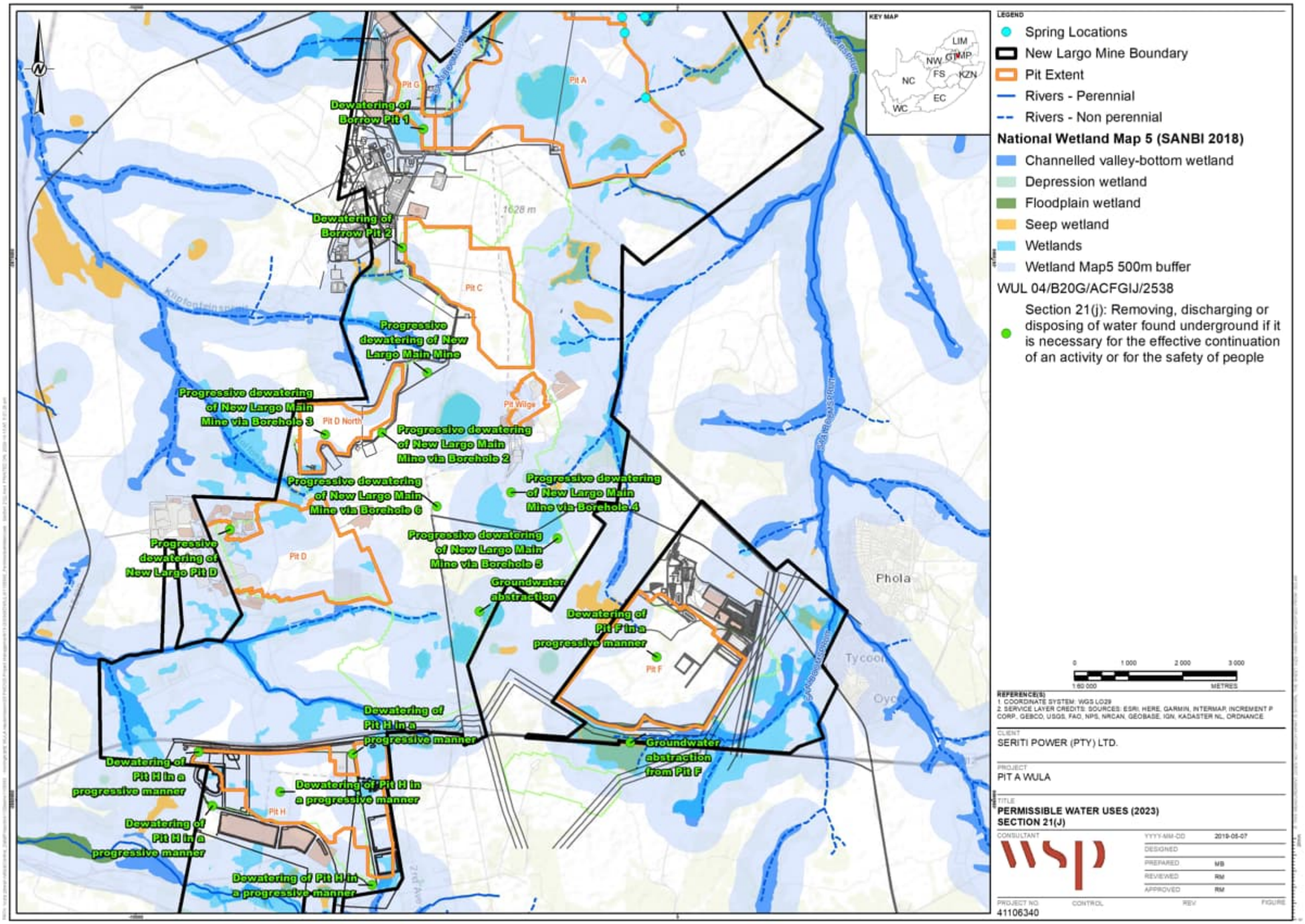


Figure 11: Section 21 (j) - WUL 04/B20G/ACFGIJ/2538

Table 12: Section 21 (c) & (i) impeding or diverting the flow of water in a watercourse and altering the bed, banks, course or characteristics of a watercourse (WUL: 04/B20G/CI/2246)

Activity	Properties	Name of Watercourse	Coordinates
New road crossing on watercourse (RCR1).	Remaining Extent Farm Honingkrantz 536 JR	Unnamed valley bottom wetland	Start 25° 53' 19.56" S 28° 59' 20.07" E End 25° 53' 19.73" S 28° 59' 17.06" E
New road crossing on watercourse (RCR2).			Start 25° 53' 46.36" S 28° 59' 42.66" E End 25° 53' 51.89" S 28° 59' 45.22" E
New road crossing on watercourse (RCR3).			Start 25° 54' 31.43" S 29° 00' 05.71" E End 25° 54' 31.75" S 29° 00' 06.11" E
New road crossing on watercourse (RCR4).			Start 25° 55' 41.65" S 29° 00' 00.87" E End 25° 54' 44.41" S 28° 59' 57.10" E
New road crossing on watercourse (RCR5).	Portion 23 (Portion of Portion 1) farm Roodepoortjie 326 JS	Unnamed valley bottom wetland	Start 25° 56' 25.22" S 28° 59' 01.32" E End 25° 57' 17.18" S 28° 58' 44.16" E
New road crossing on watercourse (RCR6a).	Portion 24 (Portion of Portion 1) Farm Roodepoortje 326 JS		
New road crossing on watercourse (RCR6b).			
New road crossing on watercourse (RCR7).	Portion 16 farm Roodepoortjie 326 JS		Start 25° 57' 48.29" S 28° 59' 12.77" E End 25° 57' 54.39" S 28° 59' 20.19" E
New road crossing on watercourse (RCR8).	Portion 19 Farm Vlakfontein 569 JR	Unnamed Seepage Wetland	Start 25° 57' 54.39" S 28° 59' 20.19" E End 25° 58' 46.60" S

Activity	Properties	Name of Watercourse	Coordinates
			28° 59' 35.80" E
New road crossing on watercourse (RCR9).	Portion 5 Farm Eenzaamheid 534 IR	Ephemeral drainage line	Start 25° 53' 02.67" S 28° 58' 15.83" E End 25° 52' 58.20" S 28° 58' 36.63" E
New road crossing on watercourse (RCR10).	Portion 5 Farm Eenzaamheid 534 IR		Start 25° 53' 30.18" S 28° 59' 29.78" E End 25° 53' 30.24" S 28° 59' 33.33" E

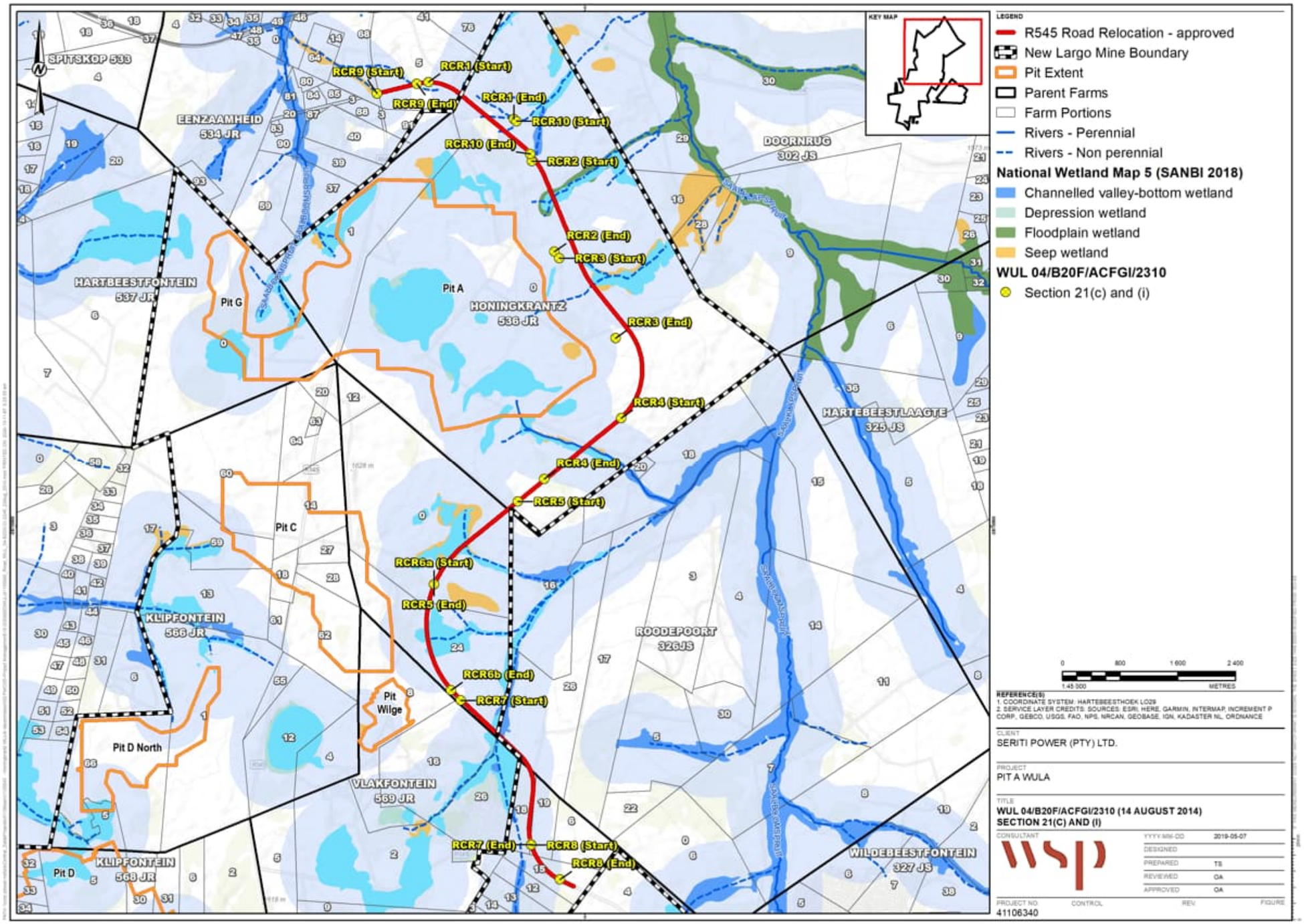


Figure 12: Section 21 (c) & (i) - WUL: 04/B20G/CI/2246 dated August 2014

3.2 EXISTING LAWFUL WATER USES

In terms of Section 32 of the NWA, an Existing Lawful Water Use (ELWU) is defined as follows:

“Water use which has taken place at any time during a period of two years immediately before the date of commencement of the Act (1 October 1996 to 30 September 1998) and which was authorised by or under any law which was in force immediately before the date of commencement of this Act, or which has been declared an existing lawful water use in terms of Section 33 of the Act”.

New Largo is a new mine and has no existing lawful water uses as defined in the Act.

3.3 RELEVANT EXEMPTIONS

The Minister of Water and Sanitation is responsible for the protection, use, development, conservation, management, and control of the water resources of South Africa on a sustainable basis. Section 26 (1) of the NWA makes provision for the Minister of Water and Sanitation to make regulations to control, monitor, modify or prohibit various practices related to water use. Government Notice 704 was promulgated by the Minister on 4 June 1999 in Government Gazette vol. 408, No. 20119. The GN 704 Regulations were published in terms of Section 26(1), (b), (g) and (i) of the NWA and pertain specifically to water uses for mining and related activities.

The Regulations published in Government Notice 704 of 4 June 1999 were developed to enable DWS to enforce the requirements of the National Water Act 1998, (Act 36 of 1998), thereby protecting the nation’s water resources.

The requirements prescribed in terms of the regulations must be seen as minimum requirements to fulfil this goal. Refer to Table 13 for the relevant listed activities under Government Notice 704 (GNR. 704).

The Regulations on use of water for mining and related activities aimed at the protection of water resources made in terms of Section 26 of the National Water Act, (Act No. 36 of 1998), published GNR. 704 stipulates the following:

- In terms of regulation 3 of GNR. 704 the Minister may in writing authorise an exemption from the requirements of regulations 4, 5, 6, 7, 8, 10 or 11 on his or her own initiative or on application, subject to such conditions as the Minister may determine;
- In terms of regulation 4 of GNR. 704 there are restrictions on locality. No person in control of a mine or activity may place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation;
- In terms of Regulation 5 of GNR. 704 there are restrictions on use of material and no person in control of a mine or activity may use any residue or substance which causes or is likely to cause pollution of a water resource for the construction of any dam or other impoundment or any embankment, road, or railway, or for any other purpose which is likely to cause pollution of a water resource; and
- In terms of regulation 7 of GNR. 704, the Protection of water resources every person in control of a mine or activity must take reasonable measures prevent water containing waste or any substance which causes or is likely to cause pollution of a water resource from entering any water resource, either by natural flow or by seepage, and must retain or collect such substance

or water containing waste for use, re-use, evaporation or for purification and disposal in terms of the Act.

The following is however noted from the DWS' Water Quality Management, Operational Guideline No. M6.1: Guideline document for the implementation of Regulations on the use of water for mining and related activities aimed at the protection of water resources:

- "Should an exemption from any requirements of these regulation imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations. However, the following clause needs to be incorporated into the water use licence: In terms of the conditions of this licence, the Licence Holder is exempted from the clause (specific regulation) of the regulations on use of water for mining and related activities aimed at the protection of water resources (GNR. 704)."

The following exemptions are relevant to the New Largo Pit A project application:

Table 13: GN 704 Assessment for New Largo

Schedule	Description of Schedule	Comments
4 a	Locate or place any residue deposit, dam, reservoir, together with any associated structure within 1:100-year flood-line or within a horizontal distance of 100 m of a watercourse or borehole, excluding boreholes drilled specifically to monitor the pollution of ground water, or on ground likely to become water-logged, undermined, unstable or cracked.	The mine has been issued a WUL: 04/B20G/ACFGIJ/2538 which authorises mining through a number of wetlands, however the mine requires authorisation for mining through the wetlands and regulated areas in Block A. Exemption from this requirement of this regulation imply the necessity for a water use licence The mine needs only to apply for a water use licence, as water use licence has higher authority than the regulations as per Water Quality Management Series, Operational Guideline No M6.1: Guideline document for the implementation of Regulations on use of water for mining and related activities aimed at the protection of water resources (May 2000). It is the subject of this application, as supported by a revised wetland offset strategy. (Appendix F)
4 b	No opencast mining, prospecting or any other operation or activity under or within the 1:50 year flood-line or within a horizontal distance of 100 m from any watercourse.	The mine has been issued a WUL: 04/B20G/ACFGIJ/2538 which authorises i mining of wetlands, however the mine requires authorisation for mining through the wetlands and regulated areas the Block A. Exemption from this requirement of this regulation imply the necessity for a water use licence The mine needed only to apply for a water use licence, as water use licence has higher authority than the regulations as per Water Quality Management Series, Operational Guideline No M6.1: Guideline document for the implementation of Regulations on use of water for mining and related activities aimed at the protection of water resources (May 2000). It is the subject of this application, as supported by a revised wetland offset strategy. (Appendix F)
4 c	No placement or disposal of any residue or substance which causes or is likely to cause pollution of a water resource, in the underground workings or opencast excavation.	The mine will do roll over mining and backfill with hard overburden material. This is viewed by DWS as a substance which causes pollution of a water resource and hence the mine requires exemption from this Schedule 4c.

Schedule	Description of Schedule	Comments
		Refer to Waste Classification for Overburden material for New Largo Main Mine compiled by WSP Group (Pty) Ltd, dated March 2024. (Appendix B). The waste assessment indicates that there are no leachables in the overburden material and the regulatory threshold values are not exceeded. In terms of the Water Quality Management, Operational Guideline M6.1: Guideline document for the implementation of Regulations on the use of water for mining and related activities aimed at the protection of water resources, an exemption from any requirements of the GNR. 704 regulation imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations. The following clause needs to be incorporated into the water use licence: In terms of the conditions of this licence, the Licence Holder is exempted from the clause 4c of the regulations on use of water for mining and related activities aimed at the protection of water resources (GNR. 704). The mine will apply for a section 21 (g) water use authorisation for backfill. The mine has been issued with WUL: 04/B20G/ACFGIJ/2538 which authorises in-pit disposal, and this implies an exemption has been granted. DWS must include the statement in the licence that the licensee is exempted from the requirements of regulation 4c.
4 d	Locate any sanitary convenience, fuel depots, reservoir or depots for any substance which causes or is likely to cause pollution within the 1:50 year flood line of any watercourse.	Not relevant to this WULA. Comply with condition.
5	May not use any residue or substance which causes or is likely to cause pollution of water resource for the construction of any dam or other impoundment or any embankment, road, or railway or for any other purpose which is likely to cause pollution of a water resource.	Not relevant to this WULA. Comply with condition

Schedule	Description of Schedule	Comments
6 a	Any unpolluted water must be confined to a clean water system, away from any dirty area.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C)
6 b	Clean water systems must be designed, constructed, maintained, and operated so that it is not likely to spill into any dirty water system more than once in 50 years.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C)
6 c	Water arising within any dirty area must be collected, including water seeping from mining operations, outcrops, or any other activity, into a dirty water system.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C) and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023 (Appendix H)
6 d	Any dirty water systems must be designed, constructed, maintained, and operated so that it is not likely to spill into any clean water system more than once in 50 years.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C) and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023 (Appendix H).
6 e	Dams and tailings storages which form part of the dirty water system must be designed, constructed, maintained, and operated with a minimum freeboard of 0.8 m above full supply level, unless otherwise agreed with Department of Water and Sanitation (DWS) with respect to the dam safety regulations.	Not relevant to this WULA. Comply with condition

Schedule	Description of Schedule	Comments
6 f	Water systems shall be designed, constructed, and maintained to guarantee the serviceability of such conveyances for flows up to and including those arising as a result of the maximum flood with an average period of recurrence of once in 50 years.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C) and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023. (Appendix H).
7 a	Prevent water containing waste or any substance which causes or is likely to cause pollution of water resource from entering any water resource, either by natural flow or by seepage and retain or collect such water for use, reuse, evaporation or for purification and disposal.	Refer to Waste Classification for Overburden material for New Largo Main Mine compiled by WSP Group (Pty) Ltd, dated March 2024. (Appendix B). The waste assessment indicates that there are no leachables in the overburden material and the regulatory threshold values are not exceeded. In terms of the Water Quality Management, Operational Guideline M6.1: Guideline document for the implementation of Regulations on the use of water for mining and related activities aimed at the protection of water resources, an exemption from any requirements of the GNR. 704 regulation imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations. WUL: 04/B20G/ACFGIJ/2538 authorises in-pit disposal, and this implies an exemption has been granted. DWS has to include the statement in the licence that the licensee is exempted from the requirements of regulation 7a. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 (Appendix C) and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023. (Appendix H).
7 b	Design, modify, locate, construct, and maintain all water systems, including residue deposits, in any area so as to prevent the pollution of any water resource through the operation or use thereof.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa

Schedule	Description of Schedule	Comments
		Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 c	Cause effective measures to be taken to minimise the flow of any surface water or floodwater into mine workings.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 d	Design, modify, construct, maintain and use any dam or any residue deposit or stockpile used for the disposal or storage of mineral slimes, so that the water or waste therein will not result in the failure thereof or impair its stability.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 e	Prevent the erosion or leaching of materials from any residue deposit or stockpile and contain material or substances so eroded or leached in by providing suitable barrier dams, evaporation dams or any other effective measures to prevent this material or substance from entering and polluting any water resources.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 f	Ensure that water used in any process at the mine is recycled as far as practicable, and any facility, sump, pumping installation, catchment dam or other impoundment used for recycling water is of adequate design and capacity to prevent the spillage, seepage or release of water containing waste at any time.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 g	Keep any water system free from any matter or obstruction which may affect the efficiency thereof.	Comply with condition. Refer to the Conceptual Storm Water Management Plan and Water Balance report for New Largo Main Mine compiled by Bio Engineering Africa

Schedule	Description of Schedule	Comments
		Consulting (Pty) Ltd, dated July 2023 and the Water and Salt Balance Report compiled by JMA Consulting (Pty) Ltd in November 2023
7 h	Every person in control of a mine or activity must take reasonable measures to cause all domestic waste, including wash-water, which cannot be disposed of in a municipal sewage system, to be disposed of in terms of an authorisation under the Act.	Comply with condition. WUL: 04/B20G/ACFGIJ/2538 authorises effluent discharge and this implies an exemption has been granted.
8 a	Any impoundment or dam containing any poisonous, toxic or injurious substance must be effectively fenced-off to restrict access thereto and must have warning notice boards at prominent locations to warn persons of the hazardous contents thereof.	Mine complies with condition.
8 b	Access control in any area used for stockpiling or disposal of any residue or substance which causes, has caused or is likely to cause pollution of water resource is required to protect any measures taken in terms of this regulation.	Mine complies with condition.
8 c	The mine shall not allow the area contemplated in 8 a) and b) above to be used for any other purpose if such use causes or is likely to cause pollution of a water resource.	Mine complies with condition.
8 d	The mine must protect any existing pollution control measures or replace any measures deleteriously affected, damaged, or destroyed by the removing or reclaiming of materials from any residue deposit or stockpile, and must establish additional measures for the prevention of pollution of a water resource which might occur, is occurring or has occurred as a result of such operations.	Noted and will be adhered to.
9 (1)	Any person in control of a mine or activity must at either temporary or permanent cessation of operations ensure that all pollution control measures have been designed, modified, constructed, and maintained so as to comply with these regulations.	Noted and will be adhered to.

Schedule	Description of Schedule	Comments
9 (2)	Any person in control of a mine or activity must ensure that the in-stream and riparian habitat of any water resource, which may have been affected or altered by a mine or activity, is remedied so as to comply with these regulations.	Noted and will be adhered to.
9 (3)	On either temporary or permanent cessation of a mine or activity the Minister may request a copy of any surface or underground plans as required in terms of the Minerals Act, 1991.	Noted and will be adhered to
10	Winning sand and alluvial minerals from a watercourse.	Not applicable to application.
11 a	To ensure all coal residue deposits are compacted to prevent spontaneous combustion and minimise infiltration of water.	Not applicable to application.
11 b	To ensure rehabilitation of coal residue deposits concurrent with mining.	Not applicable to application.

Motivation for GN R.704 exemption

WSP Group Africa (Pty) Ltd (WSP) was contracted by Seriti Power (Pty) Ltd. (hereafter referred to as Seriti) to assist with environmental permitting processes for backfill with overburden material, including carbonaceous shale (WSP, 2024a) (Appendix B).

A total of ten (10) samples were analysed as per the laboratory programme to classify and assess the waste streams. Two of the samples were subsoil samples (Table 16) and it is noted that soils are not included in the definition of residue stockpile[1] in the Mineral and Petroleum Resources Development Act (MPRDA) and are not included in Schedule 3 (Defined Wastes) of the National Environmental Management: Waste Act (NEM: WA) and are therefore not considered as wastes. Although the data can be relevant to New Largo in their environmental planning, and in the context of proper soil management (Golder, 2020) neither a waste classification nor a waste assessment for subsoil should be presented to the regulator.

Of the ten samples, eight were overburden samples: one sample of soft overburden, and seven samples of hard overburden (Table 16), with different lithologies. All samples were classified as non-hazardous in terms of SANS 10234 and (GN R. 634 2013). On waste assessment (GN R. 635 2013) all the samples did not meet the full definition of Type 3 waste, as although one or more constituents exceeded the first total concentration threshold (TC > TCT0), as shown in Table 14, no constituents exceeded the first leachable concentration threshold (LC < LCT0) shown in Table 15. The overburden samples are therefore conservatively assessed as Type 3 waste per regulation 7(6) of (GN R. 635 2013) but present a leachable constituent risk similar to Type 4 waste.

Soils are not considered wastes and do not require pollution control in terms of law, rather they should be managed in terms of New Largo's Environmental Management (Golder, 2020) and Soil Management Plan (Index, 2011). Mineral residues have been subject to the same environmental law as other wastes, with the pollution control barrier design prescribed by regulation 4 of (GN R. 636, 2013), and the New Largo overburden samples would require a Class C barrier in terms of that regulation – although licenses for a less stringent barrier design have been granted in cases similar to these stockpiles, where the leachability of the samples is low risk (LC<LCT0).

Regulations specific to mineral residues were issued in 2015 (GN R. 632 2013) and these were amended in 2018 to require per regulation 3(5) that the pollution control measures suitable for a specific residue stockpile or residue deposit must be recommended by a competent person based on a risk analysis that is required in those regulations. In this case the overburden samples present a leachable constituent risk similar to Type 4 waste.

Further details related to the waste assessment can be found in Appendix B.

[1] *any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, beneficiation plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored, or accumulated for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or production right.*

Table 14: Comparison of solids concentrations for waste assessment (WSP, 2024a)

Constituents	GN R.635 levels of thresholds for leachable concentrations (mg/kg)			WASTE MATERIAL									
	TCT0	TCT1	TCT2	Subsoil 1 (Sample 3)	Subsoil 2 (Sample 4)	Whiteish softs (Sample 5)	Sandstone (Sample A)	Shale (Sample B)	Carbonaceous shale (Sample C)	Sandstone (Sample D)	Sandstone (Sample E)	Sandstone 1 (Sample 1)	Sandstone 2 (Sample 2)
As	5.8	500	2000	3.8	8.8	11.5	6.9	6.5	1.4	6.1	4.5	5.3	4.1
B	150	15000	60000	*BDL*	1.08	1.86	2.87	6.4	12.36	6.42	10.91	0.54	*BDL*
Ba	62.5	6250	25000	121	472	388	116	150	99	99	170	571	136
Cd	7.5	260	1040	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.3	0.2	*BDL*	*BDL*
Co	50	5000	20000	17.3	24.4	15.9	11.5	91.5	1.1	13	16.6	18	17.7
Cr (total)	46000	800000	-	48.8	42.1	47	30.1	28.2	6.9	25.1	28.3	42.4	88.1
Cr (VI)	6.5	500	2000	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Cu	16	19500	78000	18	51	56	45	53	14	49	46	15	28
Hg	0.93	160	640	*BDL*	*BDL*	0.2	*BDL*	0.1	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Mn	1000	25000	100000	576	818	387	730	1 197	74	62	450	1 662	496
Mo	40	1000	4000	0.8	1.8	2.2	1.3	5.2	0.1	0.2	0.7	1.3	0.8
Ni	91	10600	42400	29.8	43	41	22.7	144	5.1	15.2	27.3	19.9	29.4
Pb	20	1900	7600	17	31	29	22	36	21	26	28	7	18
Sb	10	75	300	3	2	2	1	2	*BDL*	*BDL*	*BDL*	1	3
Se	10	50	200	*BDL*	*BDL*	*BDL*	*BDL*	2	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
V	150	2680	10720	56	72	64	49	65	11	26	91	20	68
Zn	240	160000	640000	120	197	130	131	159	*BDL*	142	105	56	110
TDS	-	-	-	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Chloride	-	-	-	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Sulphate	-	-	-	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Nitrate	-	-	-	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Fluoride	100	10000	40000	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.7	0.5	1	*BDL*	*BDL*

Constituents	GN R.635 levels of thresholds for leachable concentrations (mg/kg)			WASTE MATERIAL									
Cyanide (total)	14	10500	42000	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*

Notes:
BDL – below detection limits
'- '– No data

Table 15: Comparison of leachable concentrations for waste assessment (WSP, 2024a)

Constituents	GN R.635 levels of thresholds for leachable concentrations (mg/L)				WASTE MATERIAL									
	LCT0	LCT1	LCT2	LCT3	Subsoil 1 (Sample 3)	Subsoil 2 (Sample 4)	Whiteish softs (Sample 5)	Sandstone (Sample A)	Shale (Sample B)	Carbonaceous shale (Sample C)	Sandstone (Sample D)	Sandstone (Sample E)	Sandstone 1 (Sample 1)	Sandstone 2 (Sample 2)
As	0.01	0.5	1	4	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
B	0.5	25	50	200	0.063	0.088	0.072	0.02	0.022	0.015	0.021	0.024	0.05	0.069
Ba	0.7	35	70	280	0.274	0.246	0.272	0.289	0.257	0.214	0.229	0.161	0.272	0.231
Cd	0.003	0.15	0.3	1.2	*BDL*	*BDL*	BDL	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Co	0.5	25	50	200	*BDL*	*BDL*	BDL	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Cr (total)	0.1	5	10	40	*BDL*	*BDL*	0.0027	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.0021	*BDL*
Cr (VI)	0.05	2.5	5	20	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Cu	2	100	200	800	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Hg	0.006	0.3	0.6	2.4	0.002	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Mn	0.5	25	50	200	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.034	*BDL*
Mo	0.07	3.5	7	28	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Ni	0.07	3.5	7	28	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Pb	0.01	0.5	1	4	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Sb	0.02	1	2	8	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*

Constituents	GN R.635 levels of thresholds for leachable concentrations (mg/L)				WASTE MATERIAL									
Se	0.01	0.5	1	4	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
V	0.2	10	20	80	0.0032	0.002	0.0039	0.0017	*BDL*	*BDL*	0.0024	*BDL*	*BDL*	*BDL*
Zn	5	250	500	2 000	0.017	0.012	0.018	0.007	0.011	0.01	0.011	0.014	0.014	0.014
TDS	1 000	12 500	25 000	100 000	102	136	84	*BDL*	*BDL*	*BDL*	38	*BDL*	65	36
Chloride	300	15 000	30 000	120 000	0.4	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.4
Sulphate	250	12 500	25 000	100 000	2.4	2.7	2.5	2.9	1.9	0.0012	*BDL*	*BDL*	*BDL*	2.9
Nitrate	11	550	1 100	4 400	0.3987	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	0.4873	*BDL*	0.3101	0.3987
Fluoride	1.5	75	150	600	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*
Cyanide (total)	0.07	3.5	7	28	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*	*BDL*

Notes:
BDL – below detection limits
'- '– No data

The results the waste assessment on the overburden material is summarised in Table 16.

Table 16: Waste Classification and Assessment Summary (WSP, 2024a)

Waste Material	Classification	Assessment	Risk Assessment	Barrier/Liner
Subsoils samples				
Subsoil 1 (Sample 3)	Non-hazardous	Type 3 Triggered by concentrations of Barium and Copper.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Subsoil 2	Non-hazardous	Type 3	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C

Waste Material	Classification	Assessment	Risk Assessment	Barrier/Liner
(Sample 4)		Triggered by concentrations of Arsenic, Barium, Copper, and Lead.		
Soft overburden samples				
Whiteish softs (Sample 5)	Non-hazardous	Type 3 Triggered by concentrations of Arsenic, Barium, Copper, and Lead.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Hard overburden samples				
Sandstone (Sample A)	Non-hazardous	Type 3 Triggered by concentrations of Arsenic, Barium, Copper, and Lead.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Shale (Sample B)	Non-hazardous	Type 3 Triggered by concentrations of Arsenic, Barium, Cobalt, Copper, Manganese, Nickel, and Lead.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Carbonaceous shale (Sample C)	Non-hazardous	Type 3 Triggered by concentrations of Barium and Lead	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C

Waste Material	Classification	Assessment	Risk Assessment	Barrier/Liner
Sandstone (Sample D)	Non-hazardous	Type 3 Triggered by concentrations of Arsenic, Barium and Copper.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Sandstone (Sample E)	Non-hazardous	Type 3 Triggered by concentrations of Barium, Copper, and Lead.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Sandstone 1 (Sample 1)	Non-hazardous	Type 3 Triggered by concentrations of Barium and Manganese.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C
Sandstone 2 (Sample 2)	Non-hazardous	Type 3 Triggered by concentrations of Barium and Copper.	Conservatively assessed as Type 3 waste. Risk similar to Type 4 Waste	Class C

3.4 GENERALLY AUTHORISED WATER USES

In terms of Section 22(1) of the NWA a person may use water without a licence if that water use is permissible in terms of a General Authorisation (GA) issued under Section 39 of the NWA. Typical General Authorisations that could be applicable during the submission of a WULA are included in Table 17.

Table 17: General Authorisations Applicable

Government Notice Reference	Section 21 Water Use Relevant to GA
Government Notice 538 Government Gazette 40243, dated 31 October 2016	Sections 21(a) and 21(b)
Government Notice 4167 Government Gazette 4167, dated 8 December 2023	Sections 21(c) and 21(i)
Government Notice 665 Government Gazette 36820, dated 30 August 2013	Sections 21(e), 21(f), 21(g), 21(h) and 21(j)

No generally authorised water uses are registered, and New Largo has a number of authorised WULs.

3.5 NEW WATER USES TO BE LICENCED

Proposed water uses associated with the Pit A WULA that require authorisation in terms of Section 21 of the NWA are tabulated in Table 18.

Table 18 – Identified new water uses for Pit A

Water Uses	Description	Property	Dimensions and Volume	Latitude	Longitude	Quaternary
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through a wetland (W1)	Honingkrantz 536 JR portion 0 and 1	Length 1078 m Width 665 m	25° 53' 43.836" S	28° 59' 17.340" E	B20G
				25° 53' 52.188" S	28° 59' 17.628" E	B20G
				25° 53' 49.524" S	28° 58' 41.880" E	B20G
				25° 53' 38.580" S	28° 58' 44.940" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through a pan (W3)	Honingkrantz 536 JR portion 0	Length 128 m Width 1024 m	25° 54' 22.392" S	28° 58' 47.280" E	B20G
				25° 54' 49.716" S	28° 58' 44.508" E	B20G
				25° 54' 52.344" S	28° 58' 23.016" E	B20G
				25° 54' 26.460" S	28° 58' 17.400" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through a wetland (W4)	Honingkrantz 536 JR portion 0	Length 127 m Width 167 m	25° 54' 41.976" S	28° 59' 6.252" E	B20G
				25° 54' 43.128" S	28° 59' 11.292" E	B20G
				25° 54' 46.260" S	28° 59' 9.168" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through a pan and associated seepage wetland (W5)	Honingkrantz 536 JR portion 0	Length 721 m Width 339 m	25° 54' 55.188" S	28° 58' 51.708" E	B20G
				25° 55' 3.324" S	28° 59' 0.600" E	B20G
				25° 55' 17.256" S	28° 58' 54.228" E	B20G
				25° 55' 2.712" S	28° 58' 48.324" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through a wetland (W6)	Honingkrantz 536 JR portion 0	Length 1236 m Width 482 m	25° 55' 3.072" S	28° 59' 22.272" E	B20G
				25° 55' 14.808" S	28° 59' 48.228" E	B20G
				25° 55' 18.912" S	28° 59' 25.692" E	B20G
				25° 55' 25.896" S	28° 58' 59.808" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through portion of wetland (W7)	Honingkrantz 536 JR portion 0	Length 260 m Width 127 m	25° 55' 25.824" S	28° 59' 41.388" E	B20G
				25° 55' 22.440" S	28° 59' 45.996" E	B20G
				25° 55' 21.756" S	28° 59' 49.920" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Mining through portion of wetland (W8)	Honingkrantz 536 JR portion 0	Length 675 m Width 125 m	25° 55' 32.088" S	28° 59' 12.048" E	B20G
				25° 55' 23.052" S	28° 59' 21.984" E	B20G
				25° 55' 28.956" S	28° 59' 29.544" E	B20G
				25° 55' 28.020" S	28° 59' 31.920" E	B20G
	Mining through seepage wetland (W17)		Length 407 m	25° 54' 37.872" S	28° 59' 38.940" E	B20G

Water Uses	Description	Property	Dimensions and Volume	Latitude	Longitude	Quaternary
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse		Honingkrantz 536 JR portion 0	Width 190 m	25° 54' 40.140" S	28° 59' 40.416" E	B20G
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Location and operation of the New Largo Coal mining operations, pipelines, powerlines, haul roads and associated mine infrastructure in a wetland (W29)	Hartbeestfontein 537 JR portion 0		25° 53' 57.264" S	28° 56' 39.696" E	B20F
				25° 54' 16.776" S	28° 56' 41.388" E	B20F
				25° 54' 8.861" S	28° 56' 29.224" E	B20F
Section 21(c): Impeding or diverting the flow of water in watercourse & Section 21(i): Altering the bed, banks, course or characteristics of a watercourse	Location and operation of the New Largo Coal mining operations, pipelines, powerlines, haul roads and associated mine infrastructure in the regulated area of a watercourses	Honingkrantz 536 JR portion 0	-	25° 52' 14.628" S	28° 59' 27.852" E	B20F and B20G
		Roodepoort 326 JS portion 1		25° 55' 1.308" S	29° 1' 33.240" E	
		Klipfontein 568 JR portion 17 and 13		25° 56' 55.428" S	28° 59' 21.372" E	
		Klipfontein 566 JR portion 66		25° 1' 7.860" S	28° 55' 21.864" E	
		Hartebeesfontein 537 JR portion 0		25° 53' 41.892" S	28° 56' 37.896" E	
				25° 57' 45.036" S	28° 55' 48.468" E	
				26° 0' 56.484" S	28° 57' 30.924" E	
Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource	Backfill Pit A with overburden during opencast mining	Honingkrantz 536 JR portion 0 Roodepoort 326 JR portion 0	13 636 146m^3/a	25° 53' 31.236" S	28° 58' 59.196" E	B20G
				25° 55' 5.772" S	29° 0' 1.512" E	B20G
				25° 55' 24.348" S	28° 58' 22.512" E	B20G
				25° 54' 18.936" S	28° 58' 12.792" E	B20G
Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource	Dust suppression	Honingkrantz 536 JR portion 0 Roodepoort 326 JR portion 0	219 000 m^3/a	25° 53' 31.236" S	28° 58' 59.196" E	B20G
				25° 55' 5.772" S	29° 0' 1.512" E	B20G
				25° 55' 24.348" S	28° 58' 22.512" E	B20G
				25° 54' 18.936" S	28° 58' 12.792" E	B20G
Section 21(j): Removing, discharging or disposing of water found underground if it is necessary of the effective continuation of an activity or for the safety of people	Dewatering (Pit A)	Honingkrantz 536 JR portion 0	307 613 m^3/a	25° 54' 21.240" S	28° 58' 34.464" E	B20G

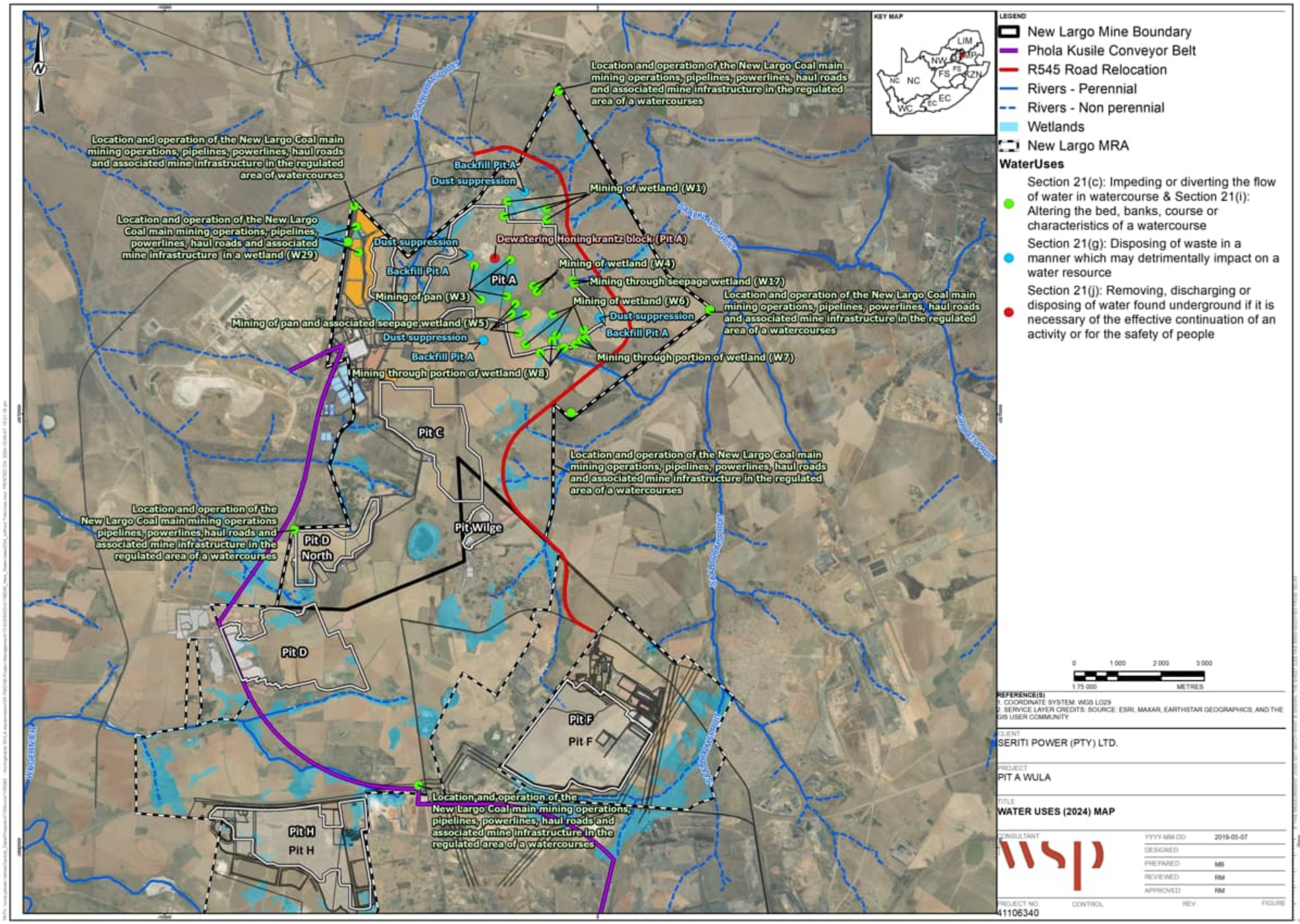


Figure 13: New Water Uses associated with the Pit A

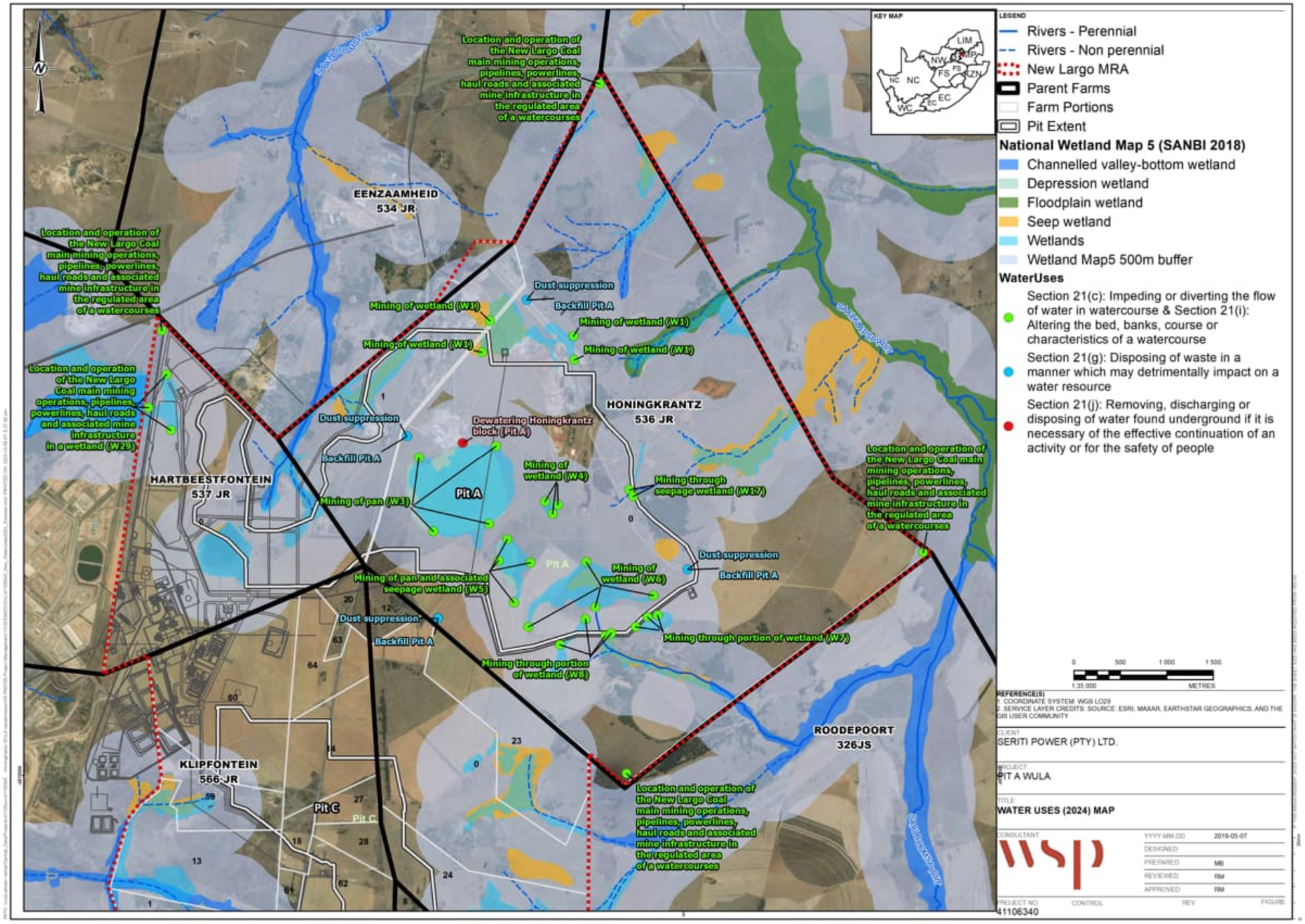


Figure 14: New Water Uses and Wetlands associated with the Pit A

3.6 WASTE MANAGEMENT ACTIVITIES (NEMWA)

Waste is regulated under the National Environmental Management Waste Act, Act No. 59 of 2008 (NEM:WA). NEM:WA defines "waste" as “any substance, whether or not that substance can be reduced, re- used, recycled and recovered:

“a) That is surplus, unwanted, rejected, discarded, abandoned or disposed of;

b) Which the generator has no further use of for (the purposes of production);

c) That must be treated or disposed of; or

d) That is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but

i) A by-product is not considered waste; and

ii) Any portion of waste, once re-used, recycled and recovered, ceases to be waste”

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA) commenced on 1 July 2009. In terms of this Act, all listed waste management activities must be licensed and in terms of Section 44 of the Act, the licensing procedure must be integrated with the environmental impact assessment process.

Government Notice 921, which commenced on 29 November 2013, lists the waste management activities that require licensing in terms of the NEMWA. Licence applications for activities involving hazardous waste must be submitted to the national authority, the Department of Environmental Affairs (DEA) and those for general waste to the provincial authority, unless the waste activity is taking place on within a Mining Right, in which case the Licence application must be submitted to the Department of Mineral Resources and Energy.

One of the major amendments effected by the National Environmental Management Waste Amendment Act 2014 is the insertion of section 24(5), as a result of which the NEMWA is now also applicable to mining residue deposits and residue stockpiles, as follows:

Residue stockpiles and residue deposits must be deposited and managed in accordance with the provisions of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), on any site demarcated for that purpose in the environmental management plan or environmental management programme in question.’’

Schedule 3 (Defined Wastes) of Act No. 26 of 2014: National Environmental Management: Waste Amendment Act, 2014 (GG. No. 37714), classifies residue deposits and stockpiles as Category A: Hazardous Waste.

Government Notice 921 was amended through GN R.633 to include the establishment of a residue stockpile or deposit as an activity that requires a waste Licence.

Other current regulatory requirements include the following:

- Waste Classification and Management Regulations (GN R.634 of 23 August 2013) which requires classification of waste as hazardous / non-hazardous in terms of SANS10234;
- National Norms and Standards for the Assessment of Waste for Landfill Disposal (GN R.635 of 23 August 2013), which requires the assessment of waste into different Types, based upon

a series of thresholds of total and leachable concentrations (TCT0-TCT2 and LCT0-LCT3); and
- National Norms and Standards for the Disposal of Waste to Landfill (GN R.636 of 23 August 2013), which prescribes barrier design (from Class D unlined to Class A triple liner), based upon the waste Type.

The Regulations Regarding the Planning and Management of Residue Stockpiles and Residue Deposits from a Prospecting, Mining, Exploration or Production Operation (GN R. 632 of 2015) sets out a risk-based approach in terms of the barrier design for mine residue facilities.

These Regulations address the following aspects:

- Waste assessment, characterisation and classification;
- Risk and impact assessment;
- Impact management;
- Roles and responsibilities, monitoring and reporting;
- Dust management and control;
- Site selection;
- Technical design; and
- Decommissioning, closure and post closure management.

NEMLAA provisions related to waste have not yet been promulgated; should the relevant sections be enacted, licensing of residue stockpiles and deposits would move from NEMWA to NEMA, but the GNR 632 would remain in place to regulate barrier designs (using the risk-based approach).

GN R632 was amended to remove reference to GN R. 635 and GN R. 636 of 2013 as the basis for barrier designs. Therefore, the barrier design for a mine residue deposit (dump / stockpile) is to be determined based on risk.

3.7 WASTE RELATED AUTHORISATIONS

New Largo Coal has an approved waste management licence, in terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEMWA), by the National Department of Environmental Affairs and/or MDEDET. Waste management licence (WML) with licence number: 12/9/11/L952/6 was granted by the (then) Department of Environmental Affairs for certain waste management activities to be undertaken on Portions 1 and 17 of the Farm Klipfontein 566 JR.

3.8 OTHER AUTHORISATIONS (EIA'S, EMPS, RODS, REGULATIONS)

The EIA for New Largo Coal, which included the Main New Largo Mine, was completed, and submitted in 2012 (Synergistics, 2012; DMR: 30/5/1/2/2/511MR F/2011/04/14/002). The application for mining was authorised on 06-02-2013.

The following authorisations are in place for the New Largo Coal:

- Environmental authorisation from the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) in terms of the National Environmental

Management Act (No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations, 2010 (Government Notice 543 to 546, 18 June 2010); and
- Approved environmental management programme report (EMPr), in terms of the Mineral and Petroleum Resources Development Act (No 28 of 2002) (MPRDA), by the Department of Mineral Resources and energy (DMRE).
- Approved environmental authorisation for the proposed Phola-Kusile Coal Conveyor (reference: 17/2/3N-13), dated 26 July 2012 and subsequent amendments dated 5 December 2013 and 27 May 2015.

The following information was sourced from a legal opinion compiled by Malan Scholes Attorneys in July 2020:

New Largo Coal is the Holder, as defined in section 1 of the MPRDA of a Mining Right with the DMR reference number: MP30/5/1/2/2/511MR (New Largo Coal Mining Right), granted on 6 November 2014 over various properties, including, inter alia, the Pit A. The New Largo Coal Mining Right was notarially executed on 28 April 2015.

New Largo Coal became the Holder of the New Largo Coal Mining Right and associated Environmental Management Programme (EMPr) after acquiring, inter alia, the New Largo Coal Mining Right from AAIC and after the conclusion of a notarial deed of cession of a Mining Right, on 1 August 2018.

Prior to the cession of the New Largo Coal Mining Right to New Largo Coal, AAIC was granted certain Environmental Authorisations (EA) for the undertaking of mining and ancillary activities in and on the New Largo Coal Mining Right area.

The Environmental authorisation (EA) granted to AAIC by the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) in terms of the National Environmental Management Act, 107 of 1998, as amended (NEMA) on 11 December 2012 with reference number: 17/2/3N-41, for certain listed activities to be undertaken on the farms Honingkrantz 536 JR, Hartebeesfontein 5637 JR, Eenzaamheid 534 JR and Roodepoortjie 326 JR in the Nkangala District, Mpumalanga Province.

The New Largo Coal Environmental Approvals were ceded to Seriti Power from AAIC.

4 PRESENT ENVIRONMENTAL SITUATION

4.1 CLIMATE

New Largo is located in the Mpumalanga Highveld region where the climate is characterized as generally dry. Summers are warm and hot with an average daily high temperature of approximately 27^{0}C (with occasional extremes of up to 35^{0}C). Winters are mild and cold with an average daily high of approximately 15^{0}C (with occasional extremes of up to -10^{0}C). Frost and mist are frequently experienced during the winter months on the Mpumalanga Highveld (WSP, 2024b).

4.2 REGIONAL CLIMATE RAINFALL

Golder (2020) conducted a study of the rainfall in the area. They found 5 rainfall stations with long term rainfall records (more than 50 years of rainfall) in a 50 km radius around New Largo.

The mean annual precipitation (MAP) ranges from 667 mm/a to 746 mm/a. The historical rainfall at Ogies where the MAP from 1910 to 2000 was 743 mm/a. For this study, the Khutala rainfall from 2010 to 2023 (MAP of 697 mm/a) and the Klipspruit rainfall from 2014 to 2023 (MAP of 718 mm/a) were plotted together with the Ogies data (Figure 15). As expected for the highveld, the highest rainfall months are November to January (WSP, 2024b).

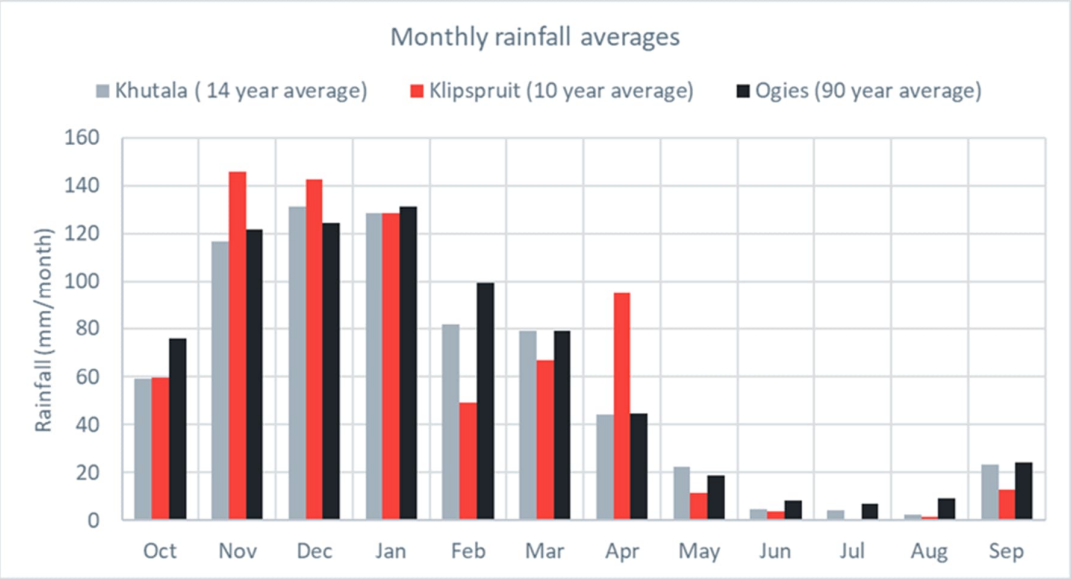


Figure 15: Average monthly rainfall (WSP, 2024b)

The Cumulative Rainfall Departure (CRD) provides an indication of the responsivity of the aquifer to rainfall and is indicated in Figure 16.

Figure 16: CRD using Khutala rainfall data (selected for the longest recent dataset) (WSP, 2024b)

4.3 EVAPORATION

Mean monthly evaporation data (Symons Pan or S-Pan) was taken from Bronkhorstspruit Dam Monitoring Station (B2E001) (DWS, 2023) and analysed for a monitoring period between 1967-2023. The Mean Annual Evaporation (MAE) recorded and thus assigned to the study area is 1 517.6 mm/annum, with the monthly distribution indicated in Table 19 and on Figure 17 (JMA, 2023).

Table 19: Average Monthly S-Pan Evaporation Recorded at Rietfontein (1967 – 2023) (JMA, 2023)

Month	Evaporation(mm/month)
October	163.5
November	159.4
December	174.4
January	165.1
February	143.3
March	135.1

Month	Evaporation(mm/month)
April	105.3
May	86.5
June	68.4
July	75.1
August	103
September	138.7
Total	**1517.6**

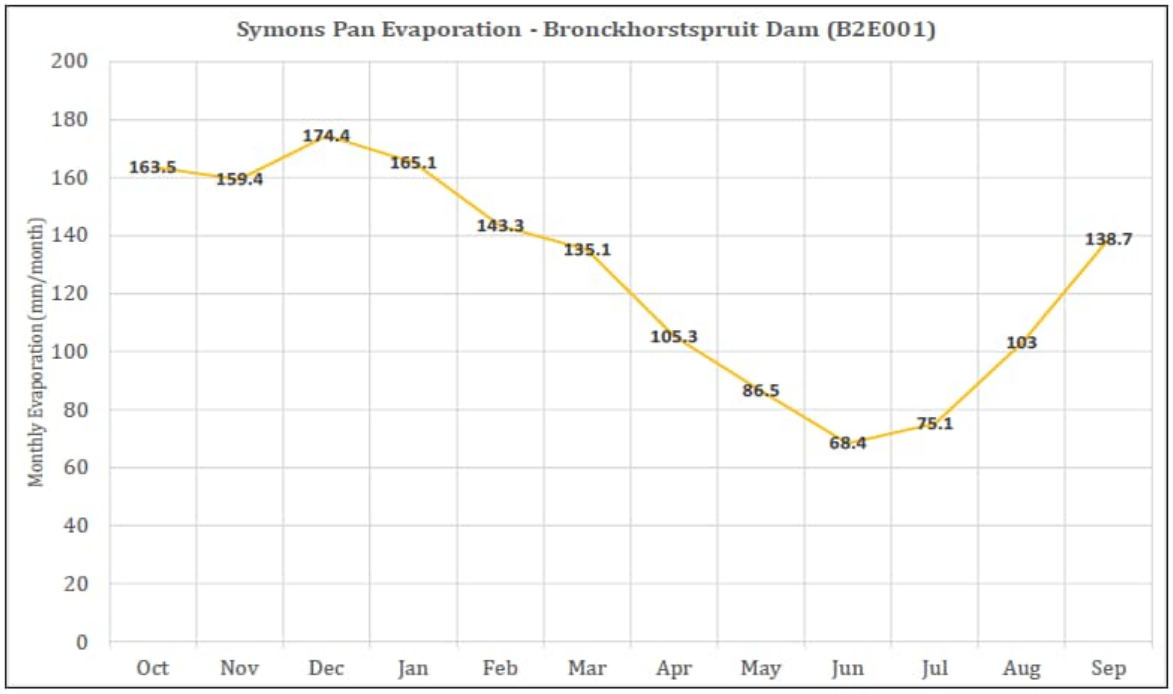


Figure 17: Average Monthly S-Pan Evaporation Recorded at Bronkhorstspruit Dam (1967 - 2023) (JMA, 2023)

4.4 SURFACE WATER

A long-term record of the rainfall within the study area was obtained from the SAWS weather station SA10561. The extracted Mean Annual Precipitation (MAP) and 24 - hr storm rainfall is summarized in Table 20 below.

Table 20: Adopted storm rainfall (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

Record Period	1920-2000
MAP (mm)	669

Record Period	1920-2000
1: 2-year storm rainfall (mm)	55
1:5-year storm rainfall (mm)	72
1:50 year storm rainfall (mm)	107
1:100-year storm rainfall (mm)	118

4.5 WATER MANAGEMENT AREA

The area is situated on the catchment boundary between quaternary catchments B20F and B20G.The south-western parts of New Largo (B20F) drain west towards the north flowing Wilge River, while the north-eastern parts of New Largo (B20G) drain east, north-east, and north towards the Saalboom– and Saalklap Spruit. Both these catchments eventually flow into the Loskop Dam (WSP, 2024b).

According to (DWS, 2016) New Largo is situated in three management units (MU20, MU21 & MU22) as indicated in Figure 18. MU22 represents catchment B20F that flows into the Wilge Dam some 25 km downstream. MU20 flows towards MU21 and ultimately to the Loskop Dam which is 65 km downstream (WSP, 2024b).

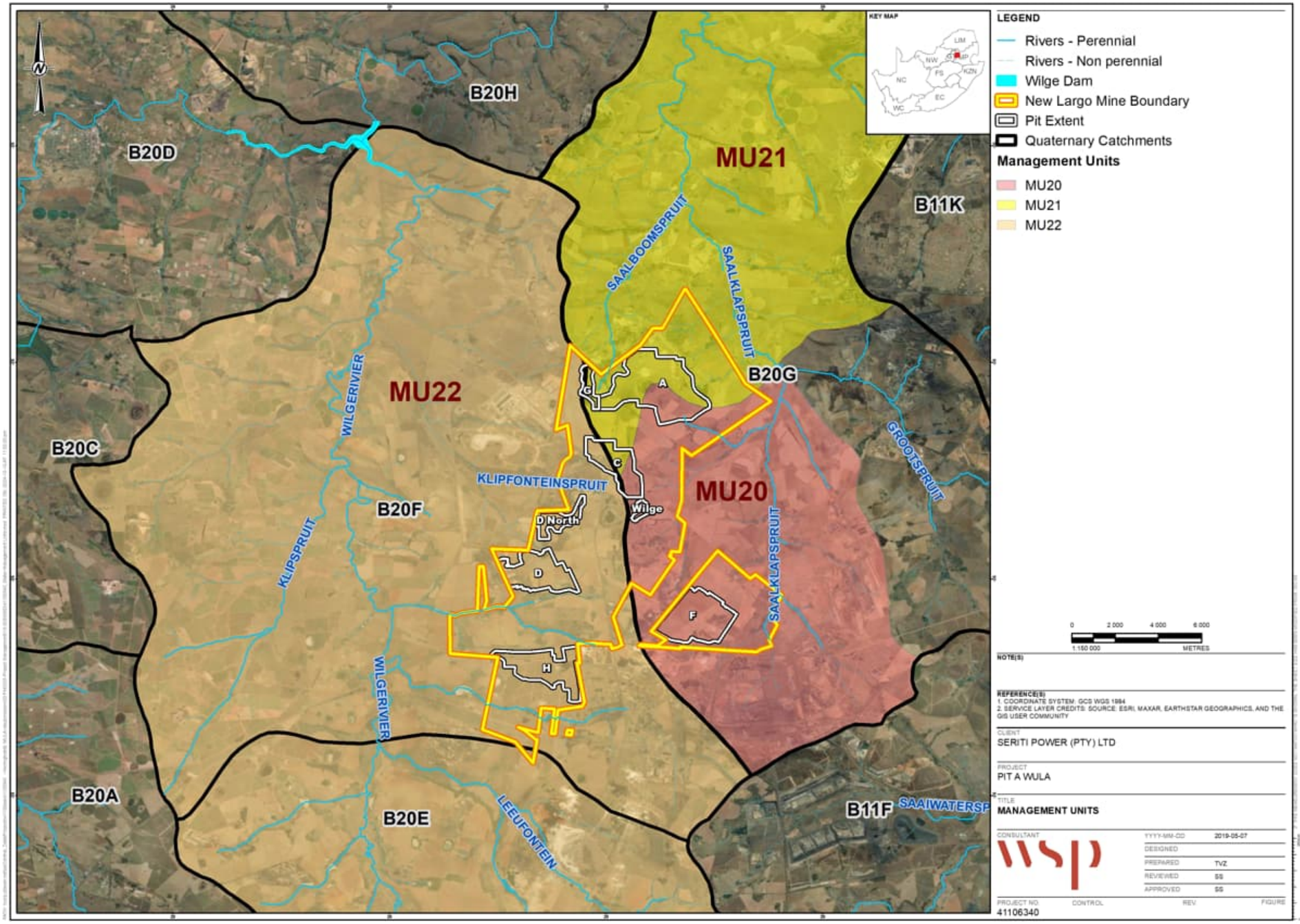


Figure 18: Catchment management units (WSP, 2024b)

4.6 SURFACE WATER HYDROLOGY

The New Largo Project is located across the water divide of quaternary catchments B20F (Wilge River) and B20G (Saalklapspruit).

The Wilge River flows north on the western side of the MRA. An unnamed tributary drain east to west through several farm dams on the southern boundary of Pit H, and further north several unnamed tributaries and the Klipfonteinspruit drain east to west to the Wilge River from the MRA. The Klipfonteinspruit flows on the southern boundary of Kusile Power Station.

The Saalklapspruit flows north along the eastern side of the MRA to confluence with the Wilge River approximately 15km downstream of the mine area. Several unnamed tributaries drain west to east to the Saalklapspruit, and the Grootspruit drains east to west to the Saalklapspruit. Downstream of the Grootspruit confluence with the Saalklapspruit, three unnamed tributaries emanating from springs enter the Saalklapspruit on the northeastern boundary of the MRA.

4.7 SURFACE WATER QUALITY

WUL condition 5 in Appendix V of WUL (No:04/B20G/ACFGIJ/2538) requires that the surface water monitoring points (Figure 19) be sampled on a monthly basis. It should be noted that New Largo has a standalone monitoring programme, and the monitoring localities will change as mining progresses.

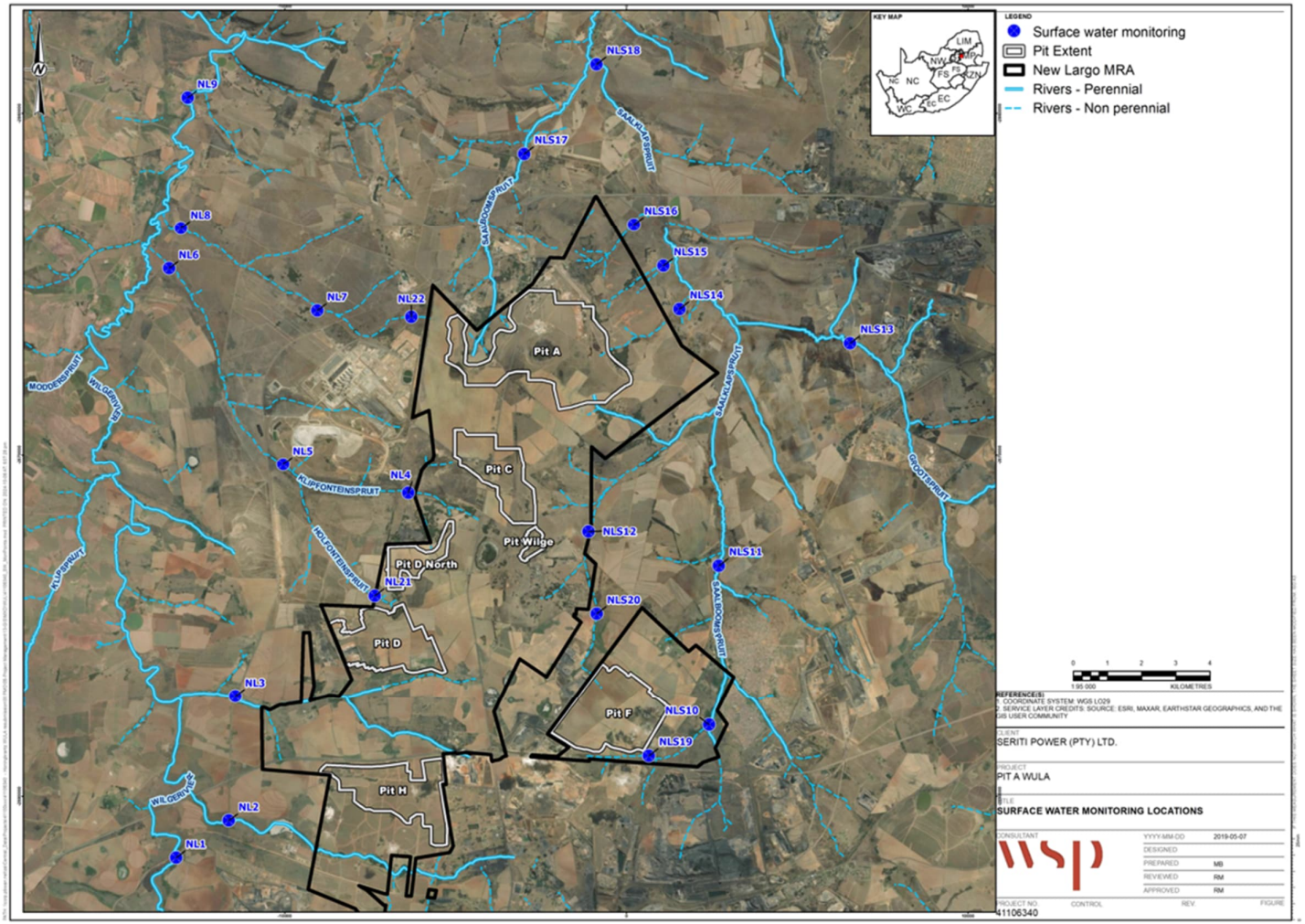


Figure 19: Surface water monitoring points as per WUL (WUL No:04/B20G/ACFGIJ/2538)

Surface Water quality information was obtained from the New Largo quarterly report compiled by (Aquatico (Pty) Ltd, 2024) for January until March 2024 (Appendix D).

Quarterly average surface water quality data were compared to the New Largo Colliery surface water WUL limits (Aquatico (Pty) Ltd, 2024).

On average, the majority of the surface water monitoring points sampled during the January 2024 to March 2024 quarterly period can be described as neutral and non - saline to saline.

During the January to March 2024 quarterly period, exceedances were noted in terms of a number of the analysed variables for the majority of the sampled surface water localities. The variables that exceeded the New Largo WUL: Surface Water limits include: Electrical conductivity (EC), Total Dissolved solids (TDS), Total Alkalinity, Aluminium (Al), Calcium (Ca), Sodium (Na), Chloride (Cl), Manganese (Mn), Magnesium (Mg), Potassium (K), Fluoride (F), Nitrate (NO_3), Iron (Fe), and Sulphate (SO_4). The monitored surface localities of most concern include: NL2, NL9, NLS10, NLS11, NLS13, NLS18, and NLS19.

The high SO_4 concentrations recorded at NLS10, NLS 11, NLS13, and NLS18 indicate a pollution source impacting these monitoring points. It is recommended that this source be investigated and contained (Aquatico (Pty) Ltd, 2024).

Mn concentrations at some of the surface water localities are likely naturally occurring due to interaction of the rock or soil with the water. However, this should be continuously monitored as extremely high Mn concentrations have been observed at NLS13, and NLS 16.

It should be noted that the New Largo WUL: Surface Water license only defines one value for pH. This is a limitation in terms of water quality comparison because an extremely low pH or an extremely high pH may result with detrimental impacts to the environment. For example, a low pH may facilitate the solubility of metals in the water, resulting with elevated metal concentrations observed. It is recommended that a range is defined for pH levels to better understand the water quality (Aquatico (Pty) Ltd, 2024).

Table 21: Quarterly Average Surface Water Quality Data, New Largo Colliery (January 2024 to March 2024) (Aquatico (Pty) Ltd, 2024).

VARIABLE	UNITS	New Largo WUL: Surface Water	MONITORING LOCALITIES									
			NL1	NL2	NL3	NL4	NL5	NL6	NL7	NL8	NL9	NLS10
pH @ 25°C	pH	9.03	8.25	7.78	8.16	4.03	7.89	7.37	7.87	7.84	7.88	8.22
Electrical conductivity (EC) @ 25°C	mS/m	96	120	50.3	35.3	30.7	91.9	41.1	11.9	14.7	105	328
Total Dissolved solids @ 180°C	mg/l	865	796	376	219	239	685	317	83	97	799	3136
Total Alkalinity	mg $CaCO_3$/l	59.9	91.4	132	127	*11.8*	80.2	58.5	53.8	62	91	234
Aluminium (Al)	mg/l	0.002	*0.001*	0.05	*0.001*	0.118	*0.001*	*0.001*	*0.004*	*0.001*	*0.001*	*0.001*
Calcium (Ca)	mg/l	124	70	34.5	28.4	22.4	151	46.5	9.29	10.5	104	440
Sodium (Na)	mg/l	33.9	198	40.4	19.2	10.7	12.4	13.2	9.69	8.65	99.1	54
Chloride (Cl)	mg/l	11.2	9.94	9.08	17.1	*1.46*	4.98	*3.34*	0.922	1.56	15.3	10.1
Manganese (Mn)	mg/l	0.031	*0.001*	2.13	*0.013*	0.805	0.257	1.5	*0.001*	*0.02*	*0.001*	*0.03*
Magnesium (Mg)	mg/l	65.8	13.6	22.4	17.3	13.6	29.5	13.3	4.24	6.16	27.3	322
Potassium (K)	mg/l	7.87	4.84	2.95	4.48	2.62	3.99	0.634	1.26	1.64	5.69	19.1
Fluoride (F)	mg/l	0.194	0.367	0.782	*0.379*	*0.255*	0.405	0.653	0.516	0.564	0.905	*0.204*
Iron (Fe)	mg/l	0.004	*0.002*	*0.022*	*0.002*	*0.002*	*0.002*	*0.002*	*0.002*	*0.004*	*0.002*	*0.002*
Ammonium (NH_4) as N	mg/l	-	0.046	0.14	0.08	0.215	*0.034*	0.061	*0.027*	0.049	0.112	0.238
Nitrate (NO_3) as N	mg/l	0.194	0.283	0.256	*0.244*	0.292	0.314	*0.199*	*0.217*	*0.207*	0.656	0.387
Sulphate (SO_4)	mg/l	585	495	111	31.9	115	393	126	1.72	1.79	438	2050
Zinc (Zn)	mg/l	0.611	*0.001*	*0.001*	*0.001*	*0.005*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
Dissolved oxygen (DO)	mg/l	-	6.86	6.05	6.6	6.39	6.8	5.39	6.87	6.83	6.34	7.02
Total suspended solids (TSS)	mg/l	-	26	79	*107*	14	15	42	19	*5.1*	166	12
Total oxidised nitrogen as N	mg/l	-	0.283	0.256	*0.244*	0.292	0.314	*0.199*	*0.217*	*0.207*	0.656	0.387
Turbidity	NTU	-	9.73	140	9.57	4.82	16.2	26.3	16.8	9.77	159	1.56

Table 22: Quarterly Average Surface Water Quality Data, New Largo Colliery (January 2024 to March 2024) continued (Aquatico (Pty) Ltd, 2024).

VARIABLE	UNITS	New Largo WUL: Surface Water	MONITORING LOCALITIES									
			NLS11	NLS12	NLS13	NLS14	NLS15	NLS16	NLS17	NLS18	NLS19	NLS20
pH @ 25°C	pH	9.03	7.76	7.9	3.85	7.56	7.79	7.73	8.23	8.32	7.82	6.78
Electrical conductivity (EC) @ 25°C	mS/m	96	181	45.9	171	11.6	15.9	49.6	20	131	39.9	83.1
Total Dissolved solids @ 180°C	mg/l	865	1451	275	1465	95	118	358	155	1037	269	621
Total Alkalinity	mg $CaCO_3$/l	59.9	216	207	*0.995*	53.5	71.3	135	78.7	133	102	36.2
Aluminium (Al)	mg/l	0.002	*0.001*	*0.001*	1.27	*0.001*	*0.005*	*0.001*	*0.002*	*0.001*	*0.001*	*0.001*
Calcium (Ca)	mg/l	124	177	44	222	7.99	10.7	47.1	16.6	147	44.5	72.9
Sodium (Na)	mg/l	33.9	65.6	32	30.4	5.44	8.56	16.8	9.49	44.8	12.9	52.1
Chloride (Cl)	mg/l	11.2	32	21.7	20.1	*0.279*	1.92	*0.714*	3.91	23.9	11.5	7.08
Manganese (Mn)	mg/l	0.031	0.419	0.168	9.88	*0.442*	*0.005*	3.84	*0.018*	*0.082*	*0.09*	1.47
Magnesium (Mg)	mg/l	65.8	135	21.1	86.1	7.17	8.9	29.5	9.68	85.3	18.1	36.5
Potassium (K)	mg/l	7.87	13.9	2.89	11.6	0.472	1.9	0.302	1.56	7.86	4.32	4.59
Fluoride (F)	mg/l	0.194	*0.305*	*0.38*	0.614	0.378	0.471	0.613	0.502	0.449	*0.25*	*0.569*
Iron (Fe)	mg/l	0.004	*0.285*	*0.002*	0.461	*0.153*	*0.095*	*0.002*	*0.075*	*0.002*	*0.002*	*0.002*
Ammonium (NH_4) as N	mg/l	-	7.85	0.051	0.117	0.053	0.071	0.206	0.045	0.035	0.405	0.163
Nitrate (NO_3) as N	mg/l	0.194	0.308	1.57	*0.21*	0.274	0.337	0.292	0.32	0.399	0.474	*0.303*
Sulphate (SO_4)	mg/l	585	831	12.7	889	4.49	3.46	124	11.3	607	87.8	406
Zinc (Zn)	mg/l	0.611	*0.001*	*0.001*	0.112	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*
Dissolved oxygen (DO)	mg/l	-	3.3	6.32	6.57	5.76	6.56	5.53	6.72	7.05	7.38	6.02
Total suspended solids (TSS)	mg/l	-	27	361	*6.4*	58	*3.2*	*27*	*4.2*	*128*	*25*	206
Total oxidised nitrogen as N	mg/l	-	0.308	1.57	*0.21*	0.274	0.337	0.292	0.32	0.399	0.474	*0.303*
Turbidity	NTU	-	20.6	149	1.29	59.7	13.9	52.4	7.9	62.2	28.6	410

Pan Water Monitoring

A Surface water pan was monitored in February 2024 and July 2024. A description of the site is given in the table below in Table 23. The results obtained for the two sampling campaigns are shown in Table 24 below.

Table 23: Pan monitoring site description and coordinates

Pan	Description	Coordinates	
		Latitude	Longitude
Honingkrantz Pan	Pan adjacent to and associated with Pit A	25°54'39.66"S	28°58'32.91"E

Table 24: Summary of the water quality results for the pans monitored during the February 2024 and July 2024 sampling campaigns

Water Quality Variable	Units	MU20 Monitoring Point HONINGKRANTZ PAN (PAN 1)	
		27-Feb-24	08-Jul-24
Physico-chemical			
pH#*	pH Units	6.12	7.84
Electrical Conductivity#*	mS/m	54	132
Total Dissolved Solid	mg/l	278	1 090
Dissolved Oxygen	mg/l	3.0	5.9
Suspended Solids at 105C(O)	mg/l	147	106
P Alkalinity(O)	mg/l $CaCO_3$	<0.6	<0.6
Total (M) Alkalinity(O)	mg/l $CaCO_3$	171	728
Sodium Adsorption Ratio(O)		1.43	6.12
Major Ions			
Ammonia as N(O)	mg/l	<0.05	2.46
Chloride Cl(O)	mg/l	15	118
Fluoride F(O)	mg/l	0.47	0.79
Nitrate NO_3(O)	mg/l	<0.442	<0.442
Nitrate NO_3 as N(O)	mg/l	<0.1	<0.1
Nitrite NO_2(O)	mg/l	0.013	0.052
Nitrite NO_2 as N(O)	mg/l	0.004	0.016
Ortho Phosphate PO_4 as P(O)	mg/l	<0.005	0.023
Phosphate PO_4(O)		0.015	-

Water Quality Variable	Units	MU20 Monitoring Point HONINGKRANTZ PAN (PAN 1)	
		27-Feb-24	08-Jul-24
Sulphate SO_4 (O)	mg/l	11.69	2.749
Calcium as Ca (O)	mg/l	21.7	59.1
Potassium as K (O)	mg/l	18.4	120
magnesium as Mg (O)	mg/l	13.22	61.60
Sodium as Na (O)	mg/l	34.34	281.66
Metals			
Aluminium as Al (O)	mg/l	<0.05	<0.05
Boron as B (O)	mg/l	<0.1	<0.1
Iron as Fe (O)	mg/l	0.520	0.920
Manganese as Mn (O)	mg/l	0.520	1.21
Hexavalent Chromium (O) as Cr (VI)	mg/l	<0.007	<0.007
Trace Elements (for which WQML exist)			
Arsenic as As (O)	mg/l	-	0.006
Barium as Ba (O)	mg/l	-	**0.432**
Beryllium as Be (O)	mg/l	-	0.013
Bromide as Bi (O)	mg/l	-	<0.001
Cadmium as Cd (O)	mg/l	-	<0.0001
Cobalt as Co (O)	mg/l	-	<0.001
Mercury as Hg (O)	mg/l	-	<0.0001
Nickel as Ni (O)	mg/l	-	**0.019**
Lead as Pb (O)	mg/l	-	<0.001
Antimony as Sb (O)	mg/l	-	**0.056**
Selenium as Se (O)	mg/l	-	0.005
Thalium as Th (O)	mg/l	-	**0.047**
Uranium as U (O)	mg/l	-	<0.0001
Vanadium as V (O)	mg/l	-	<0.001

(O) Outsourced

4.8 MEAN ANNUAL RUNOFF (MAR)

Catchment areas and runoff coefficients

An important factor in hydrological modelling is the determination of relevant runoff coefficient. The runoff coefficients have been based on standard guidelines given in the Road Drainage Manual for different types of land-use. The Rational “C” value and the Curve number “CN” ranges are given in Table 25 and Table 26, respectively (Bio Engineering Africa Consulting (Pty) Ltd, 2023).

Table 25: Typical Rational C Values (Appendix C)

Typical Land Use	C Value	Typical Land Use	C Value
Business:	0.70 - 0.95	Lawns:	0.05 - 0.10
Downtown areas	0.50 - 0.70	Sandy soil, flat, 2%	0.10 - 0.15
Neighbourhood areas		Sandy soil, avg., 2-7%	0.15 - 0.20 0.13 - 0.17
		Sandy soil, steep, 7%	0.18 - 0.22
		Heavy soil, flat, 2%	0.25 - 0.35
		Heavy soil, avg., 2-7%	
		Heavy soil, steep, 7%	
Residential:	0.30 - 0.50 0.40 - 0.60	Agricultural land:	
Single-family areas	0.60 - 0.75	Bare packed soil	0.30 - 0.60
Multi units, detached	0.25 - 0.40	*Smooth	0.20 - 0.50
Multi units, attached		*Rough	
Suburban		Cultivated rows	0.30 - 0.60 0.20 - 0.50
		*Heavy soil, no crop	0.20 - 0.40
		*Heavy soil, with crop	0.10 - 0.25
		*Sandy soil, no crop	
		*Sandy soil, with crop	0.15 - 0.45
		Pasture	0.05 - 0.25
		*Heavy soil	0.05 - 0.25
		*Sandy soil	
		Woodlands	
Industrial:		Streets:	
Light areas	0.50 - 0.80	Asphaltic	0.70 - 0.95
Heavy and mining areas	0.60 - 0.90	Concrete	0.80 - 0.95
		Brick	0.70 - 0.85
Waste dumps	0.12 -0,15	Course material waste dumps	0,15
Parks, cemeteries	0.10 - 0.25	Unimproved areas	0.10 - 0.30

Typical Land Use	C Value	Typical Land Use	C Value
Playgrounds	0.20 - 0.35	Drives and walks	0.75 - 0.85
Railroad yard areas	0.20 - 0.40	Roofs	0.75 - 0.95

Table 26: Typical CN Values (Appendix C)

Land Use	Imperviousness		Curve Number						
Category	(% directly connected)		Soil Type						
	Range	Average	A	A/B	B	B/C	C	C/D	D
Open Space	3-6	4	40	51	61	68	74	78	80
Agriculture	6-8	7	65	70	75	79	82	84	86
Small Holdings	10-15	12	46	56	65	72	76	80	82
Residential Low	15-20	16	51	61	68	75	78	82	84
Residential Medium	30-35	33	35	64	71	77	80	84	86
Residential High	35-45	40	59	75	80	84	86	88	90
Town House	45-50	48	79	83	86	89	90	92	93
Commercial/Industrial	70-85	79	85	88	90	91	92	93	94
Heavy industrial and mining			89	91	92	93	94	95	95

4.9 RESOURCE CLASS AND RIVER HEALTH RECEIVING WATER QUALITY OBJECTIVES AND RESERVE

The protection of water resources is governed by Chapter 3 of the National Water Act (NWA), and Chapter 5 of the National Water Resources Strategy 2 (NWRS2) (DWA, 2013) which prescribe the protection of the water resources through resource directed measures (RDM) and the classification of water resources. These are measures intended to ensure the protection of water resources and are measures for pollution prevention and remedying the effects of pollution while balancing the need to use water as a factor of production to enable socio-economic growth and development (Golder, 2019b).

In order to give effect to the concept of sustainability, an understanding of the nature and requirements of aquatic ecosystems under present conditions is needed. In addition, the pressures being placed upon resources, how the resources are being used, the water resources management

intent, and finally the objectives which provide a statement (in terms of biota, habitat, flow, and water quality) of the conditions that need to be met are also factors that must be considered.

The Reserve, classification of the resources and Resource Quality Objectives have been promulgated for the Upper Olifants Water Management Area (WMA) in which the New Largo mine is located.

4.9.1.1 Water Resource Classification

The Water Resource Classification Study (WRCS) places the following principles at the forefront of implementation:

- Maximising economic returns from the use of water resources;
- Allocating and distributing the costs and benefits of utilising the water resource fairly; and
- Promoting the sustainable use of water resources to meet social and economic goals without detrimentally impacting on the ecological integrity of the water resource.

The Wilge River catchment has been classified as a Class II River and the Saalklapspruit as a Class III river, in Government Gazette No 39943, 22 April 2016, Notice No 466, National Water Act, 1998 (Act No.36 of 1998) Classes and Resource Quality Objectives of Water Resources for the Olifants Catchment, where the classes are described as below (Table 27).

Table 27: Water Resource Classification

Class	Description
Class I	Minimally used Water resource is one which is minimally used, and the overall condition of that water resource is minimally altered from its pre-development condition
Class II	Moderately used Water resource is one which is moderately used, and the overall condition of that water resource is moderately altered from its pre-development condition
Class III	Heavily used Water resource is one which is heavily used, and the overall condition of that water resource is significantly altered from its pre-development condition

4.9.1.2 The Reserve

The Reserve specifies the quantity, quality, habitat, and biotic integrity requirements necessary for the protection of the resource, has priority over other water uses, and will vary according to the class of the resource. The Reserve is a protection measure that comprises two components:

- Basic human needs (BHN), ensuring that the essential needs of individuals served by the water resource in question are provided for.
- The ecological Reserve which is not intended to protect the aquatic ecosystem per se, but to maintain aquatic ecosystems in such a way that their integrity remains intact, and they can continue to provide the goods and services to society and is specified for groundwater, wetlands, rivers, and estuaries.

The Present Ecological State (PES) is defined as the current state or condition of a water resource in terms of its biophysical components (drivers) such as hydrology, geomorphology and water

quality and biological responses: fish, invertebrates, and riparian vegetation. The extent to which ecological conditions of an area have been modified from natural conditions (reference) and the Ecological Importance and Sensitivity (EIS) relate to the presence, representativeness, and diversity of species of biota and habitat. Ecological Sensitivity relates to the vulnerability of the habitat and biota to modifications that may occur in flows, water levels and physico-chemical conditions.

PES and EIS were determined during the classification study. The Bronkhorstspruit, Saalklapspruit and Upper Wilge rivers were found to be in a moderately modified state (category C) with fewer developed areas present in the catchment compared to other parts of the Upper Olifants catchment. The importance of the resources in this catchment was described as being moderate, especially in terms of good water quality contributed to the main stem Olifants River above Loskop Dam. Therefore, it was proposed to maintain the current PES category within the catchment. A Management Class II was recommended. This means that the area can be moderately used and that the water resource could be moderately altered from its pre-development condition.

The Ecological Water Requirements (EWR) for the site located on the Wilge River (EWR4) just downstream of the confluence of the Wilge River and the Saalklapspruit are set out in Table 28 and Table 29.

4.9.1.3 Resource Quality Objectives

Resource Quality Objectives (RQO) have been gazetted for the Wilge River catchment. Site EWR 4 is the site at which RQOs (quantity and quality) have been set (Table 28) and (Table 29) respectively (Golder, 2019b).

Table 28: River water quantity RQO (Golder, 2019b)

River	REC	RQO	Indicator/ measure	Numerical limit		
Wilge (EWR site - EWR4, outlet of IUA2)	B	Low flows need to be improved in order to maintain river habitat and the ecosystem.	EWR maintenance low and drought flows: Wilge EWR4 in B20J VMAR = 175.59x10°m^3 PES=B category	Maintenance low flows (m^3/s) (Percentile)		Drought flows (m^3/s) (Percentile)
				Oct	0.806 (50)	0.206 (99)
				Nov	1.094 60)	0.269 (99)
				Dec	1.235 (60)	0.298 (99)
				Jan	1.476 60)	0.350 (99)
				Feb	1.862 (60)	0.436 (99)
				Mar	1.733 (60)	0.405 (99)
				Apr	1.528 (50)	0.362 (99)
				May	1.277 (50)	0.307 (99)
				Jun	1.121 (50)	0.275 (99)
				Jul	0.961 (60)	0.239 (99)
				Aug	0.802 (60)	0.205 (99)
				Sep	0.696 (60)	0.183 (99)

Table 29: EWR Site: Lower Wilge: Olifants_EWR4: Eco Specs relating to Physico-chemical data

River: Lower Wilge		EWR: Olifants_EWR4	Downstream B2H015Q01 Wilge River at Zusterstroom
Water quality metrics		ECOSPEC: TEC, PES and RQO	
Major Ions	Mg	The 95th percentile of the data must be ≤ 20 mg/l	
	SO_4	The 95th percentile of the data must be ≤ 150 mg/l	
	Na	The 95th percentile of the data must be ≤ 20 mg/l	
	Cl	The 95th percentile of the data must be ≤ 30 mg/l	
	Ca	The 95th percentile of the data must be ≤ 70 mg/l	
Physical variables	EC	The 95th percentile of the data must be ≤ 55 mS/m	
	pH	The 5th and 95th percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5th percentile of the data must be ≥ 7.0 mg/l	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable	
Nutrients	TIN	The 50th percentile of the data must be ≤ 0.75 mg/l	
	PO_4-P	The 50th percentile of the data must be ≤ 0.025 mg/l	
Response variables	Chl-a phytoplankton	The 50th percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50th percentile of the data must be ≤ 21 mg/m2	
	Ammonia	The 95th percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95th percentile of the data must be ≤ 48.75 µg/L	
	Aluminium	The 95th percentile of the data must be ≤ 62.5 µg/L	
	Fluoride	The 95th percentile of the data must be ≤ 0.7 mg/l	
	Manganese	The 95th percentile of the data must be ≤ 99.0 µg/L	

Notes: TEC: Target Ecological Category; PES: Present Ecological Status and RQO: Resource Quality Objective

4.9.1.4 Water Quality Planning Limits

While RQOs have been determined for the Upper Olifants catchment, the determination of Water Quality Planning Limits (WQPL) was also undertaken to support the implementation of the RQOs. The setting of WQPLs ensures water quality planning at a finer scale and ultimately assists in achieving the downstream RQOs. The Upper Olifants catchment was sub-divided into management units (MU), and the Wilge River falls into MU22 and the Saalklapspruit into MU20. The limits set out in Table 30 were used to compare the current baseline data.

Table 30: Water Quality Planning Limits for the Wilge River and Saalklapspruit

Variable		Wilge River (MU22)	Saalklapspruit (MU20)
Calcium (dissolved)	mg/l	32	80
Chloride (dissolved)	mg/l	20	45
Total Dissolved Solids	mg/l	260	500
Electrical Conductivity	mS/m	40	75
Fluoride (dissolved)	mg/l	0.75	0.75
Potassium (dissolved)	mg/l	10	25
Magnesium (dissolved)	mg/l	20	50
Sodium (dissolved)	mg/l	30	70
Ammonium (NH_4-N)	mg/l	0.05	0.05
Nitrate	mg/l	0.5	0.5
Total Phosphorus	mg/l	0.25	0.25
pH		6.5-8.4	6.5-8.4
Orthophosphate	mg/l	0.025	0.025
Sulphate (dissolved)	mg/l	70	400
Total Alkalinity	mg/l	120	120
Dissolved Organic Carbon	mg/l	10	10
Dissolved Oxygen	mg/l	9	9
Sodium Absorption Ratio		2	2
Suspended Solids	mg/l	5	5
Chlorophyll a	µg/l	1.5	1.5
Escherichia coli	CFU/ 100ml	130	130
Faecal coliforms	CFU/ 100ml	130	130
Aluminium	mg/l	0.02	0.02
Boron	mg/l	0.5	0.5
Chromium (VI)	µg/l	7	7

Variable		Wilge River (MU22)	Saalklapspruit (MU20)
Iron	mg/l	0.1	0.1
Manganese	mg/l	0.02	0.02

4.10 SURFACE WATER USER SURVEY

An update of the users in the area was done as part of the Hydrocensus and, can be found in Section 4.15.

4.11 SENSITIVE AREAS SURVEY

Wetland Consulting Services (Pty.) Ltd. (WCS) was appointed by WSP Africa on behalf of Seriti to update the New Largo Wetland Mitigation and Offset Strategy (Appendix F). The findings of this study are documented in this section.

New Largo Coal Wetlands

New Largo Coal intends to undertake opencast coal mining activities that will impact a number of wetlands within the Mining Right Area (MRA) at Pit A. A field survey was undertaken over several days in August and September 2022 to collect the required input data for the various wetland assessment updates. Previous wetland delineations were used as the basis of this study (WCS, 2012; 2016 and limited verification in 2020 as part of the new Water Use licence Application f), and only the state and sensitivity of wetlands were updated as part of this project to reflect the current state. Several different wetland HGM types have been identified, delineated, and classified within the study area (Wetland Consulting Services (Pty.) Ltd. , 2024). These include:

- Channelled and unchannelled valley bottoms.
- Seeps.
- Depressions.

Also recorded onsite are drainage lines - watercourses that act as preferential flow paths but support neither wetland habitat nor riparian habitat. Springs also occur, some of which support wetland habitat. In some cases, the wetland habitat occurs in excavations or small dams dug around the springs (Wetland Consulting Services (Pty.) Ltd. , 2024).

A map of the wetlands associated with the Mining Rights Area is shown in Figure 20 and the areas covered by each wetland HGM type are detailed in Table 31.

Table 31: Wetland types, other watercourses and the approximate total area of each within the study area (Wetland Consulting Services (Pty.) Ltd. , 2024).

Wetland HGM Classification	Wetland Area (Ha)	% of Total Wetland Area
Channelled Valley Bottom	108	5.86%
Unchannelled Valley Bottom	198	10.78%
Drainage line	3	0.15%

Wetland HGM Classification	Wetland Area (Ha)	% of Total Wetland Area
Seep	1373	74.86%
Depression	153	8.35%
Grand Total	**1834**	**100%**

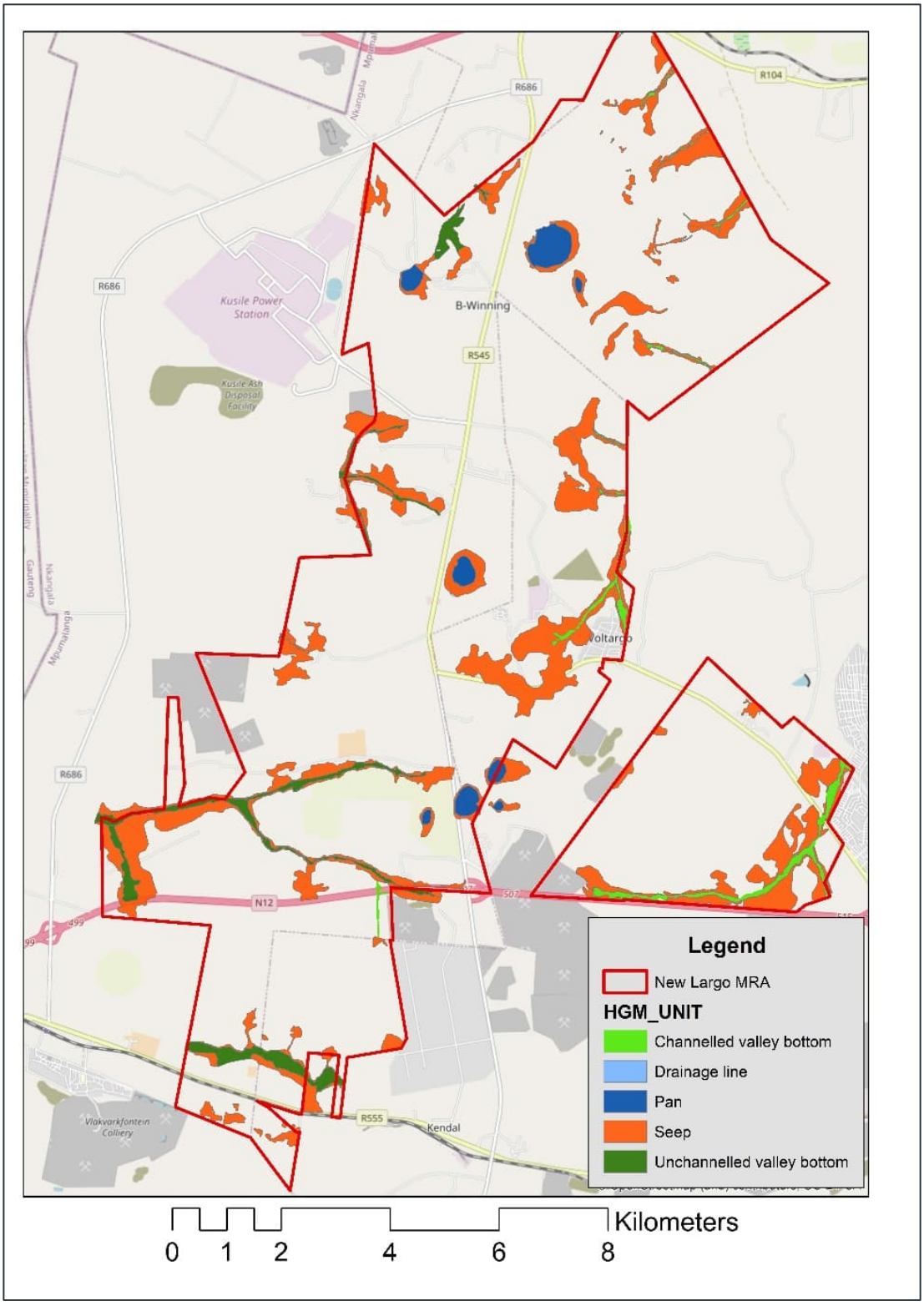


Figure 20: Distribution and HGM typing of wetlands within the study area (Wetland Consulting Services (Pty.) Ltd. , 2024)

Wetland Present Ecological State (PES)

An updated PES assessment was undertaken for all the wetlands within the New Largo Coal Mining Right Area utilizing the WET-Health Version 2 Level 1b assessment methodology (MacFarlane, *et al*., 2020), which determines the PES of a wetland based on land use within the wetland, a 200m buffer around the wetland, and within its catchment. For the purpose of this assessment, land use was mapped based on the latest available Google Earth imagery and supported by field observations (Wetland Consulting Services (Pty.) Ltd. , 2024).

The wetlands onsite exist within a mosaic of different land uses which affect the wetlands in a variety of ways. The land uses across the study area can be broadly grouped into the following categories (Wetland Consulting Services (Pty.) Ltd. , 2024):

- Past underground mining and associated surface infrastructure – Within the study area this is limited to past underground mining associated with the New Largo Colliery. The underground voids have resulted in limited decant of mine impacted water into the wetlands. Rehabilitated material dumps are also present.
- Agriculture – On the surface, agriculture is the dominant land use across the wetlands and their catchments. This includes the cultivation of dryland crops, such as maize, and livestock grazing. Cultivation of annual crops can have a significant impact on wetlands, in particular seepage wetlands. As seepage wetlands are usually only temporarily to seasonally saturated, cultivated fields often extend into the wetland margins, causing a loss of wetland vegetation and disturbance of the soils. Cultivated lands in which appropriate soil conservation measures are not employed are also often a source of sediment, and due to reduced surface roughness can lead to an increase in surface relative to subsurface flows into and through affected wetlands. The use of herbicides, pesticides, and fertilisers leads to water quality deterioration in the receiving wetlands. Associated with agriculture in general, is the construction of earth dams within valley bottom wetlands, and occasionally, in seepage wetlands. Dams can have a significant impact on wetlands, as they impound flows, thereby reducing supply to the downstream wetlands, and at dam outlets cause flow concentration. The raised water level behind the dam wall creates a hydraulic head which, coupled with the excavation of the dam itself, creates conditions which facilitate headcut formation and channel erosion both up- and downstream of the dam.
- Pastures – Scattered amongst the cultivated fields are several areas that are planted with perennial pasture grasses and regularly mowed and baled. Pastures have a relatively low impact on wetland habitat relative to cultivation. The primary impact is reduced habitat quality and species diversity as the diversity of natural mesic grassland is replaced with a monoculture of pasture grass.
- Natural grassland – Natural grasslands, both primary and secondary, are relatively extensive within the wetlands and to a lesser extent, within their catchments. In most cases, available grassland is used to graze livestock, and depending on stocking densities, can have a negative impact on grassland if overgrazed. Secondary grassland, or semi-natural grassland, occurs in areas that have been cultivated in the past, but have been left fallow and, to a greater or lesser degree, have regenerated.

A summary of the PES results is shown in Table 32 and Figure 21.

Table 32: Summarised results of the PES assessment showing the percentage of each wetland type (in terms of extent) falling into each PES category, as well as the overall percentage per category (bottom row) (Wetland Consulting Services (Pty.) Ltd. , 2024).

Wetland Type	PES B	PES C	PES D	PES E	TOTAL (%)
Channelled valley bottom	0%	1%	5%	0%	6%
Depression	0%	4%	4%	0%	8%
Drainage line	0%	0%	0%	0%	0%
Seep	1%	9%	57%	8%	75%
Unchannelled Valley Bottom	0%	0%	10%	0%	11%
TOTAL	**1%**	**14%**	**76%**	**9%**	**100%**

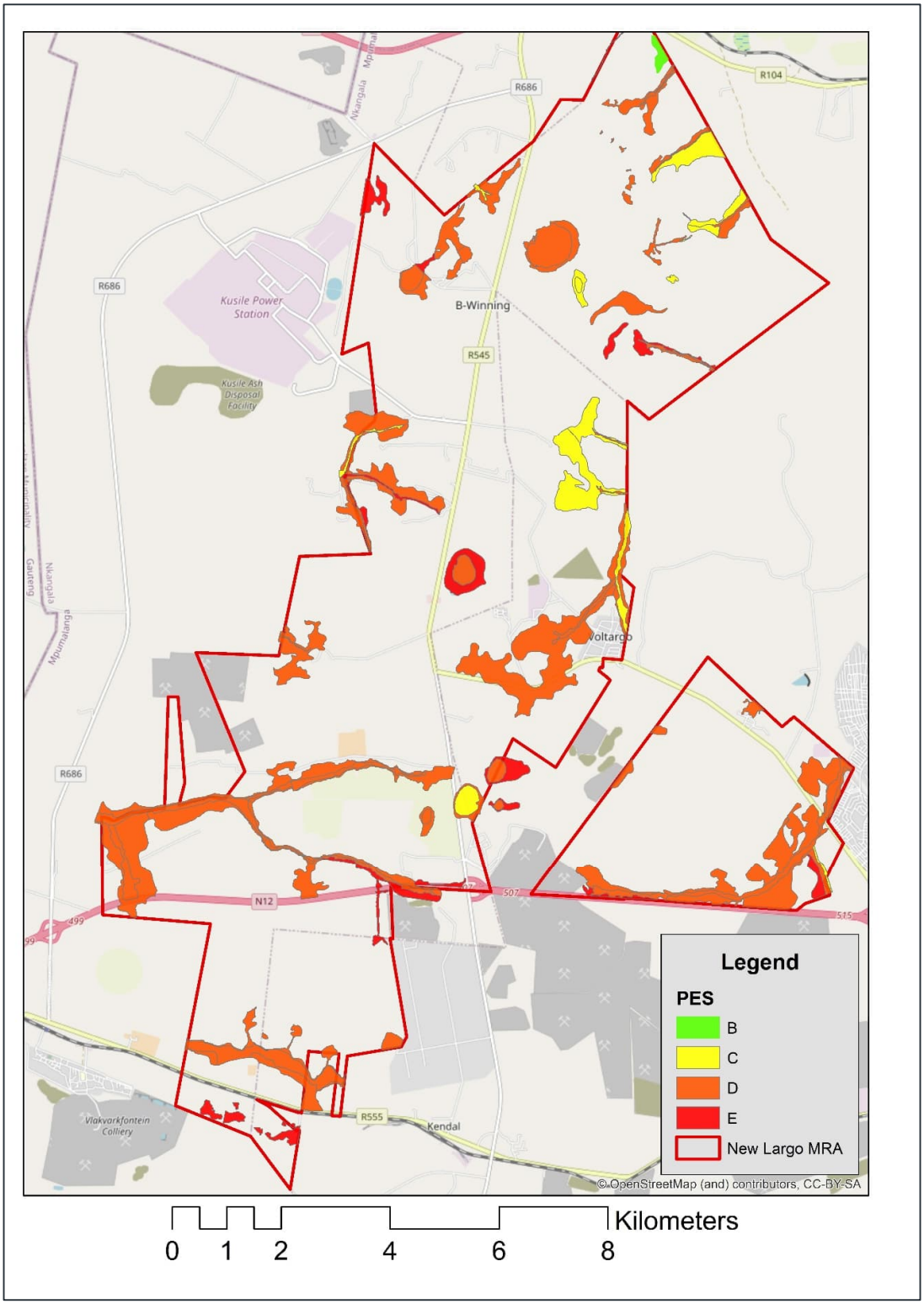


Figure 21: Map showing the PES assessment results for the wetlands within the New Largo Coal MRA (Wetland Consulting Services (Pty.) Ltd. , 2024)

Wetland Importance and Sensitivity (IS)

The scoring system as described in the document "Manual for the Rapid Ecological Reserve Determination of Inland Wetlands (Version 2.0)" (Rountree *et al*., 2013) was applied for the determination of the IS of the wetlands. The results of the IS assessments are reflected in the placement of each wetland unit into a category based on the assessment scores (Wetland Consulting Services (Pty.) Ltd. , 2024).

Considerations that informed the IS assessment included:

- The location of part of the study area within a vegetation type (Eastern Highveld Grassland) that is considered extensively transformed and threatened, having been classed as **Vulnerable**.
- The location of part of the study area within a vegetation type (Rand Highveld Grassland) that is considered extensively transformed and threatened, having been classed as **Vulnerable**.
- According to the national wetland map (Van Deventer et al., 2019), generated as part of the latest National Biodiversity Assessment (NBA, 2018) the relevant wetland ecosystem types present within the study area, and their threat status and protection levels are as follows:
  - Mesic Highveld Grassland Bioregion (Valley-bottom): Critically Endangered and Not Protected.
  - Mesic Highveld Grassland Bioregion (Seep): Critically Endangered and Poorly Protected; and
  - Mesic Highveld Grassland Bioregion (Depression): Least Concern and Poorly Protected.
- The designation of various sections of the study area as Critical Biodiversity Areas, including portions of wetlands delineated, as a "Critical Biodiversity Area – Irreplaceable" and Ecological Support Areas (ESA) Wetlands and Wetlands Clusters according to the Mpumalanga Biodiversity Sector Plan (2019 Datasets)
- The capacity of the wetlands and different wetland types to support rare, endangered, or protected fauna and flora. For example, Greater and Lesser Flamingos and Blue cranes were previously observed within, and within the vicinity of, the Honingkrantz Pan.
- The valley bottom wetlands and several of the seeps draining towards the Saalklapsruit and Wilge Rivers in the east and west respectively and Honingkrantz Pan are classified as Freshwater Ecosystem Priority Areas (FEPA's) The functional value of the different wetland types, particularly their capacity to improve water quality, in light of the anticipated poor quality of water discharging from the old New Largo Colliery underground voids at various decant points.

It is these considerations that have informed the scoring of the wetlands in terms of their importance and sensitivity, and it was found that the wetlands on site are mostly of Moderate importance and sensitivity (Table 33, Figure 22) though a number of the larger seeps and depressions are of High IS.

Table 33: Results of the IS assessment detailing the proportion of each wetland type falling into each category (Wetland Consulting Services (Pty.) Ltd. , 2024)

IS Category	HGM Unit					Total Area (%)
	Channelled Valley Bottom	Unchannelled Valley Bottom	Hillslope Seep	Depression	Drainage Line	
High	0.23%	1.21%	15.58%	4.65%	0.00%	22%
Moderate	5.34%	9.56%	44.15%	3.70%	0.00%	63%
Low/Marginal	0.29%	0.00%	15.13%	0.00%	0.15%	16%
Total Area (%)	5.86%	10.78%	74.86%	8.35%	0.15%	100%

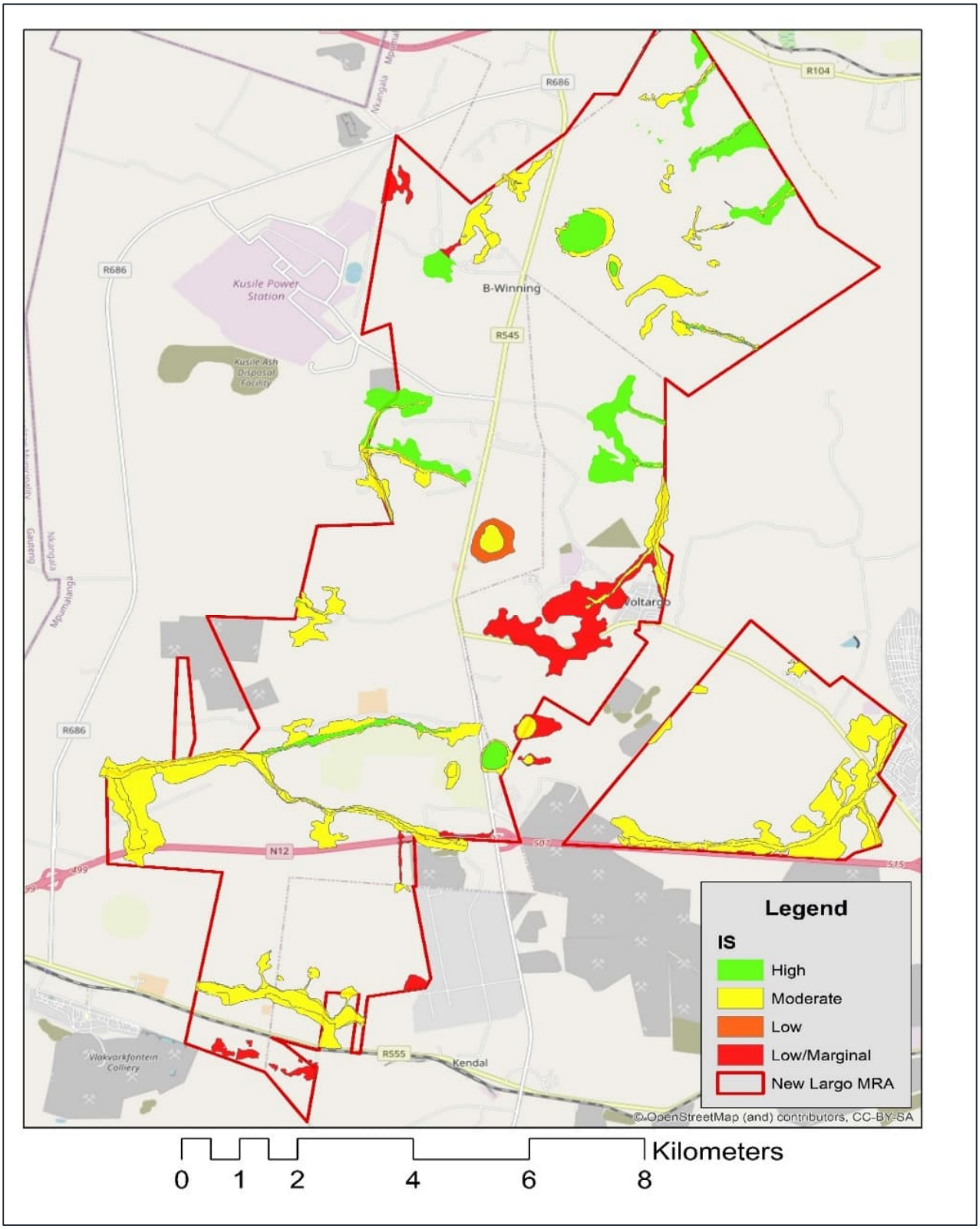


Figure 22: Map showing the importance and sensitivity (IS) of the wetlands within the study area (Wetland Consulting Services (Pty.) Ltd. , 2024)

Calculation of Wetland Offset Requirements

The SANBI & DWS (2016) wetland offset calculator was applied for the determination of the offset targets, using the updated wetland assessment data and the revised mine plan as input data. For the purpose of determining the required offset targets, direct wetland loss will occur in areas where wetlands will be completely lost within the footprints of mining and surface infrastructures. Indirect wetland loss refers to situations where the wetlands themselves will not be lost, but mining or infrastructure within the wetland catchment may affect the hydrology supporting the wetland by reducing flow inputs. The wetter a wetland's soils, the less water stress occurs. Conversely, if evapotranspiration or soil saturation is reduced, then this suggests water-limiting conditions and changes in the wetland-specific vegetation would be expected. Therefore, a reduction in the saturation of the wetland soils can lead to a deterioration in the wetland's condition and reduced functionality of the wetland. To quantify indirect losses, the losses were modelled using relative reductions of soil saturation and evapotranspiration of the affected wetlands resulting from the proposed mine plan, and these reductions equated to degrees of wetland degradation (lowering of the wetland PES category). Currently, there are no appropriate, scientifically developed, and tested methods to rate flow reduction of water balance components feeding wetlands or to relate this to a deterioration in wetland condition (PES). However, a suggested impact score rating for reduction of evapotranspiration and soil saturation is shown in Table 34 and was applied in determining the changes in wetland condition resulting from mining-related activities within various wetland catchments (Wetland Consulting Services (Pty.) Ltd. , 2024).

Table 34: Impact score on predicted wetland impacts based on average Soil Saturation Index (SSI) percentage reductions.

Severity	SSI reduction	Description	Estimated PES category reduction
No Impact	0-2.5 %	Where the reductions will not have a significant effect.	None
Low	2.5 – 5 %	Where the reductions will have a relatively small effect on the wetland integrity and functions; mitigation is unlikely to be required.	½
Low - Moderate	5 – 10 %	Where the reductions will likely have a negative effect on wetland integrity and functions; mitigation might be required.	1
Moderate	10 – 15 %	Where the reductions will definitely have a negative effect on wetland integrity and functions; mitigation is required.	1 ½
Moderate – High	15 – 22.5 %	Where the reductions will definitely have a negative effect on wetland integrity and functions; mitigation is required.	2
High	22.5 – 30 %	Where the reductions will definitely have a severe negative effect on wetland integrity and functions; mitigation is required.	2 ½
Very High	30 – 60 %	Where the impact will be severe and wetland integrity and functions are likely lost.	3
Non-Functional	> 60 %	Where the impacts are too severe for maintaining any functionality and the wetland can be regarded as lost.	4

A water use licence (WUL) (04/B20G/ACFGIJ/2538) was granted in 2015 authorising the New Largo Coal (Pty) Ltd to mine some of the wetlands and pans based on Mine Plan 7 which was approved at the time (Figure 23). The 2024 mine plan includes adjustments to the New Largo mine plan that now excludes many of the wetlands that would have been lost according to the previous mine plan. Figure 24 illustrated the 2024 mine plan in relation to the current wetland extent and shows those wetlands that are now proposed to be excluded from the mining activities and those that will remain directly impacted by mining activities. Even though there are exclusions of wetlands in the 2024 mine plan, there are still wetlands that will remain impacted and hence the strategy requires revision and updates. The extent of wetlands in relation to the proposed mining areas under the 2024 Mine Plan is indicated in Figure 24, while Figure 25 indicates direct and indirect wetland losses as a result of the proposed mining areas and associated infrastructure (Wetland Consulting Services (Pty.) Ltd. , 2024).

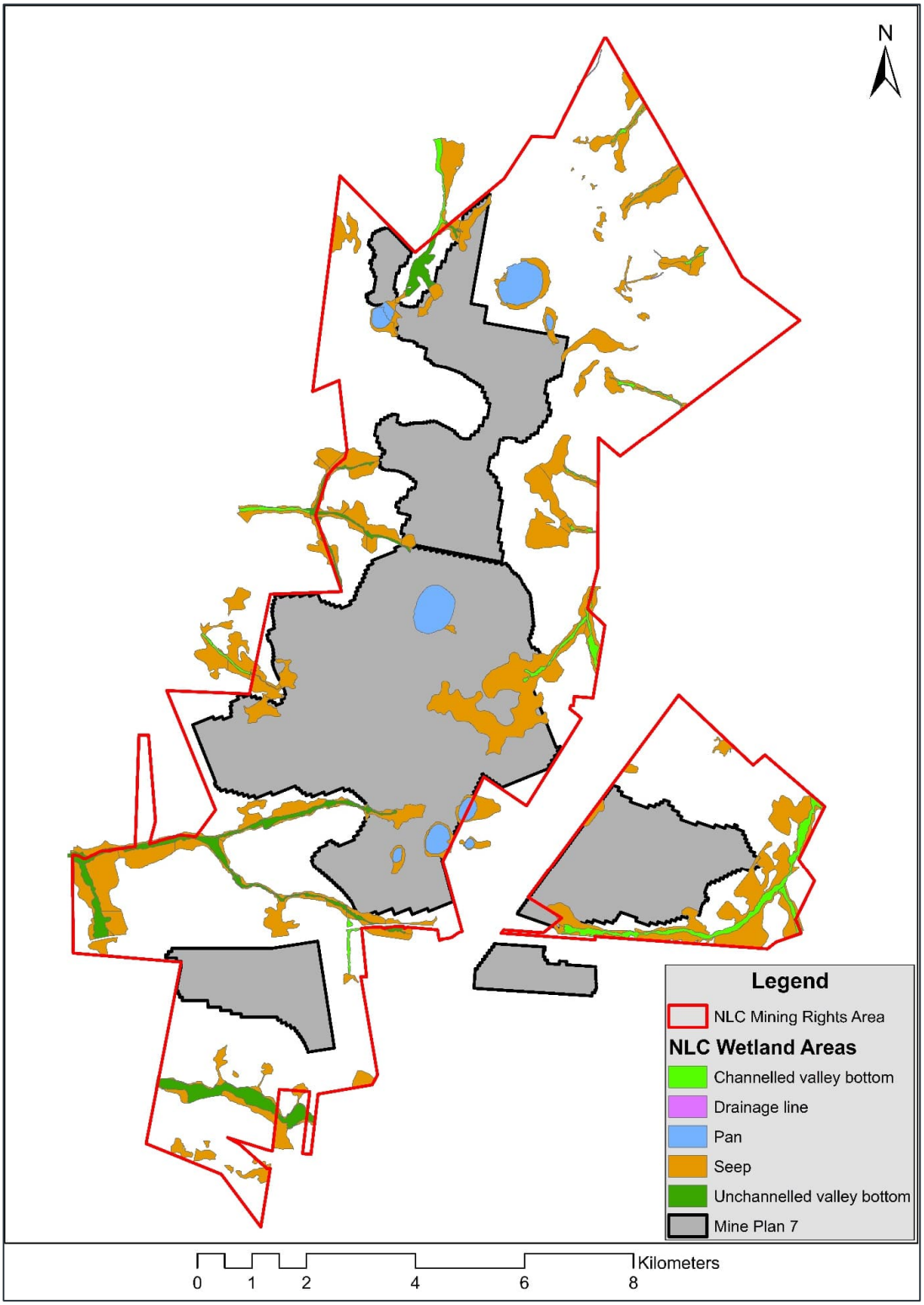


Figure 23: Approved mine plan as per existing WUL 04/B20G/ACFGIJ/2538 (Wetland Consulting Services (Pty.) Ltd. , 2024)

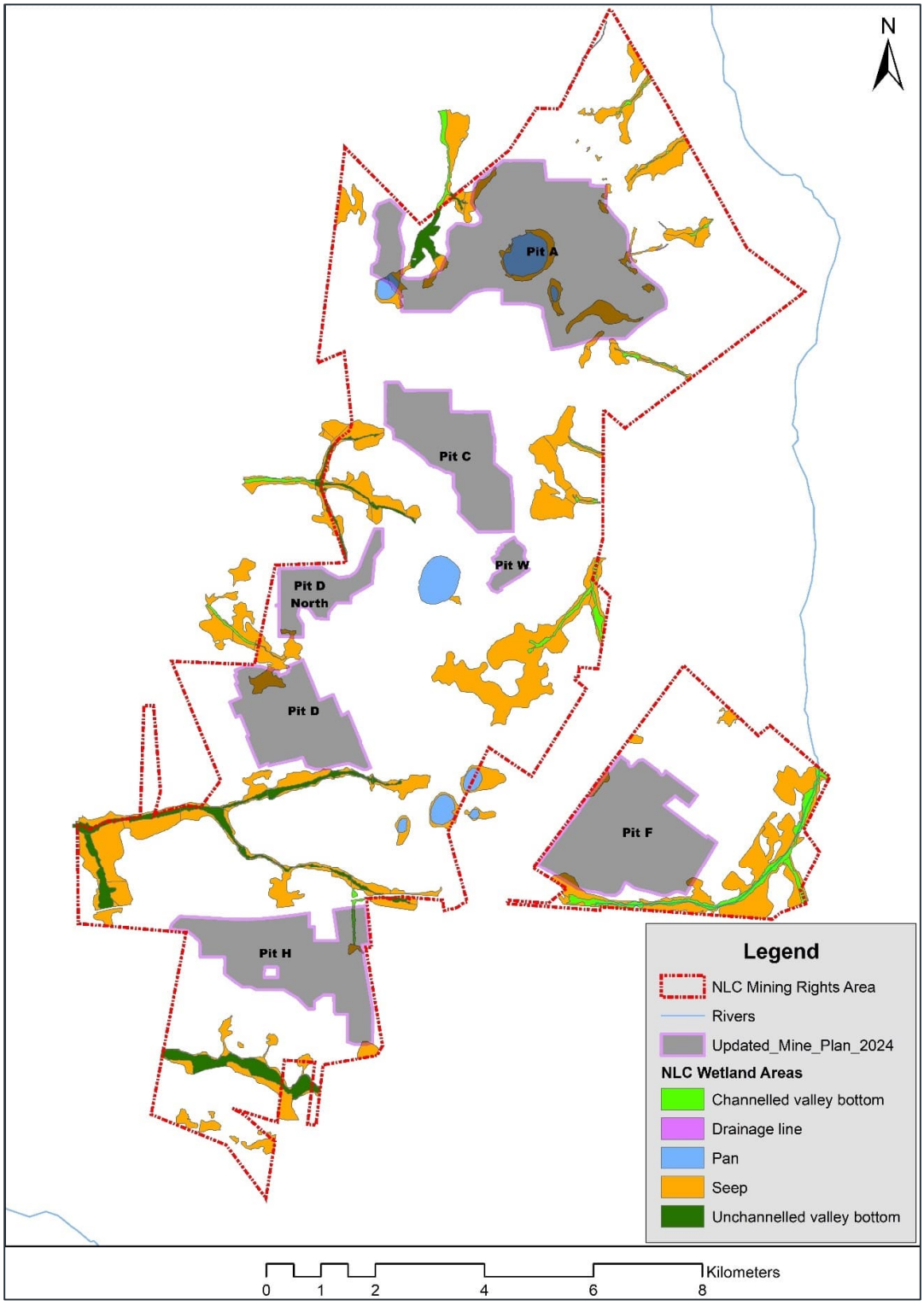


Figure 24: Map of the New Largo Coal proposed mining areas (2024 Mine Plan) in relation to the wetlands (Wetland Consulting Services (Pty.) Ltd. , 2024)

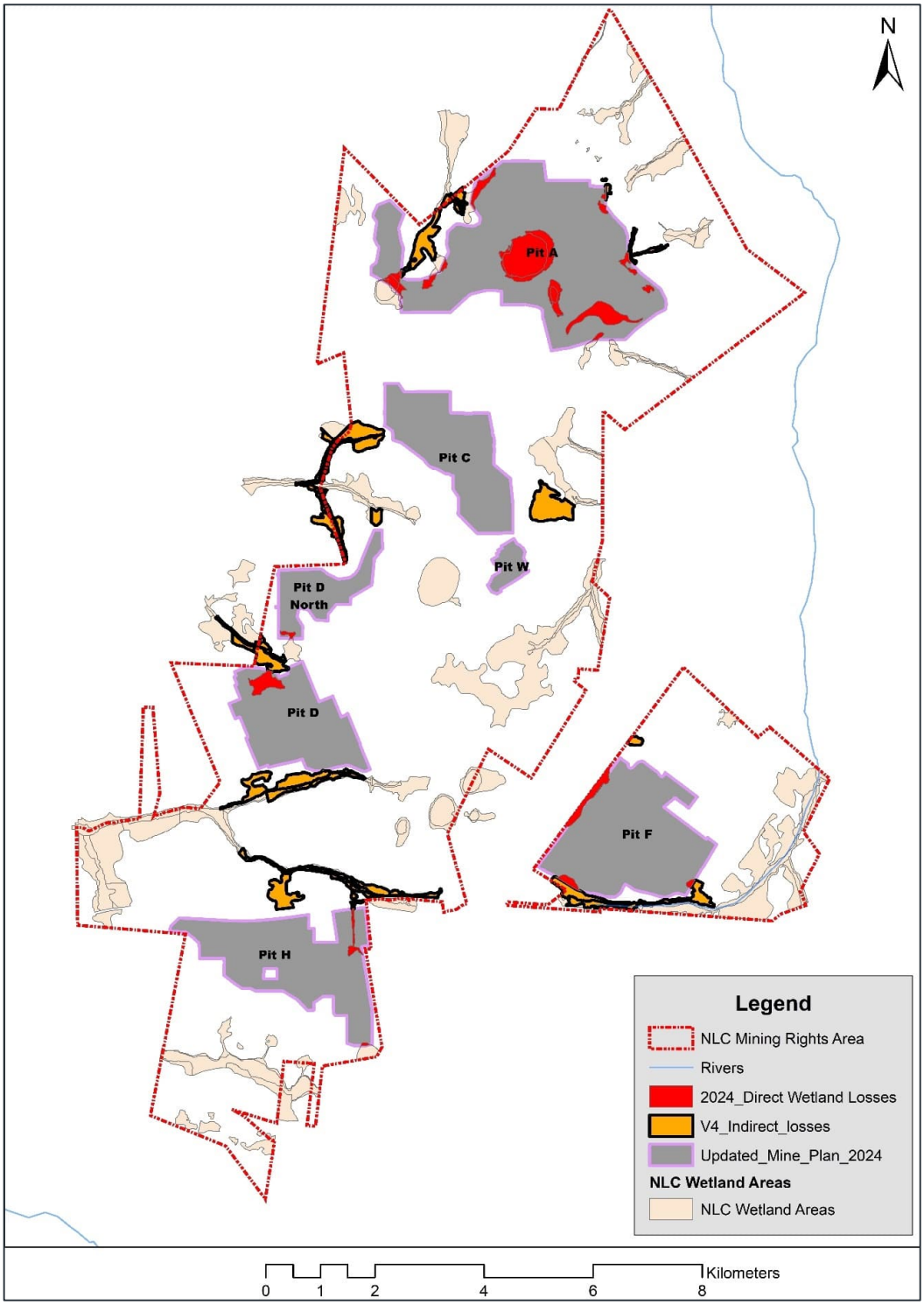


Figure 25: Map indicating expected direct and indirect wetland losses as a result of the proposed mining and associated infrastructure (2024 Mine Plan) within the New Largo Coal MRA (Wetland Consulting Services (Pty.) Ltd. , 2024)

The wetland offset target calculations were revised based on the updated PES assessment and the current mine plan and are summarized in Table 35. Table 36 indicates the specific offset requirements associated with the loss of the Honingkrantz Pan, extracted from the Table 35 loss calculations. Honingkrantz Pan has been highlighted because of the response received from the DWS that offset opportunities for the Honingkrantz Pan were not fully explored. The intention of the integrated Wetland Offset strategy is to ensure that ‘‘like for like’’ in terms of pan offsets are fully explored in order to try to meet the offset requirements for the Honingkrantz Pan (Table 36).

The goal of the wetland mitigation and offset strategy is to compensate for these losses through rehabilitation and protection of targeted wetlands remaining in the New Largo Coal MRA landscape and in an offsite area specifically targeting pans.

Table 35: Summary of the wetland offset requirements (direct and indirect losses)

Offset Requirements	Functional Targets (ha-eq)	Ecosystem Conservation Contribution Targets (ha-eq)
Requirements (Direct)	101.77	453.19
Requirements (Indirect)	36.42	452.54
Total Requirements	**138.19**	**905.73**

Table 36: Summary of both Water Resources and Ecoservices and the Ecosystem Conservation Targets/Requirements for the Honingkrantz Pan (extracted from the total requirements).

Honingkrantz Pan and associated seep	Functional Offset targets (ha-eq)	Ecosystem Conservation Contribution targets (ha-eq)
Requirements (Direct)	45.78	132.60
Total Requirements	45.78	132.60

The findings of the Wetland Offset Strategy can be summarised as follows (Wetland Consulting Services (Pty.) Ltd. , 2024):

Wetland Offsets and Mitigation:

The New Largo Wetland Mitigation and Offset Strategy follows the DWS & SANBI (2016) guidelines for calculating wetland offset requirements due to mining impacts. The assessment determined that mining activities would result in the loss of approximately 138.19 ha-eq for water resources and 905.73 ha-eq for ecosystem conservation (Wetland Consulting Services (Pty.) Ltd., 2024).

As part of the study, the following mitigation and offset categories were considered in the revised strategy:

- Category 1: Wetland areas that are not affected by the proposed mining activities within the New Largo Mining Right Area (MRA).

- Category 2: Wetland areas that are partially affected by the proposed mining activities as a result of the loss of catchment area and water inputs. This includes the identification and evaluation of available potential water inputs to mitigate water loss.
- Category 3: Remaining pan cluster within the MRA (New Largo Pan and the southern pan cluster).
- Category 4: Offsite Pans. These initially only included Pans 7 and 8 identified previously at a desktop level, but due to land tenure issues associated with Pan 8 which had to be excluded, was expanded to include additional pans within Seriti's Surface Right Areas (SRA). This included considering pans in Kriel and Middleburg Mine Services (MMS) – Boschmanskrans Section (BMK) SRA, and at Dispatch Rider.

To mitigate these losses, the strategy aims for a 'No Net Loss' or even a 'Net Gain' in functional outcomes. Through rehabilitation, conservation, and protection of targeted wetlands, the offset strategy anticipates achieving anticipated gains per each wetland offset category for Water Resources and Ecosystem Services and Ecosystem Conservation are summarised in the table below:

Overall Offset Requirements		
Requirements	*Functional Targets (ha.eq)*	*Ecosystem Conservation Targets (ha.eq)*
	138.19	905.73
Offset Evaluations		
Categories	*Functional gains (ha.eq)*	*Ecosystem Conservation (ha.eq)*
Category 1	97.76	516.07
Category 2	11.18	44.94
Category 3	5.45	56.10
Category 3 - New Largo Pan	15.02	74.83
Category 4	4.37	123.42
Additional Pans		
Dispatch Rider Pans	8.66	130.10
MMS-BMK Pan	2.39	8.08
Kriel Pans with WWTW	2.07	26.41
TOTAL	*146.89*	*979.95*
(-) Deficit/(+) Surplus)	8.70	74.22

These gains are projected to be realised during the operational phase of mining, assuming successful rehabilitation measures. The strategy focuses on functional offsets which are more difficult to achieve but crucial for maintaining ecosystem services while also contributing to broader ecosystem conservation (Wetland Consulting Services (Pty.) Ltd. , 2024).

In conclusion, the revised offset strategy balances wetland losses with targeted rehabilitation and conservation efforts, ensuring that mining impacts are countered by long-term ecological gains. This is key to preserving both the hydrological and biodiversity value of wetlands within the New Largo Coal MRA (Wetland Consulting Services (Pty.) Ltd. , 2024).

Addressing Indirect Wetland Loss:

Indirect wetland losses due to mining impacts on wetland catchments will be mitigated by supplementing wetland catchment flow with clean water from proposed water treatment facilities. Additionally, opencast pit rehabilitation will create new catchment areas for wetlands and be incorporated into the mine's closure plans (Wetland Consulting Services (Pty.) Ltd. , 2024).

Hydropedological assessment of New Largo Pan and Pan 7:

A conceptual hydropedological assessment was conducted for New Largo Pan and Pan 7 (offsite offset pan) in order to establish flow drivers to these pans and to be able to provide hydrological context for the proposed rehabilitation strategy. Hydrological response units were established for the pans and the various impacts to the pan catchments were described. The relative significance of the impacts was ranked and described and quantified using estimates in case of New Largo Pan. The impacts on the hydrology of New Largo Pan were (in order of the most significant) (Wetland Consulting Services (Pty.) Ltd. , 2024):

- Historical underground mining that has lowered the groundwater level significantly and is decanting well below the current pan basin elevation. This has resulted in groundwater being de-linked from the pan and any groundwater recharge within the pan catchment is being lost. The historical mining also has the potential to cause further pillar failure and the associated crack formation in the rock layers above. This will further reduce the water input to the pan as this can lead to interflow and surface runoff from the catchment to be redirected into the groundwater rather than the pan itself.
- Historical sand mining that resulted in the removal of interflow soils mostly within the seep wetland adjacent to the pan basin.
- Large stands of alien trees within the pan catchment have reduced the flow drivers to the pan significantly.
- Salt accumulation (mostly sulphates) from historical pumping into the pan.

An assessment was done on the soils of New Largo Pan (Appendix J). The offsite Pan 7 is currently less impacted. From the hydrological perspective the only significant impact are mature alien trees in the upper slopes of the pan catchment that reduce the pan flow drivers to some degree by reducing groundwater recharge and reduce the amount of interflow generation downslope (Wetland Consulting Services (Pty.) Ltd. , 2024).

Focus on Pan Habitat Rehabilitation:

The strategy now includes rehabilitation and protection of pan wetland habitats to offset functional and ecosystem conservation service losses caused by mining. The offset for the Honingkrantz Pan is calculated at 45.78 ha-eq (Water Resources and Ecosystem Services) and 132.60 ha-eq (Ecosystem Conservation). Category 3 and 4 wetland offsets are expected to compensate for these losses with a combined contribution of 37.95 ha-eq for Water Resources and 418.93 ha-eq for Ecosystem Conservation. The strategy achieves 83% of the "Like-for-Like" offset target (Wetland Consulting Services (Pty.) Ltd. , 2024).

Broader Environmental Contribution:

The New Largo Mine and targeted wetlands are situated in the upper Olifants River catchment, where past and current mining activities have degraded wetland habitats and water resources. This offset strategy, through targeted rehabilitation and protection, will improve water quality for

downstream users, enhance biodiversity, and contribute to water resource management (Wetland Consulting Services (Pty.) Ltd. , 2024).

Strategy Implementation:

To ensure no net loss of wetland hectare equivalents, the strategy must be implemented in parallel with mining operations. Risks, especially related to the New Largo Pan, must be managed through appropriate monitoring and management measures. A practical schedule will be agreed upon between Seriti and relevant authorities for the ongoing monitoring and audit of the offsets (Wetland Consulting Services (Pty.) Ltd. , 2024).

Key Benefits

The wetland offset strategy offers multiple benefits, including (Wetland Consulting Services (Pty.) Ltd. , 2024):

- Long-term wetland protection and stewardship.
- Preservation and enhancement of pan habitats critical to biodiversity.
- Improved water quality and resource management.
- Focused and secure implementation within Seriti's operational scope.
- Support for the restoration of vital ecosystems within the upper Olifants catchment.
- Alignment with Seriti's environmental goals, ensuring a balance between mining activity and long-term sustainability of natural resources.

This strategy emphasizes the conservation of wetlands and pan habitats, contributing to the ecological health of the upper Olifants catchment while aligning with Seriti's environmental stewardship initiatives.

Further information related to the Wetland Offsets can be found in Appendix F.

4.12 GROUNDWATER

Information related to groundwater was obtained from the geohydrological report compiled by WSP in June 2024 (Appendix G).

According to (WSP, 2024b), JMA (2012) reported the presence of two dominant hydrogeological units intersected during the drilling of their investigation boreholes at New Largo, namely:

- A laterally extensive shallow weathered zone aquifer.
- More localised deeper fractured aquifer systems.

This is difficult to verify from water level data as most of the boreholes are relatively shallow and all the water levels seem to be connected. Borehole KN-14 is an exception, however, the reason for the very deep water levels at KN-14 are uncertain (WSP, 2024b).

The more prominent of these is the laterally extensive shallow weathered zone aquifer, which occurs in the weathered and weathering related fractured zone within the Vryheid (Karoo Supergroup) and Pretoria Group (Transvaal Supergroup) lithologies (JMA, 2012). The average vertical thickness of this aquifer zone is approximately 21 meters, and it is considered to store and transport the bulk of groundwater, displaying unconfined to semi-confined piezometric conditions (WSP, 2024b).

Localised fractured aquifers are restricted to contact zones between intrusive diabase bodies and the host rock. These semi-confined aquifers may have high yields in places but have limited storage, which will be drained laterally or vertically from the storage of the neighbouring weathered zone aquifer

(JMA 2012). Aside from these isolated fracture zone aquifers, groundwater flow occurs preferentially in shallow weathered zone and bedding parallel fracturing along joints at depth.

Where present, alluvial strata will also be capable of storing and transmitting groundwater (Delta H, 2014). Although not considered a natural aquifer, significant volumes of water are stored in the mined-out underground workings in the 4 Seam and 2 Seam of New Largo (WSP, 2024b).

Unsaturated Zone

The unsaturated zone varies across the site, encompassing the zone above the water table. The unsaturated zone is thinner closer to rivers, pans and wetlands and thicker at the catchment boundaries. There is limited hydraulic information available for the unsaturated zone (WSP, 2024b).

Saturated Zone

The saturated zone encompasses the section below the water table. Two aquifers are identified at New Largo (WSP, 2024b):

- A shallow zone occurring in the transitional soil and weathered bedrock zone or sub-outcrop horizon comprising yields of < 0.3 l/s (Du Toit *et al*, 1998).
- Deeper zones associated with fractures, fissures and joints and other discontinuities within the consolidated Karoo bedrock and associated intrusive structures. Yields range from 0 to 2 l/s (Du Toit *et al*, 1998).

Groundwater has also accumulated in the old underground workings.

The hydraulic conductivity (k) of an aquifer is a measure of the ease with which ground water can pass through the aquifer system and is expressed in m/day. The transmissivity (T) of an aquifer represents the ground water flow potential through the entire saturated zone and it is the product of the average hydraulic conductivity and the thickness of the saturated portion of the aquifer and is expressed in m^2/d (WSP, 2024b).

Groundwater Recharge

Groundwater effective recharge is estimated to be between 1 and 3 % of Mean Annual Precipitation (MAP) of 725 mm/a. A similar recharge (2 – 7% of MAP) was estimated by using the natural chloride concentrations in groundwater of 10 – 25 mg/l. The recharge used by WSP for the regional model assumed 2% MAP for the pre-mining / shallow regional aquifer. A higher recharge was assigned for the open cast backfill (12%) and lower recharge for the deeper aquifer (1%) (WSP, 2024b).

Vermeulen and Usher (2006) mentioned that between 1 and 3% of the rainfall above bord-and-pillar mining in Karoo formations infiltrate into the mine. However, they found in a study of five collieries in Mpumalanga that the recharge above bord-and-pillar mining is between 5 and 10% of MAP. (JMA, 2012) estimated the recharge to be between 6.5 and 10% of the mean annual precipitation (MAP). (Golder, 2021) reported that the recharge to the groundwater system is estimated to be between 3% and 7% of the MAP. These estimates seem to be high compared regional recharge used for groundwater models in the area:

- (Delta H, 2014) used 5% of MAP (37 mm/a) as the estimated recharge for their groundwater model.
- (WSP, 2023b) used a recharge of 1% to 2% of MAP for the Khutala groundwater model.
- (Golder, 2017) used an even lower recharge of 0.7% of MAP or 4.8 mm/a for the Klipspruit groundwater model.

GROUNDWATER LEVELS

Shallow aquifer

The surface topography was plotted against the water levels measured in December 2023. Figure 26 shows that the correlation is good with an R^2 value of 88.5%. This implies that the water levels obtained from the regional (shallow) aquifer will generally follow the topography except were influenced by surrounding mining activities (WSP, 2024b).

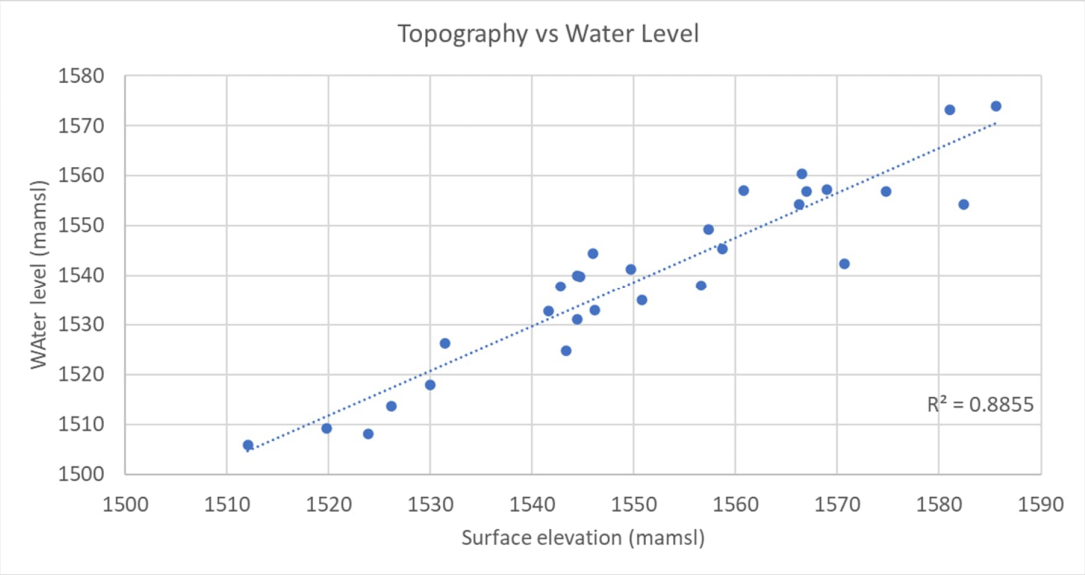


Figure 26: Topography vs Water Level (WSP, 2024b).

There are a total of 29 monitoring boreholes from which groundwater levels are measured monthly. Data was provided from 2022 to present.

The Cumulative Rainfall Departure (CPD) provides an indication of the responsivity of the aquifer to rainfall. Due to a lack of long-term water level data, it is difficult to indicate how the water level responds to the CRD, however, for most boreholes it is evident that there is a high correlation between CRD and water levels. Examples of these are (WSP, 2024b):

- LGW-B28 (Figure 27)
- LGW-B3 (Figure 28)

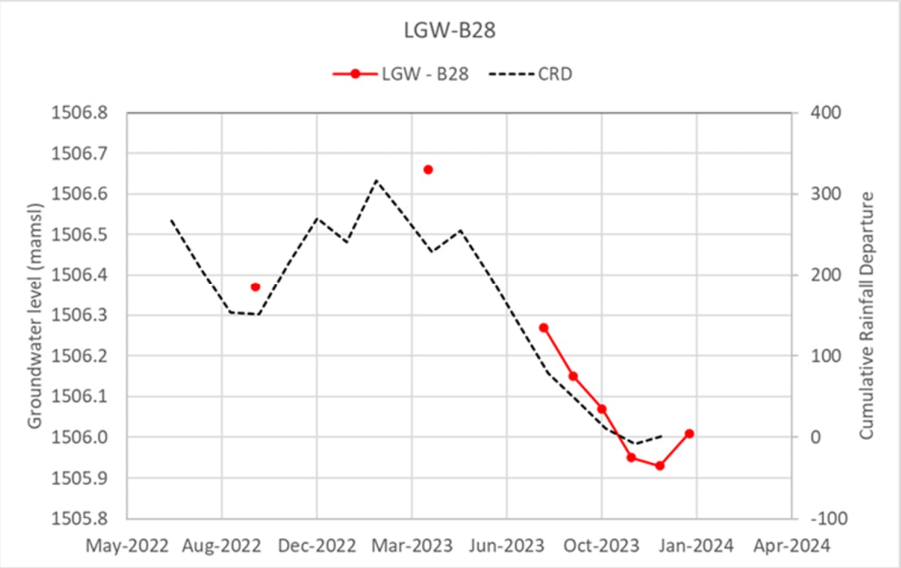


Figure 27: - LGW-B28 water level compared with CRD (WSP, 2024b).

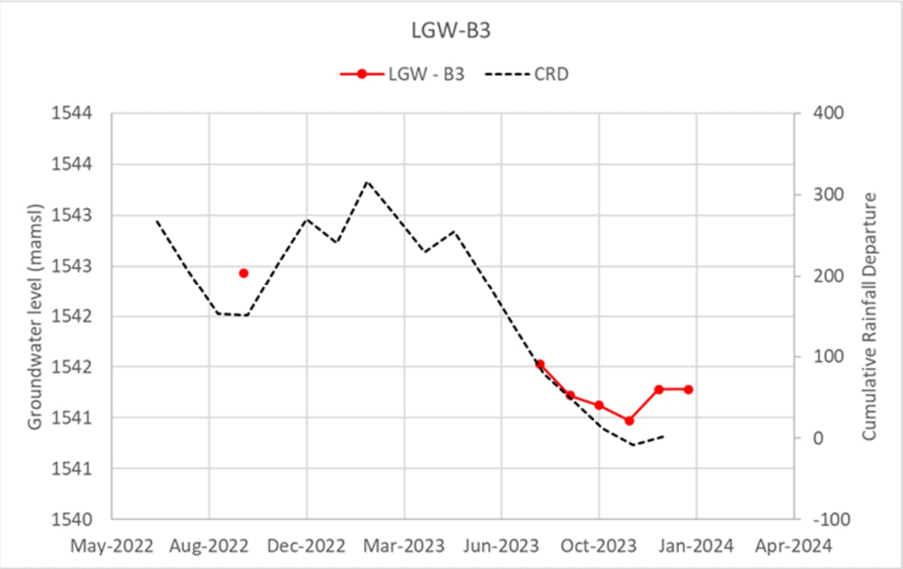


Figure 28: - LWG-B3 water level compared with CRD (WSP, 2024b).

The groundwater flow contours were interpolated from water levels measured in December 2023 (Figure 29). Groundwater generally flows from high elevations towards the surface drainages. The New Largo project lies on a topographical high, with water draining to the east and west along the sub-catchment in the direction of the Saalklap Spruit (B20G) and Wilge River (B20F) respectively (WSP, 2024b).

WSP assessed the groundwater levels in 2024 by grouping them according to monitoring boreholes located in the vicinity of each Pit outline. The boreholes associated with each pit are indicated in Figure 30.

The water level information is summarized below (WSP, 2024b):

- Pit A

  Seven boreholes were identified in the vicinity of Pit A: ED6, HZ1, HZ3, LGW-B16, LGW-B18, LGW-B21, and KN-14.

  - ED6 - Depth to groundwater varies from 12.74 to 18.05 mbgl, with an outlier for April 2023 when the groundwater level was recorded as 1.35 mbgl.
  - HZ1 - Depth to groundwater varies from 15.1 to 15.8 mbgl, except for the December 2023 level which was at 5.7 mbgl.
  - HZ3 - Depth to groundwater varies from 10.0 to 11.6 mbgl.
  - LGW-B16 is located near a river and therefore the water level is shallow, varying between 2.7 and 4.5 mbgl.
  - LGW-B18 - Depth to groundwater varies from 9.3 to 10.1 mbgl.
  - LGW-B21 - Depth to groundwater varies from 9.1 to 16.9 mbgl.
  - KN-14 has the deepest water level in the area, potentially linked to underground workings as it is located close to a shaft. The water level varies from 43.7 to 48.8 mbgl, with one outlier for December 2023 when the water level was reported as 28.1 mbgl.

The groundwater level measurements from July 2023 to Jan 2024 are presented in Table 37. Water level elevation indicates surface elevation minus depth to groundwater (WSP, 2024b).

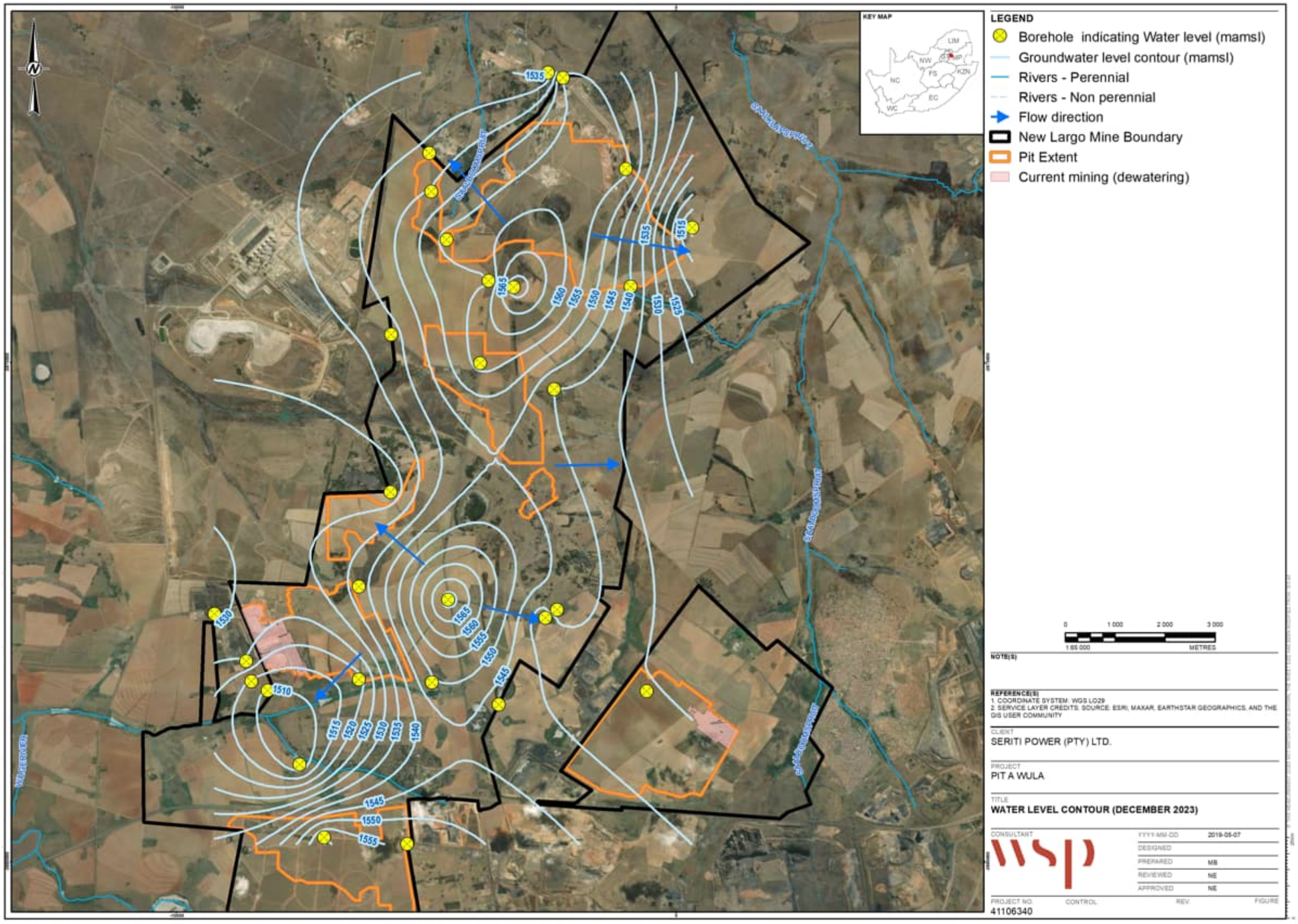


Figure 29: - Groundwater Level Map for New Largo (WSP, 2024b).

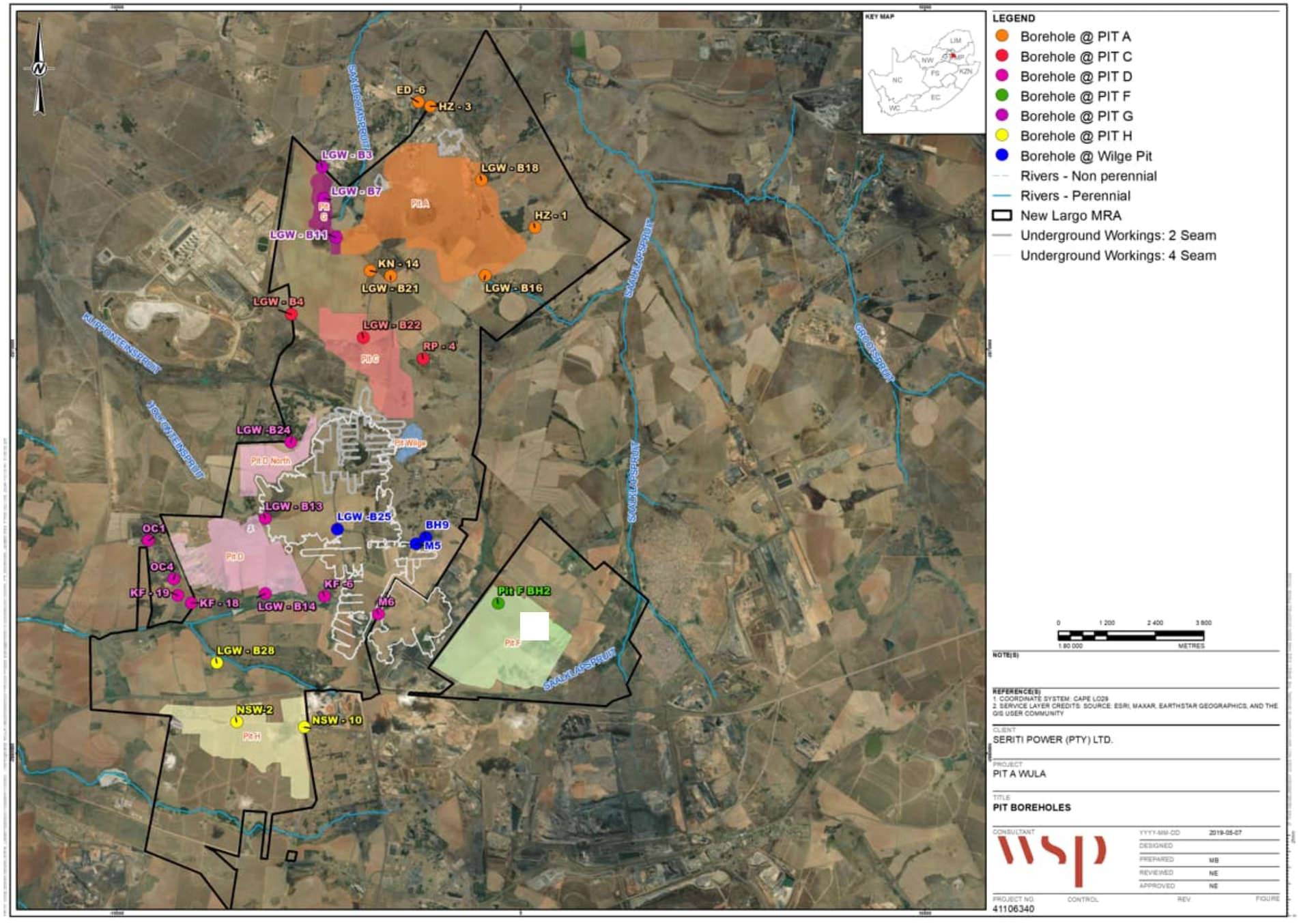


Figure 30: - Boreholes associated with pits (WSP, 2024b).

Table 37: Groundwater Levels Jul 2023 – January 2024 (WSP, 2024b).

Pit	BH_ID	Latitude	Longitude	Surface elevation (from 5 m contours)	Water level depth (m) Jul 23	Water level elevation* (mamsl) Jul 23	Water level depth (m) Aug 23	Water level elevation* (mamsl) Aug 23	Water level depth (m) Sept 23	Water level elevation* (mamsl) Sept 23	Water level depth (m) Oct 23	Water level elevation* (mamsl) Oct 23	Water level depth (m) Nov 23	Water level elevation* (mamsl) Nov 23	Water level depth (m) Dec 23	Water level elevation* (mamsl) Dec 23	Water level depth (m) Jan 24	Water level elevation* (mamsl) Jan 24
Pit A	ED -6	-25.88588	28.97445	1546.16	12.25	1533.91	12.74	1533.42	13.52	1532.64	13.1	1533.06	18.05	1528.11	13.2	1532.96	13.55	1532.61
	HZ - 1	-25.9139	29.00326	1523.91	-	-	-	-	-	-	15.11	1508.8	15.38	1508.53	15.85	1508.06	5.72	1518.19
	HZ - 3	-25.8868	28.97742	1568.98	10.01	1558.97	10.88	1558.1	11.63	1557.35	11.58	1557.4	11.63	1557.35	11.7	1557.28	11.52	1557.46
	LGW - B16	-25.9246	28.99099	1544.41	2.72	1541.69	2.82	1541.59	3.3	1541.11	3.6	1540.81	4.05	1540.36	4.43	1539.98	4.45	1539.96
	LGW - B18	-25.90331	28.99002	1566.99	-	-	-	-	10.08	1556.91	10.05	1556.94	9.32	1557.67	10.14	1556.85	9.63	1557.36
	LGW - B21	-25.92468	28.9676	1585.57	9.06	1576.51	9.36	1576.21	16.93	1568.64	10.33	1575.24	10.31	1575.26	11.64	1573.93	11.69	1573.88
Pit C	LGW - B22	-25.93843	28.96086	1574.73	15.62	1559.11	16.15	1558.58	12.88	1561.85	17.18	1557.55	17.LGW53	1557.2	17.81	1556.92	18.16	1556.57
	LGW - B4	-25.93321	28.94305	1542.82	4.69	1538.13	4.29	1538.53	4.54	1538.28	4.67	1538.15	4.78	1538.04	5.03	1537.79	5.48	1537.34
	RP - 4	-25.94314	28.97566	1544.67	3.6	1541.07	3.41	1541.26	-	-	4.25	1540.42	4.59	1540.08	4.88	1539.79	-	-
Pit D & D North	KF - 18	-25.99764	28.91837	1519.81	-	-	9.04	1510.77	11.42	1508.39	10.8	1509.01	10.91	1508.9	10.5	1509.31	10.63	1509.18
	KF - 19	-25.99598	28.91506	1526.16	-	-	10.4	1515.76	12.75	1513.41	12.56	1513.6	12.43	1513.73	12.5	1513.66	12.56	1513.6
	KF -6	-25.99617	28.95121	1557.35	8.26	1549.09	8.26	1549.09	8.33	1549.02	8.3	1549.05	8.36	1548.99	8	1549.35	8.03	1549.32
	LGW - B13	-25.97885	28.93662	1556.57	-	-	18.63	1537.94	18.68	1537.89	18.67	1537.9	18.68	1537.89	18.69	1537.88	18.72	1537.85
	LGW - B14	-25.9956	28.93662	1529.93	-	-	11.54	1518.39	12.02	1517.91	11.79	1518.14	11.92	1518.01	12.03	1517.9	12.05	1517.88
	LGW - B24	-25.96176	28.94293	1531.44	-	-	4.03	1527.41	4.44	1527	4.62	1526.82	4.95	1526.49	5.13	1526.31	-	-
	M6	-26.00014	28.96453	1570.69	-	-	28.27	1542.42	28.81	1541.88	28.22	1542.47	28.27	1542.42	28.23	1542.46	20.15	1550.54

Pit	BH_ID	Latitude	Longitude	Surface elevation (from 5 m contours)	Water level depth (m) Jul 23	Water level elevation* (mamsl) Jul 23	Water level depth (m) Aug 23	Water level elevation* (mamsl) Aug 23	Water level depth (m) Sept 23	Water level elevation* (mamsl) Sept 23	Water level depth (m) Oct 23	Water level elevation* (mamsl) Oct 23	Water level depth (m) Nov 23	Water level elevation* (mamsl) Nov 23	Water level depth (m) Dec 23	Water level elevation* (mamsl) Dec 23	Water level depth (m) Jan 24	Water level elevation* (mamsl) Jan 24
	OC1	-25.98377	28.90772	1544.41	18.48	1525.93	13.13	1531.28	13.25	1531.16	13.26	1531.15	13.32	1531.09	13.31	1531.1	-	-
	OC4	-25.99231	28.91405	1543.34	12.92	1530.42	18.52	1524.82	18.56	1524.78	17.6	1525.74	18.58	1524.76	18.59	1524.75	-	-
Pit F	Pit F BH2	-25.9936	28.99238	1544.15	7.77	1536.38	7.81	1536.34	8.51	1535.64	8.58	1535.57	8.69	1535.46	8.94	1535.21	-	-
Pit G	LGW - B11	-25.91609	28.95413	1560.76	3.37	1557.39	3.88	1556.88	3.49	1557.27	3.55	1557.21	3.48	1557.28	3.66	1557.1	3.57	1557.19
	LGW - B3	-25.9004	28.95069	1549.68		1549.68	8.15	1541.53	8.46	1541.22	8.56	1541.12	8.71	1540.97	8.4	1541.28	8.4	1541.28
	LGW - B7	-25.90736	28.95112	1558.72	13.25	1545.47	13.31	1545.41	13.28	1545.44	13.34	1545.38	13.41	1545.31	13.3	1545.42	13.98	1544.74
Pit H	LGW - B28	-26.01099	28.92471	1512.03	-	-	5.76	1506.27	5.88	1506.15	5.96	1506.07	6.08	1505.95	6.1	1505.93	6.02	1506.01
	NSW - 10	-26.02538	28.94622	1566.25	-	-	11.77	1554.48	11.86	1554.39	11.81	1554.44	11.56	1554.69	11.94	1554.31	11.91	1554.34
	NSW-2	-26.0242	28.92957	1566.51	-	-	-	-	6.02	1560.49	-	-	6.09	1560.42	6.14	1560.37	-	-
Wilge/ UG workings	BH9	-25.98304	28.97625	1545.94	-	-	0.54	1545.4	0.38	1545.56	1.25	1544.69	1.34	1544.6	1.47	1544.47	1.02	1544.92
	LGW - B25	-25.98122	28.95449	1581.04	-	-	7.74	1573.3	8.01	1573.03	8	1573.04	7.99	1573.05	7.84	1573.2	7.89	1573.15
	M5	-25.9845	28.97389	1550.81	-	-	16.82	1533.99	16.83	1533.98	16.82	1533.99	16.83	1533.98	15.84	1534.97	16.82	1533.99
UG workings/ Pit A area	KN - 14	-25.92353	28.96256	1582.41	43.86	1538.55	43.73	1538.68	43.78	1538.63	43.89	1538.52	43.96	1538.45	28.11	1554.3	48.85	1533.56

**Water level elevation = surface elevation minus water level depth*

Deeper aquifer

According to an extraction from a report by Hodgson (reference unknown) supplied by New Largo, the deeper aquifer lies within the consolidated formations below the weathered rocks. Dual porosity conditions occur, with groundwater in the formation and in the fractures, cracks and joints within these rocks. The coal itself also yields limited amounts of water (WSP, 2024b).

Underground mining

Water level data (2023 and 2024) indicates that the water level in the historical underground mining areas has recovered after mining ceased some time before 2012. (WSP, 2024b).

According to New Largo, only boreholes LGW-B13 and M5 are drilled into the underground workings. These boreholes have water levels of more than 15 mbgl. Other boreholes with deep water levels are (WSP, 2024b):

- KN-14 (in the vicinity of Pit A) with levels of between 28 and 44 mbgl. This borehole is located outside the New Largo underground workings but potentially linked to underground workings as it is located close to a shaft. It is not within the 'Non-Defined Previously Mined Areas' (Red Zones) delineated by (JMA, 2023). The Red Zones could be updated to include the area of KN-14.
- LGW - B22 (Pit C) has water levels between 12 and 18 mbgl.
- M6, OC1 and OC4 also have deep water levels, but this is attributed to mining at Pit D and Klipfontein Pit.

Geology

Regional Geology

The geohydrological report compiled by WSP in June 2024 indicated that the geology of the New Largo area primarily comprises of sedimentary rocks belonging to the Karoo Supergroup, consisting of the Dwyka, Ecca and Beaufort Groups capped by the Drakensburg Basalt Group (WSP, 2024b).

The study area consists mainly of the Vryheid Formation (part of the Ecca Group) and consists of sandstone, shale and subordinate coal beds The Vryheid Formation in the north-eastern Witbank Coalfield contains five coal seams, 1 Seam (deepest) at the base to 5 Seam at the top. A generalized lithology is presented in Figure 32 (WSP, 2024b).

Local Geology

In the New Largo area, the Vryheid Formation (Pv) consists of thick beds of yellowish to white cross-bedded sandstone and grit, alternating with beds of soft sandy shale and coal seams. At surface the geology in the north and far west of the New Largo mine lease area is marked by numerous fine to medium-grained diabase intrusives (V-di). The geological map is indicated in Figure 31 (WSP, 2024b).

The depth of weathering is generally between 7 and 15m. Only the 2 Seam and 4 Seam are economically viable resources in the New Largo area. There are only limited known dyke intrusions and no significant faulting at New Largo. The Ogies dyke is situated south of New Largo (WSP, 2024b).

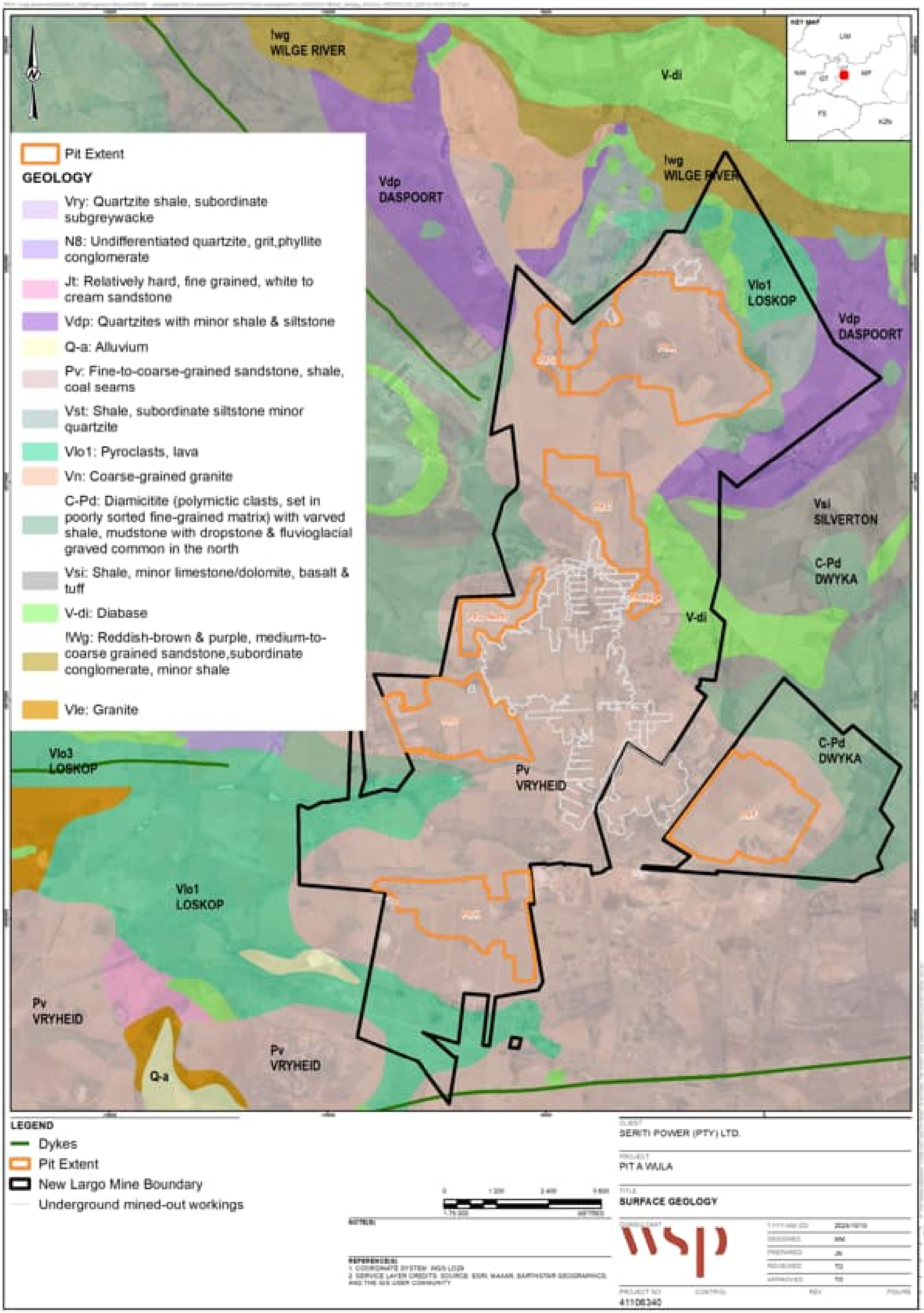


Figure 31: Geology Map (WSP, 2024b)

Depth (m)	Lithology
1	Clay
2	Clay
3	Clay
4	Clay
5	Clay
6	Clay
7	Silt
8	Silt
9	Silt
10	Silt
11	Shale
12	Coal
13	Sandstone
14	Coal
15	Coal
16	Coal
17	Shale
18	Shale
19	Sandstone
20	Sandstone
21	Sandstone
22	Shale
23	Shale
24	Shale
25	Shale
26	Shale
27	Coal
28	Coal
29	Coal
30	Coal
31	Coal
32	Coal
33	Shale
34	Shale
35	Shale
36	Coal
37	Coal
38	Shale
39	Tillite
40	Tillite

Figure 32: General stratigraphy (WSP, 2024b)

4.13 AQUIFER CHARACTERISATION

Aquifer Testing

WSP (2024) reported that aquifer testing in the form of falling head and slug tests were conducted in the new monitoring boreholes to establish the aquifer hydraulic conductivities. Results from JMA (2005) and Groundwater Square (2021) are summarised below (WSP, 2024b):

- 0.03 m/d in the consolidated rock matrix and 1.0 m/day where fractures were observed (JMA, 2005).
- 0.002 to 6.71 m/day and 0.98 m/day on average in monitoring boreholes (Groundwater Square, 2021).

JMA (2012) conducted slug tests at 15 boreholes at New Largo and calculated the hydraulic conductivity and transmissivity values. Additional data was sourced from the adjacent Seriti mines of Klipspruit and Khutala.

Groundwater vulnerability

A groundwater vulnerability map for the area is presented in Figure 33. The groundwater vulnerability is defined as the tendency or likelihood for contamination to reach a specific position within the aquifer the groundwater system after being introduction at an upgradient location. Most of the New Largo area has aquifers of **medium vulnerability**, which is vulnerable to some pollutants with continuous discharge or leaching (WSP, 2024b).

The area in the north of New Largo has aquifers of **low vulnerability**, and a small area in the north-east of New Largo has aquifers of high and medium high vulnerability (WSP, 2024b).

Aquifer classification

The aquifer classification map for the area is presented in Figure 34. The aquifer underlying the site were classified in accordance with the “South African Aquifer System Management Classification, December 1995” presented in Table 38. The aquifer classification in the area is indicated as a minor aquifer for the entire area surrounding New Largo.

Table 38: Aquifer system management classes (WSP, 2024b)

Type of aquifer system	Description of system
Sole Aquifer System	An aquifer which is used to supply 50 per cent or more of domestic water for a given area, and for which there is no reasonably available alternative sources should the aquifer be impacted upon or depleted. Aquifer yields and natural water quality are immaterial.
Major Aquifer System	Highly permeable formations, usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes. Water quality is generally very good (electrical conductivity of less than 150 mS/m).
Minor Aquifer System	**These can be fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability. Aquifer extent may be limited and water quality variable. Although these aquifers seldom produce large quantities of water, they are important for local supplies and in supplying baseflow for rivers.**
Non-Aquifer System	These are formations with negligible permeability that are regarded as not containing groundwater in exploitable quantities. Water quality may also be such that it renders the aquifer unusable. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered when assessing the risk associated with persistent pollutants.

Figure 34 also indicates the hydrogeological yield (WSP, 2024b):

- Most of the area is classified as: Intergranular and Fractured with yields between 0.1 and 0.5 l/s.
- The north-eastern section of New Largo is classified as: Intergranular and Fractured with yields between 0.5 and 2 l/s.

Aquifer protection classification

Aquifer susceptibility is a qualitative measure of the relative ease with which a groundwater body can be potentially contaminated by anthropogenic activities, and which includes both aquifer vulnerability and the relative importance of the aquifer in terms of its classification. Parsons and Conrad (1998) provided the basis for assigning aquifer contamination susceptibility classes (Table 39).

Table 39: Basis for assigning aquifer contamination susceptibility classes (WSP, 2024b)

Aquifer system management class	Low Vulnerability (1)	Medium Vulnerability (2)	High Vulnerability (3)
Poor Groundwater Region (1)	Low Susceptibility (1)	Low Susceptibility (2)	Medium Susceptibility (3)
Minor Groundwater Region (2)	Low Susceptibility (2)	Medium Susceptibility (4)	High Susceptibility (6)
Major Groundwater Region (3)	Medium Susceptibility (3)	High Susceptibility (6)	High Susceptibility (9)

For most of New Largo, the susceptibility rating is low (4), indicating that medium level groundwater protection may be required. The northern area of New Largo has a low susceptibility (2) while a small area in the north-east of New Largo has a high susceptibility (6) (WSP, 2024b).

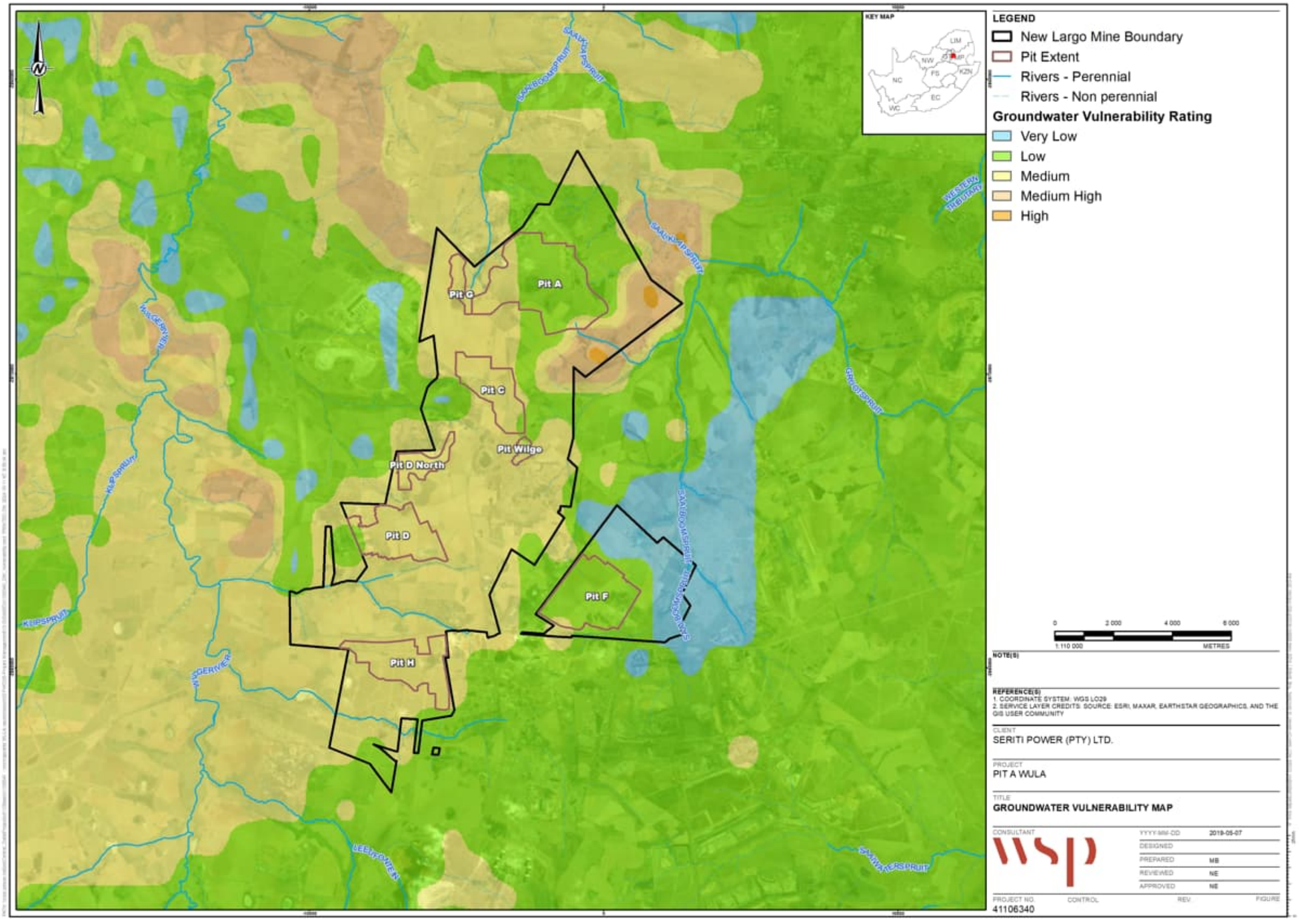


Figure 33: Groundwater Vulnerability Map (WSP, 2024b)

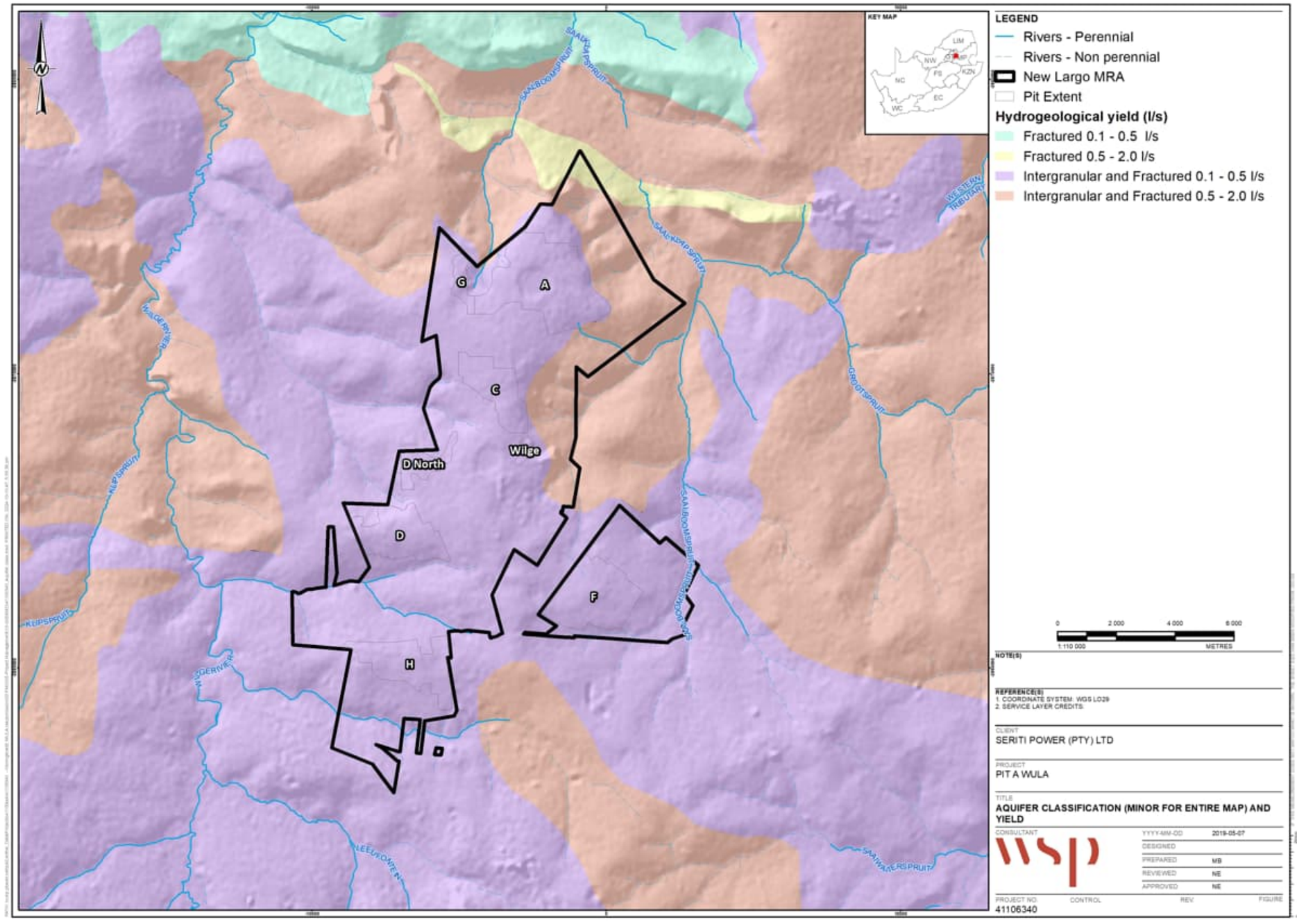


Figure 34: Aquifer Classification Map (WSP, 2024b)

4.14 GROUNDWATER QUALITY

New Largo has a standalone monitoring programme, which is updated regularly to align with mining activities. (Appendix E).

According to (WSP, 2024b) ,the earliest groundwater quality data available is sourced from JMA, 2012 with the latest water quality data sourced from the monitoring program (2023) and collected during the hydrocensus (February 2024).

It is important to note the following (WSP, 2024b):

- Baseline water quality as determined from unimpacted boreholes in the area.
- Whilst the Reserve has also been determined for the Olifants and Letaba catchment (GN 41887, September 2018), there are no priority sites specified, and groundwater quality objectives are therefore not specified. The reserve typically considers the target water quality in terms of Classes associated with domestic use. DWAF, 1998[2], Class 2 marginal water quality for domestic use is therefore included in Table 40 for comparison.
- Since there are no RQOs specific to catchments B20F and B20G, the Water Quality Planning Limits (WQPLs) for the Upper Olifants sub-catchment (DWS, 2016) as published in Government Gazette no 466 of 22 April 2016 are included for reference. Note that the WQPLs for MU22 is more stringent than the WQPLs for MU20 and MU21.
- The SANS 241-2015 standard for drinking water is included for reference as GPT (annual monitoring reports) refer to this standard in their reporting. It is emphasized water is not utilized for drinking purposes from the monitoring boreholes and these reference values are only for comparison purposes.
- Generally, the groundwater quality of the monitoring boreholes ranged from good to poor where boreholes comprise locally elevated concentrations in respect to total dissolved solids (TDS), manganese and sulphate.

The analytical results of the 6 WSP hydrocensus groundwater samples as well as groundwater samples monitored by New Largo in October 2023 were plotted spatially for TDS in Figure 35, and for Sulphate in Figure 36. The sections below describe the water qualities for each of the management units and these are compared to the reference concentrations as summarised in Table 40.

[2] Department of Water Affairs and Forestry, 1998, Quality of Domestic Water Supplies: Volume 1 Assessment Guide. Marginal Water quality – may be used without health effects by most individuals but can cause effects in some individuals in sensitive groups or after lifetime use.

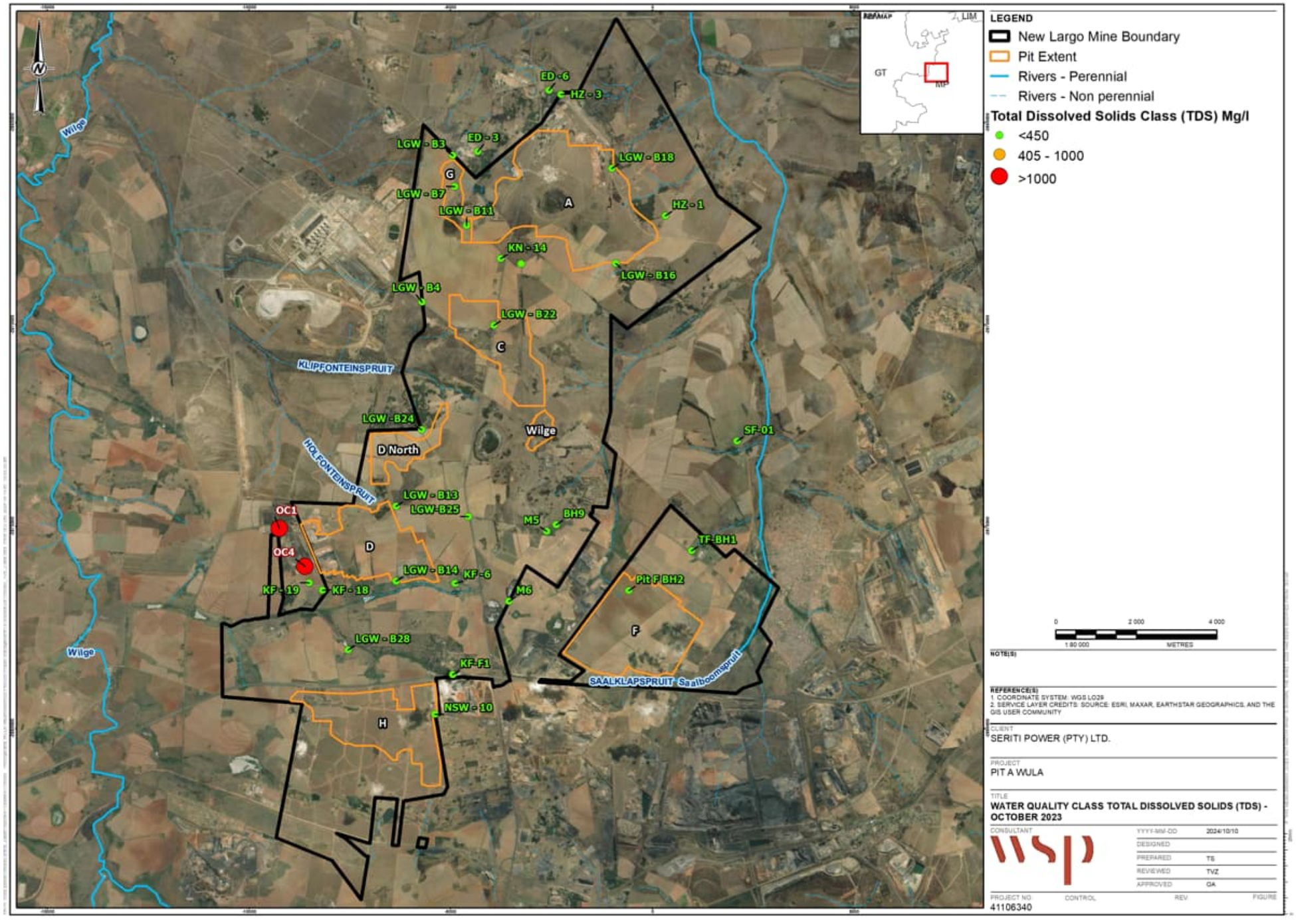


Figure 35: - Observed TDS concentrations (October 2023) (OC1 and OC 2 are in-pit water sampling points at Pit D) (WSP, 2024b)

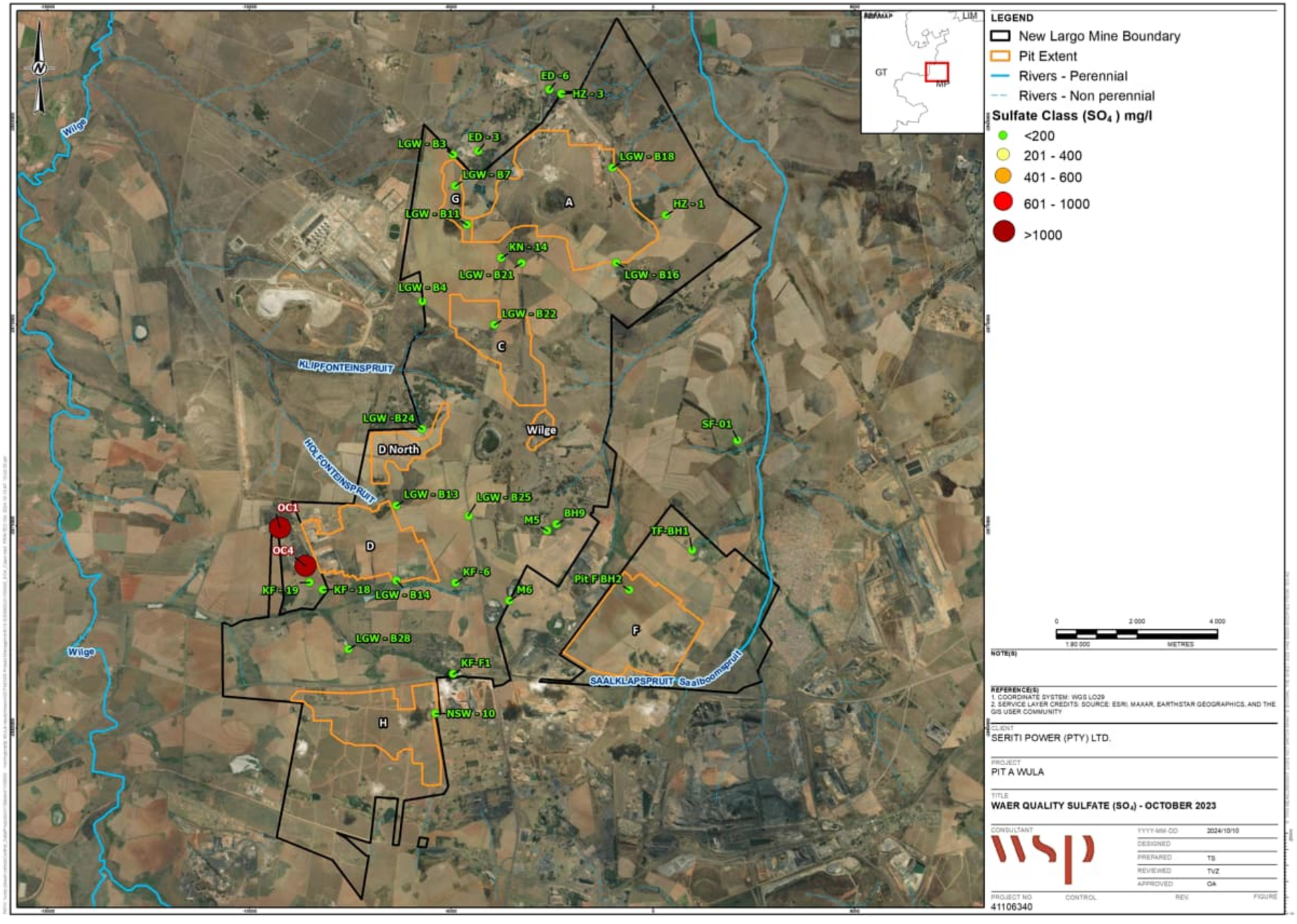


Figure 36: - Observed Sulfate concentrations (October 2023) (OC1 and OC 2 are in-pit water sampling points at Pit D) (WSP, 2024b)

The following have been reported in the hydrogeology report compiled by WSP in 2024 (WSP, 2024b):

MU20

The pits that fall within MU22 are the eastern parts of Pit A and Pit C as well as the entire Pit F. A section of Pit F has been mined, but Pits A and C will be mined from 2025 onward.

There are seven (7) boreholes that fall in MU20, three (3) hydrocensus boreholes and four (4) monitoring boreholes. In general, the water quality is acceptable, but the following values should be noted (WSP, 2024b):

- Nitrate (as N) – The values of the monitoring boreholes range from 1.5 mgN/L to 2.4 mgN/L while some of the values of the hydrocensus boreholes were comparatively higher, ranging from below detection to 12.4 mgN/L possibly due to these being located in agricultural areas.
- Mn – A localised maximum of 0.16 mg/L Mn was measured at BH9 which is between Wilge Pit and Pt F and near the underground workings.
- The water quality in the hydrocensus boreholes TF-BH3 (pH of 5.7) and TF-BH1 (pH of 6.1) were slightly acidic in comparison to the other borehole water quality in the area. These boreholes are north-east of Pit F.

MU21

Ten monitoring boreholes fall within MU21. In general, the water quality is acceptable, but the following values should be noted (WSP, 2024b):

- Nitrate (as N) –Values ranged from 0.2 to 172 mgN/L. The highest values measured was at:
  - ED6 where 161 mgN/l was recorded.
  - LGW-B11 where 26.6mgN/L was recorded.
  - HZ-3 where 16.2mgN/L was recorded.
  - Elsewhere within MU21, the nitrate values were below 4 mgN/L.
- Mn – Borehole LGW-B22 had a value of 0.26 mg/L Mn and borehole HZ-1 had a value of 0.41 mg/L Mn.

MU22

Seventeen (17) boreholes are located in MU22, three (3) hydrocensus boreholes and fourteen (14) monitoring boreholes. The following values should be noted (WSP, 2024b):

- The pH at hydrocensus borehole KF-F1 was slightly acidic (pH of 5.9).
- EC values above 200 mS/m and TDS of 1000 mg/l were observed at boreholes OC1 and OC4 associated with comparatively elevated sulfate concentrations of > 1000 mg/L
- Total Alkalinity values above 100 mg/L were observed at monitoring boreholes LGW-B13, LGW-B14, and OC4.
- Ca values above 80 mg/L were observed at boreholes OC1 and OC4.
- Mg values above 70 mg/L were observed at boreholes OC1 and OC4.
- Sodium concentrations were locally elevated above 100 mg/L at Pit F BH2.
- Nitrate (as N) values were generally reported as below 6 mg/L except in KF-F1 (6.2 mgN/L), LGW-B24 (26.6 mgN/L), KF-18 (172 mgN/L) and Pit F BH2 (172 mgN/L).
- Fluoride values above 0.7 mg/L were locally observed at monitoring boreholes LGW-B13, LGW-B14, and OC4.
- Manganese concentrations above 0.4 mg/L were observed at boreholes KF-6 and OC4.

Boreholes OC1 and OC4 are impacted by mining as they are situated inside Pit D and the Klipfontein open pit (WSP, 2024b).

Table 40: New Largo Groundwater Chemistry data (in mg/L, except for EC which is in mS/m) February 2024 (WSP, 2024b)

Pit	Borehole	Management Unit	pH	EC	TDS	Total Alkalinity	Ca	K mg/l	Mg	Na	Cl	NO_3 (N)	SO_4	F	Fe	Mn	Class
	WQPL's for MU20		6.5-8.4	75	500	120	80		50	70	45	0.5	400	0.75	0.1	0.02	
	WQPL's for MU21		6.5-8.4	75	500	120	80		30	70	20	0.5	400	0.75	0.3	0.18	
	WQPL's for MU22		6.5-8.4	40	260	120	32		20	30	20	0.5	70	0.75	0.1	0.02	
	Class 0 Max. Allowable Limit		7-9.5	<70	<450	-	<80	<25	<70	<100	<100	<6	<200	<0.7	<0.01	<0.1	0
	Class 1 Max. Allowable Limit		9.5-10	70-150	450-1000	-	80-150	25-50	70-100	100-200	100-200	6 to 10	200-400	0.7-1.0	0.01-0.2	0.1-0.4	1
	Class 2 Max. Allowable Limit		10-10.5	150-370	1000-2400	-	150-300	50-100	100-200	200-400	200-600	10 to 20	400-600	1.0-1.5	0.2-2.0	1.0 to 4.0	2
	Class 3 Max. Allowable Limit		10.5-11	370-520	2400-3400	-	>300	100-500	200-400	400-1000	600-1200	20-40	600-1000	1.5-3.5	2 to 10	4.0 to 10.0	3
	Class 4 Max. Allowable Limit		>11	>520	>3400	-		>500	>400	>1000	>1200	>40	>1000	>3.5	>10.0	>10.0	4
East of Wilge,	SF-01	MU20	6.9	24.1	188	41	18	1.2	9.5	10.8	13.8	10.7	<2.5	0.08	0.059	0.056	2 (NO_3)
Pit A	LGW - B16	MU20	5.9	2.5	20	5.3	<0.263	0.4	10.4	7.2	1.3	2.1	1.8	<0.263	<0.004	0.16	1 (Mn)
Pit A	LGW - B18	MU20	6.6	11.3	106	42.9	11.5	4.8	4.2	4.5	3.3	2.4	2.4	<0.263	<0.004	0.1	1 (Mn)
Pit F	TF-BH1	MU20	6.1	17.6	139	8.3	9.6	4	5.3	11.2	12.4	12.1	<2.5	<0.06	0.048	<0.001	2 (NO_3)
Wilge/ UG workings	BH9	MU20	7.9	67.7	404	96.1	<0.263	2.3	1.9	6.1	40.1	1.8	161	<0.263	<0.004	0.01	0
Wilge/ UG workings	M5	MU20	5.5	13.1	84	3.6	<0.263	5.5	3.9	10.3	4.1	1.5	16.2	<0.263	<0.004	<0.001	1 (pH)
Pit A	ED -6	MU21	6.5	7.5	50	32	0.4	1	9.1	3.9	<0.557	161	3.4	0.37	<0.004	0.1	4 (NO_3)
Pit A	HZ - 1	MU21	6.9	7.2	54	29.2	3.3	2.1	3.3	4.3	1.1	0.2	2.1	<0.263	<0.004	0.41	1 (Mn)
Pit A	HZ - 3	MU21	7.6	20.1	110	96.5	0.9	1	16.2	3.5	1.4	16.2	2.8	0.85	<0.004	0.04	2 (NO_3)
Pit A	LGW - B21	MU21	6.5	2.3	16	7.7	0.7	0.6	2.5	1.6	1.2	2	1.8	0.7	<0.004	0.04	1 (F)
Pit A/UG workings	KN - 14	MU21	7.1	9.8	60	46.4	<0.263	2.3	4.3	4.8	2.1	2.8	2.1	<0.263	<0.004	<0.001	0
Pit C	LGW - B22	MU21	6.4	7.7	46	31.6	0.5	1.2	3.3	3.7	2.5	1.8	1.5	0.49	<0.004	0.26	1 (Mn)
Pit G	ED - 3	MU21	7	22.6	186	85.6	0.8	1	2.8	1.4	1.3	3.7	26.6	0.83	<0.004	<0.001	1 (F)
Pit G	LGW - B11	MU21	8.1	11.7	76	44.1	9.8	2.3	5.9	2.8	3.8	26.6	4.2	<0.263	<0.004	<0.001	3 (NO_3)
Pit G	LGW - B3	MU21	6.5	9.9	82	17.8	5.4	1.7	4.6	5	2.3	2	2	0.36	<0.004	<0.001	1 (pH)
Pit G	LGW - B7	MU21	6.5	3.8	30	<1.99	0.8	1	0.4	1.1	1.5	1.8	3.8	<0.263	<0.004	<0.001	1 (pH)
Pit C	LGW - B4	MU22	6.6	3.5	22	9.6	0.5	0.6	1	1.5	0.9	3.9	2	0.47	<0.004	0.11	1 (Mn)
Pit C	KF-F1	MU22	5.9	9.9	77	3.8	12.4	2	5.5	12.2	3.6	6.2	3.8	<0.06	0.01	0.012	1 (NO_3)
Pit D & D North	KF - 18	MU22	7	8.1	54	24.7	4.5	5.2	2.2	3.6	3.1	172	1.8	0.64	<0.004	0.12	4 (NO_3)
Pit D & D North	KF - 19	MU22	8.1	24.6	128	49.7	13	4.2	17.3	4.9	5.6	1.8	61.7	<0.263	<0.004	0.11	1 (Mn)
Pit D & D North	KF -6	MU22	5.8	45.1	380	3.2	0.6	9.4	1.2	1.3	3.4	2.2	172	0.62	<0.004	0.61	1 (Mn)
Pit D & D North	LGW - B13	MU22	8	32.8	188	180	23.6	4.6	13.9	28	4.6	3.4	2	2.59	<0.004	<0.001	3 (F)
Pit D & D North	LGW - B14	MU22	9	28	160	147	5.7	3.6	2.1	58.1	5	2.8	1.9	4.91	<0.004	<0.001	4 (F)
Pit D & D North	LGW -B24	MU22	8.1	7.8	56	30	<0.263	2.3	4.7	8.2	2.9	26.6	1.4	<0.263	<0.004	<0.001	3 (NO_3)
Pit D & D North	M6	MU22	7.2	18.4	134	74.2	<0.263	2.8	1	1.5	5.6	1.4	2.2	<0.263	<0.004	<0.001	0
Pit D & D North	OC1	MU22	6.5	209	1900	49.4	233	14.9	107	23	4.5	0.3	1192	<0.263	108	12.5	4 (SO_4)
Pit D & D North	OC4	MU22	6.9	219	1952	357	404	20.3	133	13.6	3.1	0.3	1116	0.8	0.3	1.52	4 (SO_4)
Pit F	Pit F BH2	MU22	7.4	15.4	98	61	0.5	2.1	4.9	118	2.5	172	3.7	0.45	<0.004	0.07	4 (NO_3)
Pit H	LGW - B28	MU22	8.4	18.3	110	99.4	31.4	1.1	3.2	3	3	1.5	3.9	<0.263	<0.004	<0.001	0
Pit H	NSW - 10 (monitoring)	MU22	7.1	8.2	52	22.2	4.5	4.4	0.9	3.9	2.6	1.4	4.2	<0.263	<0.004	<0.001	0
Pit H	NSW-10 (hydrocensus)	MU22	6.3	5.9	44	12.1	2.3	5.3	1.2	4.7	<2.5	<0.25	5.2	<0.06	<0.004	0.011	0
Wilge/ UG workings	LGW-B25	MU22	7.2	17.3	110	62	17.2	3.5	4.7	8.7	<2.5	2.3	<2.5	0.09	0.04	0.021	0

4.15 HYDROCENSUS

A Hydrocensus was conducted by WSP in June 2024 (WSP, 2024b) (Appendix G). New Largo is located between other coal mines and adjacent to the Kusile Power Station. Other mining areas surrounding New Largo include Klipspruit to the east and Khutala to the south, but they are not directly linked to the New Largo mining areas. There is also the old mined-out Vlakfontein underground mine located west of Pit F.

Pre-mining Hydrocensus

(WSP, 2024b) noted that JMA (2012) conducted a hydrocensus adjacent to the proposed pit areas at New Largo, during which ground water samples were collected from numerous adjacent landowners and from geohydrological investigative boreholes. It is noted that the area had already been altered by previous underground mining at the time.

A total of 309 points were sampled, 46 of these were fountains and 236 were groundwater samples.

The following water uses were listed by JMA (2012) (WSP, 2024b):

- Mining activities from surrounding mines.
- Existing agricultural activities.
- Nearby sand mining and coal washing plant.

Hydrocensus 2022

(WSP, 2024b) reported that in November 2018 Aquatico Scientific conducted a hydrocensus that focussed on the area surrounding Pit D and Pit H. This was followed in 2022 by a survey of the status of five historical New Largo boreholes by GPT intercepting the historical underground workings. No significant changes in water quality were observed between the 2012 and 2018 data. The measured groundwater levels from these five boreholes ranged from 0.32 mbgl to 28.35 mbgl

Hydrocensus 2024

Groundwater monitoring is undertaken mostly bi-annually by the mine for environmental compliance. WSP conducted a hydrocensus in and around New Largo during February 2024, to locate and verify the status of pre-selected current monitoring boreholes as well as to locate new boreholes around Pit F and Pit H as current data does not reflect the groundwater conditions in these areas. WSP's hydrogeologist was assisted by a mine representative (WSP, 2024b).

Fourteen (14) boreholes were visited and confirmed during the hydrocensus and one (1) fountain. (Table 41). Of these, five (5) boreholes and the spring were identified as being in use primarily for livestock watering although three (3) of them were also used for domestic supply. The headworks were covered in most of the groundwater user boreholes and water levels could therefore not be confirmed during the hydrocensus. Fourteen (14) monitoring boreholes were confirmed to be present of which ten (10) were in good or fair condition. Monitoring and hydrocensus boreholes are indicated in Figure 37 (WSP, 2024b).

Table 41: Hydrocensus Boreholes, 2024 for New Largo (WSP, 2024b)

BH-Nr	Latitude	Longitude	SWL (depth below surface in m)	Date	Comment
TF-BH1	-25.98885	29.00972	4.02	22/02/24	Submersible pump. Used by farmer for livestock. Sampled. Private BH.
TF-BH2	-25.98877	29.00952	-	22/02/24	Submersible pump. Used for livestock watering. Headworks are covered by a closed system with no access to measure water level. Private BH.
TF-BH3	-25.99183	29.01575	4.73	22/02/24	Domestic and Livestock use. Submersible pump. Sampled. Private BH
LGB-24	-25.98121	28.95447	7.35	22/02/24	Old monitoring BH. Next to road, no cap and bent casing. Poor condition.
KBH-6	-25.99597	28.91508	10.02	22/02/24	Monitoring BH. Not on WSP map. Newly found. Good condition.
KF-6	-25.99617	28.95121	7.95	22/02/23	Monitoring BH, bad condition, no cap.
LGW-B13	-25.99571	28.93668	11.11	22/02/24	Open BH, no cap, Fair condition.
KB-H8	-25.99765	28.91834	8.98	22/02/2024	Monitoring borehole not previously identified. Good condition

BH-Nr	Latitude	Longitude	SWL (depth below surface in m)	Date	Comment
SF-01	-25.96432	29.02099	-	22/02//24	Closed system - could not measure water level. Good condition. Siro Farms
SF-02	-25.96353	29.02349	43.87	22/02/24	Good condition, livestock, and domestic use.
SF-03	-25.96199	29.02423	21.14	22/02/24	Livestock and Domestic use. Good condition. Weak BH, mostly for household use.
NSW-10	-26.02538	28.94622	12.42	23/02/24	Monitoring borehole close to Pit H. Fair condition, cap not locked.
NSW-6	-26.04442	28.94413	-	23/02/224	Monitoring borehole blocked by bees. Could not measure or sample.
KF-F1	-26.01651	28.95065	-	23/02/24	Fountain (spring). Small community uses it for water.
FF1	-25.95202	28.97419	9.60	23/02/24	Old BH for farmhouse. No pump, farmer reported that the pump was stolen. Borehole is no longer in use as there are no occupants.

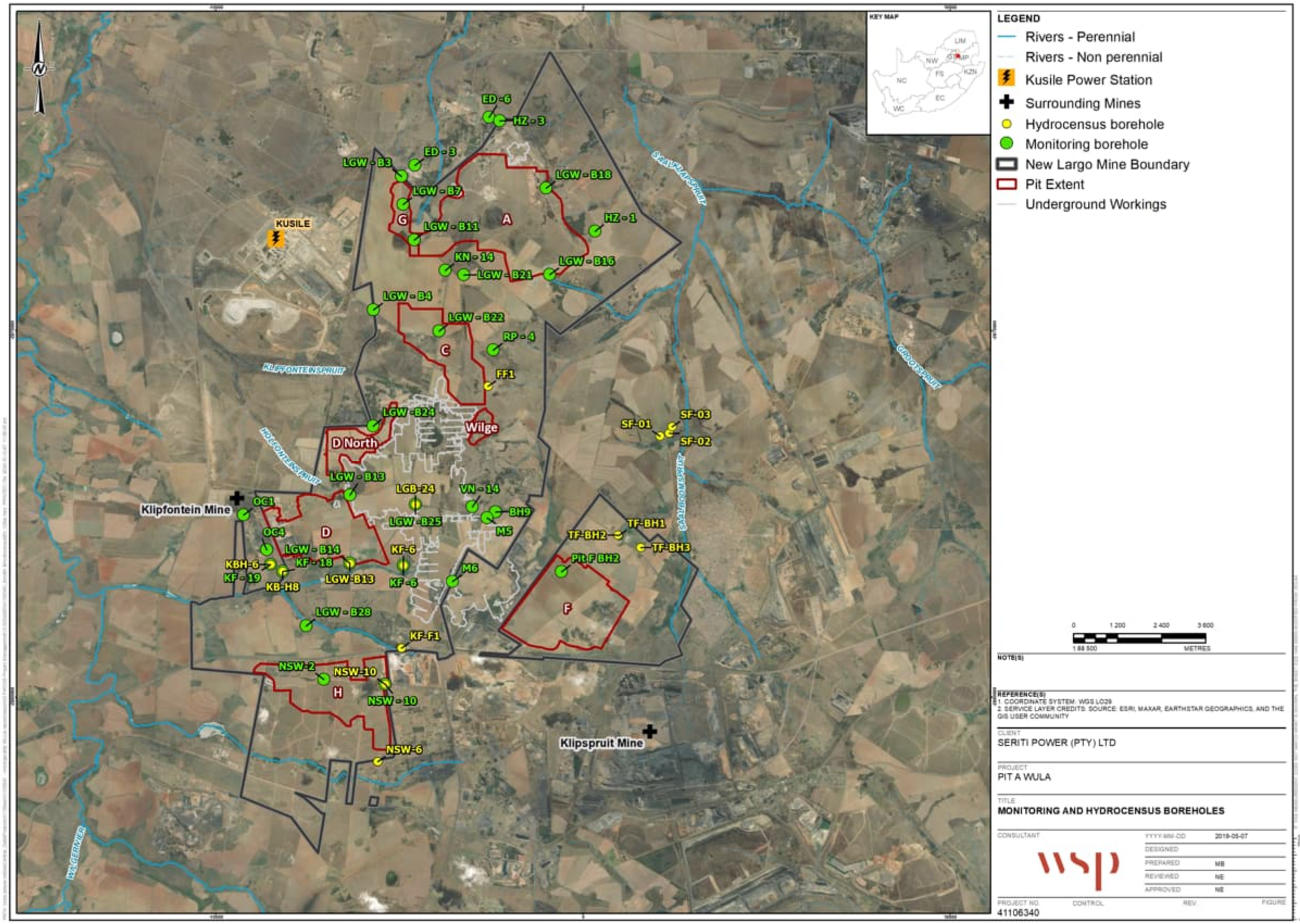


Figure 37: Location of monitoring and hydrocensus boreholes (WSP, 2024b)

4.16 POTENTIAL POLLUTION SOURCE IDENTIFICATION

Pit A has been authorised for in-pit disposal of discard. Discard will be placed below in-pit water level.

According to the (WSP, 2024c) Geochemistry report (Appendix I), the post closure pit water qualities predicted for the open pits, suggest lower pH levels, representing acidic conditions. Predictions were completed for the pits with the discard (in-pit disposal), from the results, the following is summarised (WSP, 2024c):

- All pits are conservatively considered to have the potential to turn acidic, with long-term pH ranging between 4.5 and 6.0. This is partly influenced by the conservative laboratory method used in previous studies on the overburden and should be revised when a geochemical assessment update is done for the pits.

Table 42: Predicted Mine Water Quality (2024 Final or Preliminary Findings) Compared to JMA 2011 Predictions (WSP, 2024c)

Pit	Description	pH	Sulfate (SO_4^{2-})	Total Dissolved Solids (TDS)
			mg/L	mg/L
With Discard / Rejects				
Pit A&G (Final)	DMS plant discard – Medium term	5.18	877	2 170
	DMS plant discard – Long term	5.23	701	1 938

Table 43: Predicted final source terms for New Largo open cast pits with DMS Plant discard over medium and term post-closure (WSP, 2024c)

Parameter	Units	Pit A&G		
		Without Discard	Medium Term (DMS Plant discard)	Long Term (DMS Plant discard)
pH		4.87	5.18	5.23
Alkalinity	mg/L as $CaCO_3$	3.00	8.05	8.47
Chloride (Cl^-)	mg/L	782	688	696
Sulfate (SO_4^{2-})	mg/L	644	877	701
Aluminium (Al^{3+})	mg/L	1.47	1.30	1.30
Silver (Ag)	mg/L	0.000	0.001	0.001
Arseni (As)	mg/L	0.008	0.018	0.011
Boron (B)	mg/L	0.039	0.049	0.046
Barium (Ba^{2+})	mg/L	0.006	0.022	0.047
Beryllium (Be)	mg/L	0.010	0.009	0.009

Parameter	Units	Pit A&G		
		Without Discard	Medium Term (DMS Plant discard)	Long Term (DMS Plant discard)
Calcium (Ca^{2+})	mg/L	242	292	250
Cadmium (Cd)	mg/L	0.002	0.003	0.002
Cobalt (Co)	mg/L	0.042	0.066	0.041
Copper (Cu^{2+})	mg/L	0.166	0.151	0.148
Chrome (Cr)	mg/L	0.000	0.001	0.001
Fluoride (F^{-})	mg/L	0.169	0.215	0.201
Iron (Fe)	mg/L	215	190	190
Mercury (Hg)	mg/L	0.000	0.000	0.000
Potassium (K^{+})	mg/L	19.0	18.4	17.3
Lithium (Li)	mg/L	0.066	0.064	0.060
Magnesium (Mg^{2+})	mg/L	95.7	106.2	97.3
Manganese (Mn)	mg/L	1.07	1.26	0.99
Molybdenum (Mo)	mg/L	0.017	0.016	0.016
Nitrate (NO_3)	mg/L	0.000	0.000	0.000
Sodium (Na^{2+})	mg/L	183	175	164
Nickel (Ni)	mg/L	0.088	0.111	0.083
Phosphorus (P)	mg/L	0.000	0.000	0.000
Lead (Pb^{2+})	mg/L	0.098	0.088	0.088
Antimony (Sb)	mg/L	0.003	0.003	0.004
Selenium (Se)	mg/L	0.004	0.004	0.006
Silicon (Si)	mg/L	3.41	3.02	3.02
Tin (Sn)	mg/L	0.001	0.001	0.001
Strontium (Sr)	mg/L	0.000	0.428	0.182
Thorium (Th)	mg/L	0.000	0.000	0.000
Thallium (Tl)	mg/L	0.001	0.001	0.001
Uranium (U)	mg/L	0.005	0.004	0.004
Vanadium (V)	mg/L	0.002	0.002	0.002
Zinc (Zn^{2+})	mg/L	0.37	1.41	0.74
Total Dissolved Solids (TDS)	mg/L	1 976	2 170	1 938

4.17 GROUNDWATER MODEL

An updated groundwater model was compiled by WSP in 2024 (WSP, 2024b). The conceptual model for New Largo was developed based on the information described in the sections above. The

following considerations relating to the geometry of the topography and the coal seams are: (WSP, 2024b)

- There are two dominant hydrogeological units at New Largo, namely (WSP, 2024b):
  - A laterally extensive shallow weathered zone aquifer. The average vertical thickness of this aquifer zone is approximately 21 meters.
    More localised deeper fractured aquifer systems restricted to contact zones between intrusive diabase bodies and the host rock. These semi-confined aquifers may have high yields in places but have limited storage (JMA, 2012).
  - Although not considered a natural aquifer, significant volumes of water are stored in the mined-out (4 Seam and 2 Seam) underground workings.
- Transmissivities are expected to range from 0.04 m^2/d to 2 m^2/d. Transmissivities higher than 2 m^2/d are associated with fracture zones.
- Recharge is expected to range between 0.5% and 5% of MAP, or between 3.5 mm/a and 35 mm/a.

Three cross sections were made to illustrate the topography, water levels and setting of the pits. The locations of the cross sections are shown in Figure 38 and the cross sections are shown as follow:

- The north to south (NS) cross section is shown in Figure 39
- The north-north-east to south-south-west (NNE-SSW) cross section is shown in Figure 40

Data indicates that the water levels in the historical underground mining area have mostly recovered. The groundwater flow is mainly towards the rivers, except where the recent pit mining causes local sinks.

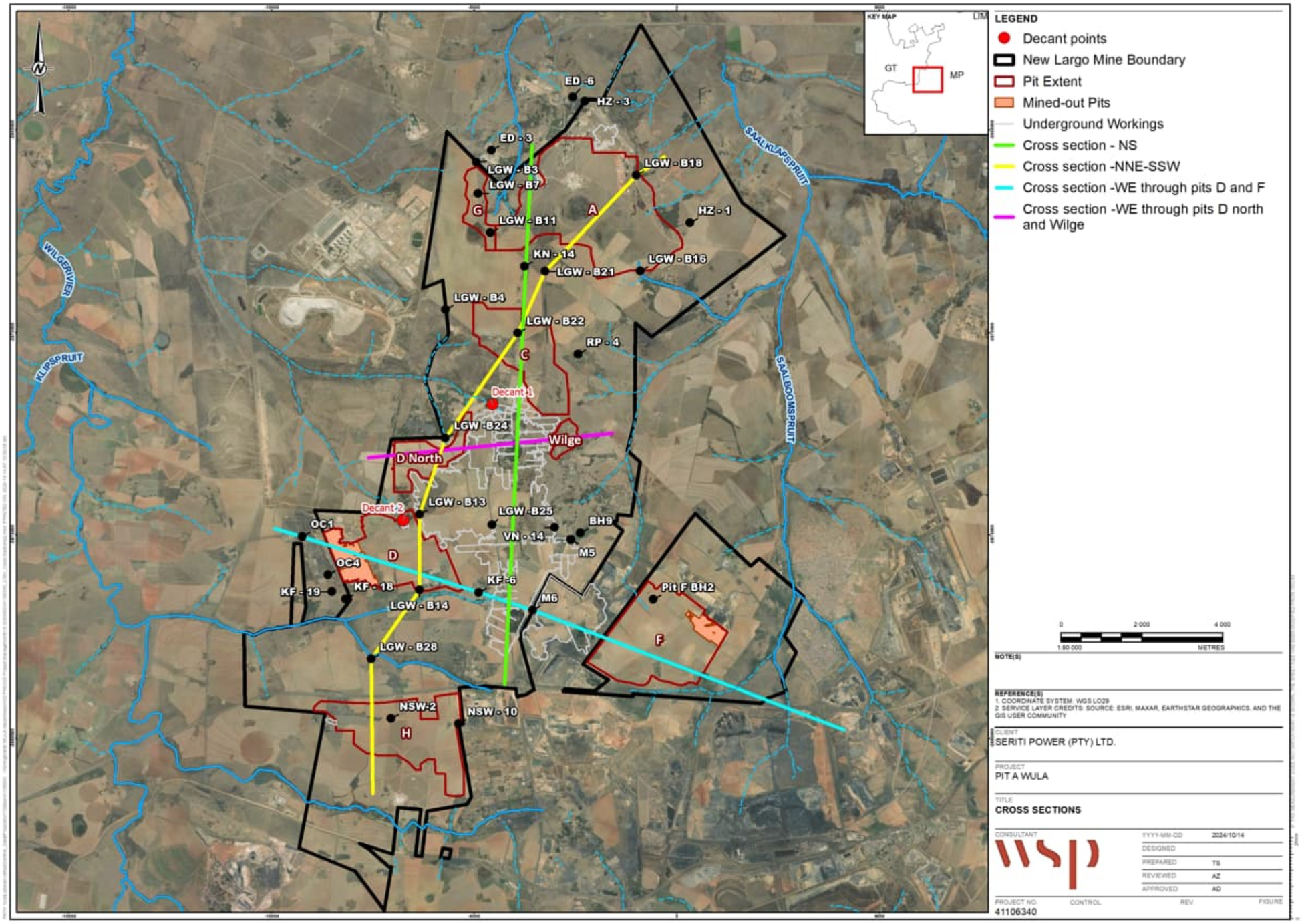
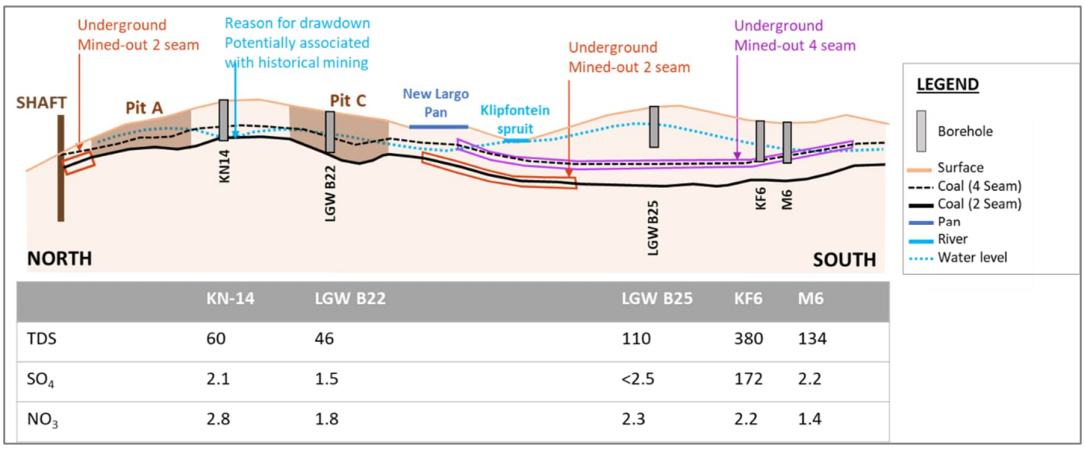


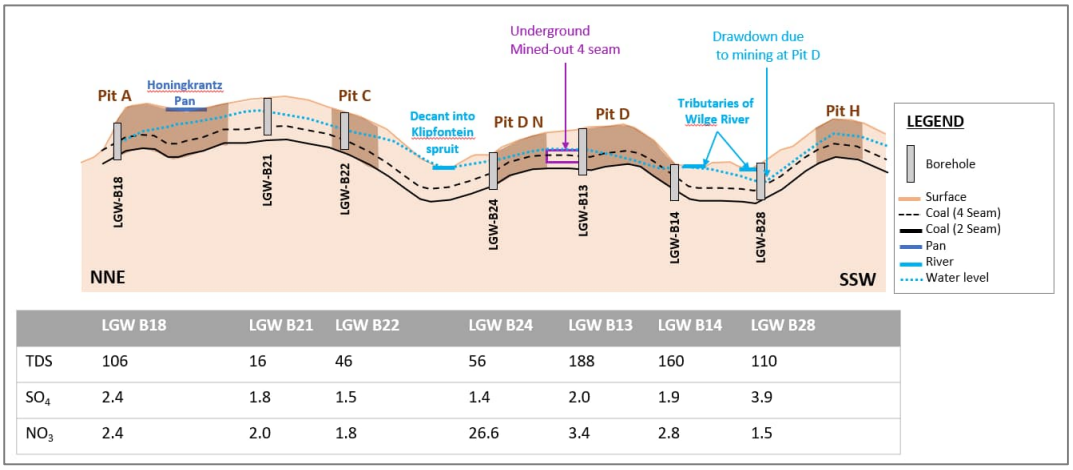
Figure 38: - Locations of cross sections (WSP, 2024b)



	KN-14	LGW B22	LGW B25	KF6	M6
TDS	60	46	110	380	134
SO_4	2.1	1.5	<2.5	172	2.2
NO_3	2.8	1.8	2.3	2.2	1.4

Figure 39: - North to south cross section (WSP, 2024b)

The water quality is generally good, with the highest Sulfate concentrations associated with underground mining.



	LGW B18	LGW B21	LGW B22	LGW B24	LGW B13	LGW B14	LGW B28
TDS	106	16	46	56	188	160	110
SO_4	2.4	1.8	1.5	1.4	2.0	1.9	3.9
NO_3	2.4	2.0	1.8	26.6	3.4	2.8	1.5

Figure 40: - North-north-east to south-south-west cross section (WSP, 2024b)

The water quality is generally good, with high Nitrates at LGW-B24 (potentially linked to agricultural runoff) and slightly elevated TDS concentrations at LGW-B13 and LGW-B14 (WSP, 2024b).

Pre-facility (Pre-mining)

The area has been mined out underground and water levels have mostly filled the voids (with some exceptions where the underground void seems to be disconnected to the shallow aquifer). The current situation (end 2023) was used as the steady state calibration. Since this is at the beginning of mining, the calibrated “steady state” model can be used for pre-mining results. These results are indicated in the calibration section of this report (WSP, 2024b).

During Facility (Operational model)

Groundwater Ingress

- The simulated ingress is groundwater ingress only and does not account for rainfall directly on the pit nor for surface runoff that enters the pit. That is why the simulated ingress values are lower than the amount of water pumped out of the pits (WSP, 2024b).
- Since the mining schedule provided is an annual schedule, the model results are presented as annual inflows.

The average and maximum ingress per pit is given in Table 44 and the ingress over time is depicted in Figure 41. Please note that rainfall on the pit as well as runoff into the pit should be added to these numbers to make provision of pumping from the pits (WSP, 2024b).

Table 44: Average and maximum groundwater ingress per pit (m^3/d) (WSP, 2024b)

	Pit A	Pit C	Pit D	Pit D North	Wilge Pit	Pit F	Pit H
Average	528.2	118.0	105.4	95.5	14.9	322.3	201.3
Maximum	935.5	352.1	486.1	562.5	253.2	1101.4	958.4

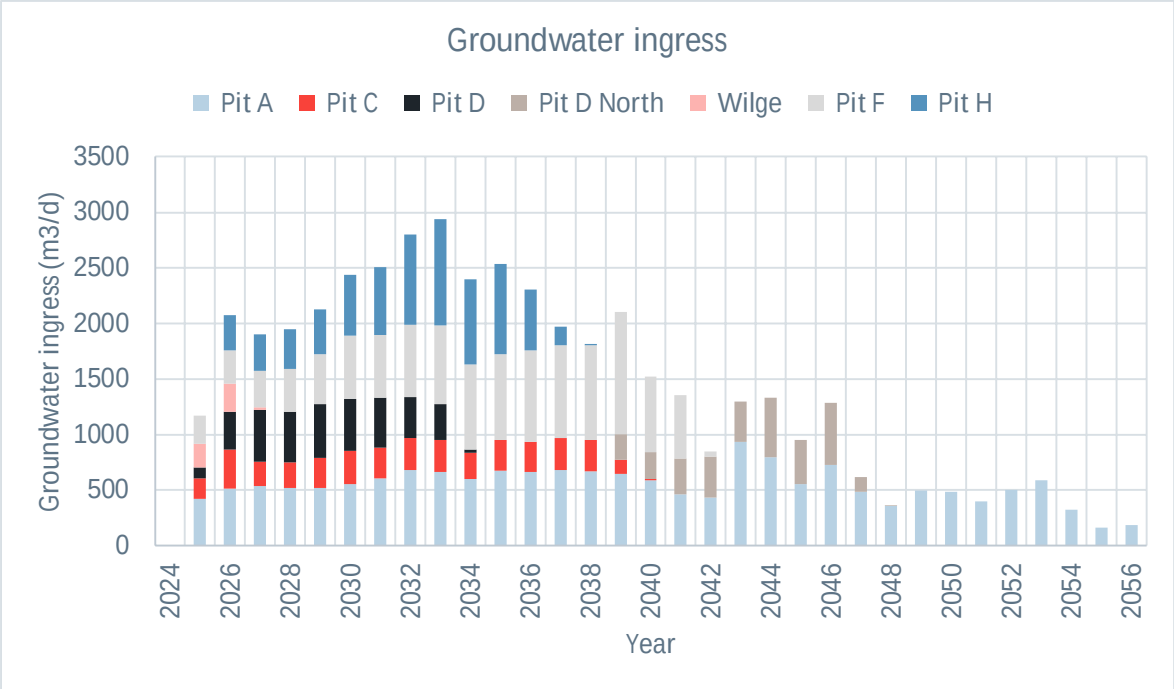


Figure 41: Simulated groundwater ingress (WSP, 2024b)

Figure 41 shows the total ingress for all the pits reaches a maximum in 2033. Pit ingress in directly related to the area that will be mined in a year. (WSP, 2024b).

Groundwater Drawdown

Figure 7-12 shows how the borehole water levels are pulled down by mining and subsequent recovery (WSP, 2024b).

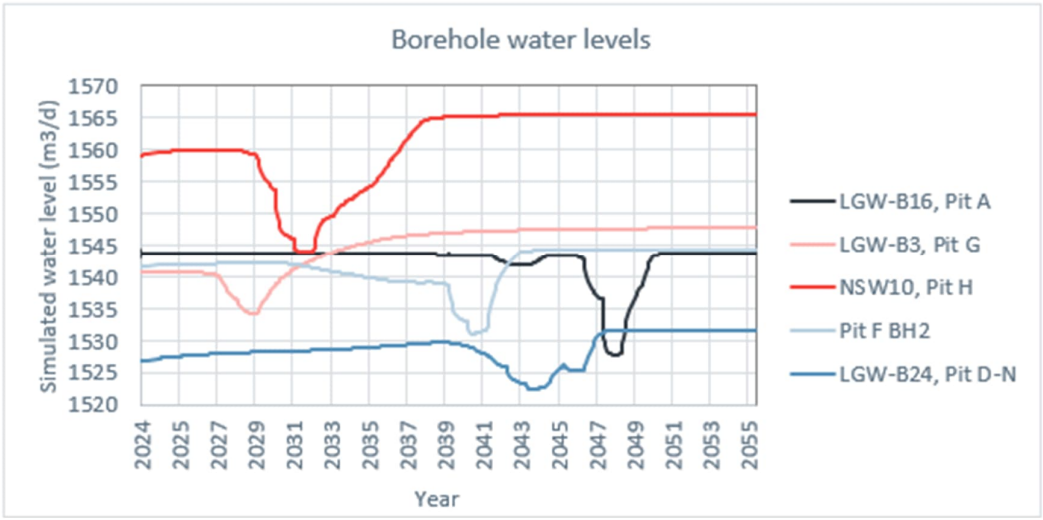


Figure 42: Simulated water levels at boreholes (WSP, 2024b)

Figure 42 shows how the simulated drawdown over time is associated with the pits. As time progresses, the extent of drawdown grows larger and finally reaches the eastern part of Pit A that will be mined last (WSP, 2024b).

Post-facility (Post-closure model)

For post-closure it was assumed that all the pits will be covered at closure. For modelling purposes this was applied from 2056 by applying a reduced recharge of 98 mm/a to the pits. Two scenarios were modelled (WSP, 2024b):

- Post-closure scenario 1: Backfilling with overburden and DMS discard/rejects from destoning plant.
- Post-closure scenario 2: Backfilling with overburden only.

There was no difference in the flow regime between the two scenarios. The recovery rates and decant was the same for both scenarios. However, the source concentrations for scenario 2 was lower than for scenario 1.

Water Level Recovery

Water level recovery starts at the end of mining. Two cross sections are shown in Figure 43. The water levels for 2055 will not change after closure (specifically for these cross sections), as the decant will prevent the water levels to rise further. The final water levels are indicated in Figure 44 showing where the water levels are higher and lower than the current (2024) water levels (WSP, 2024b).

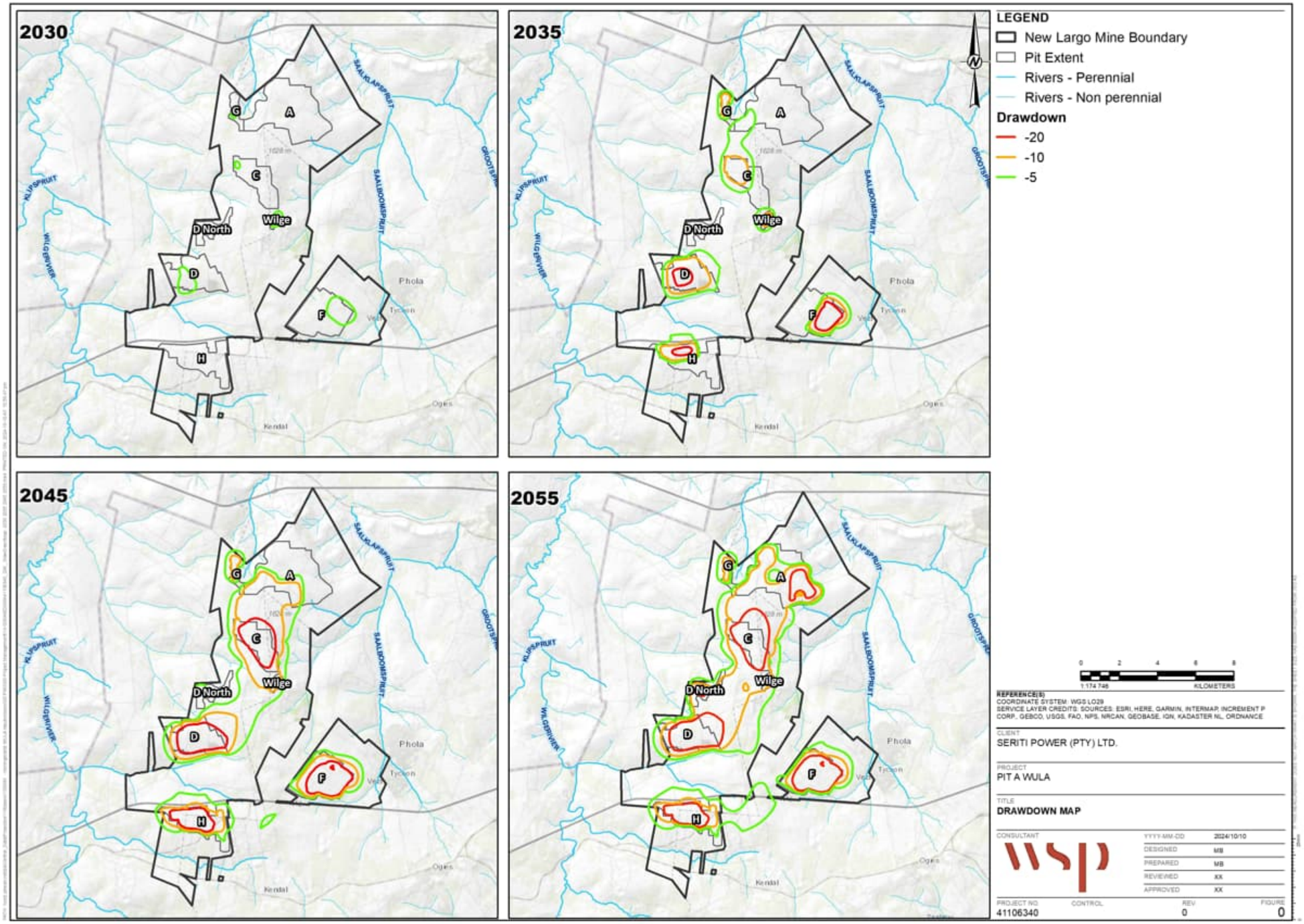


Figure 43: Simulated drawdown over time (WSP, 2024b)

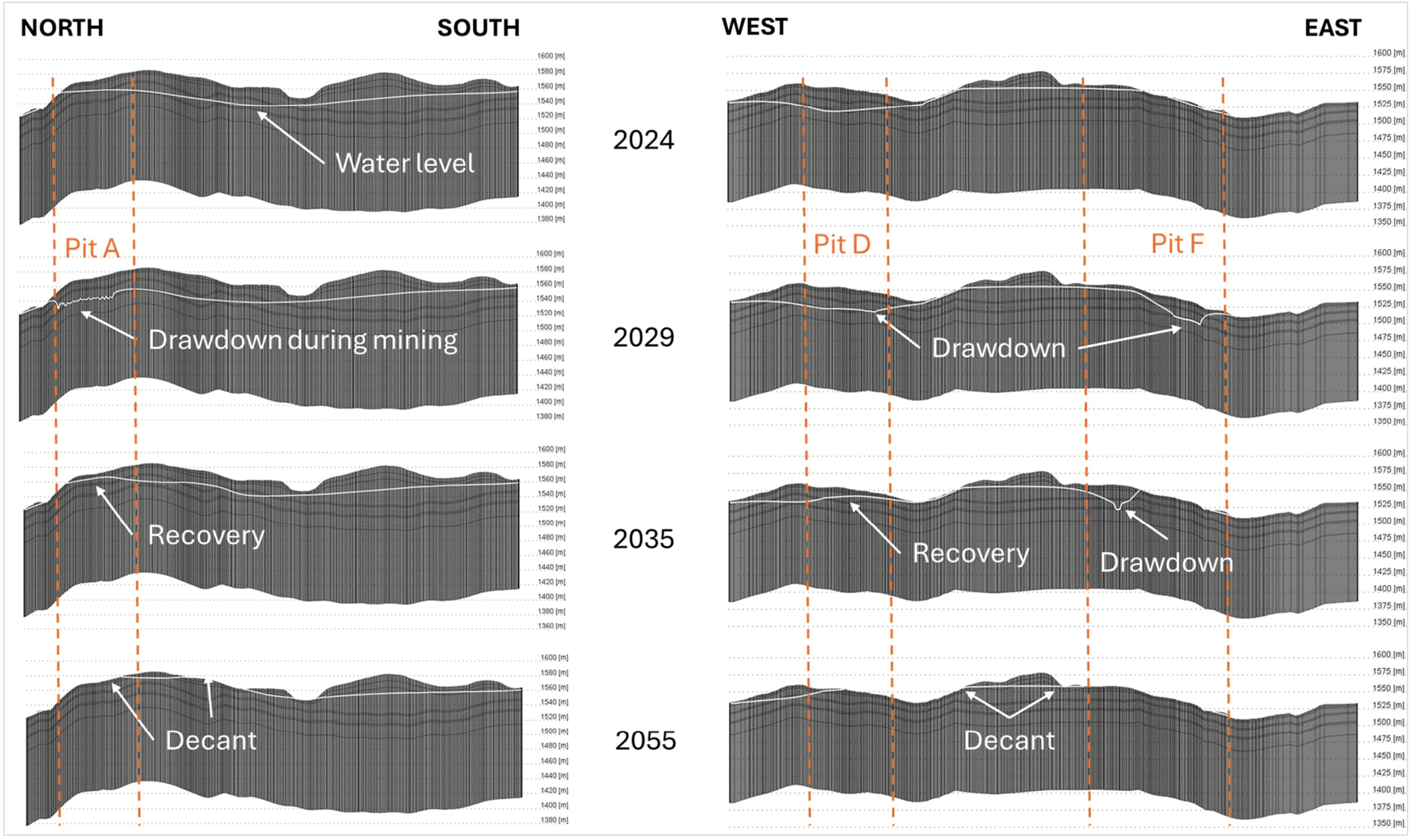


Figure 44: Cross sections NS and EW indicating drawdown and recovery (WSP, 2024b)

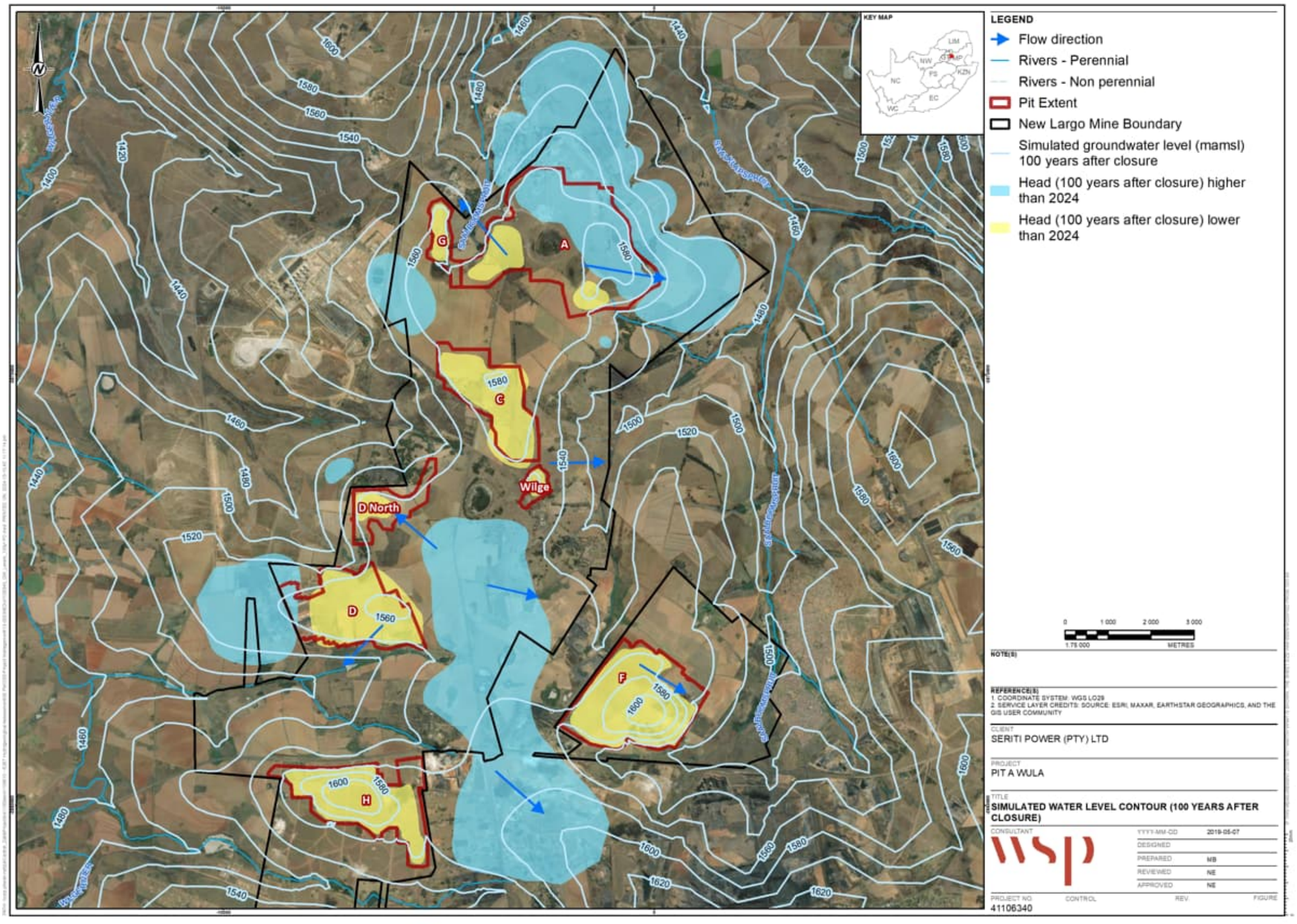


Figure 45: Final water levels 100 years after closure (WSP, 2024b)

Contaminant Transport

The contaminant plumes for post-closure scenario 1 are shown in Figure 46. The map shows how the 400 mg/L Sulfate and the 500mg/L TDS plumes grows over time for 10, 20, 50, and 100 years after closure (WSP, 2024b).

There is very little difference in the contaminant plumes for the two scenarios. Hundred years after closure, the TDS plumes for the two scenarios are the same. The Sulfate plume for scenario 1 (that includes discard/rejects) extends up to 400 m further than the Sulfate plume for scenario 2 as indicated in Figure 47.

Decant

The simulated decant points differ from the potential decant location based on the lowest surface elevation for each pit. This can be due to model simplifications and calibration errors. Where the calibrated water level was higher than measured, it will mean that the decant volumes will be overestimated (conservative approach). This was the case for Pit G, Pit C, Pit D, Pit F and Pit H (WSP, 2024b).

Figure 48 indicates the simulated decant points. Please note that these are the initial decant points. The decant should be managed by pumping from the pits. Failure to manage the decant will result in the extent of decant will spread all around the pits. This is because the pits are situated in the upper catchment areas (WSP, 2024b).

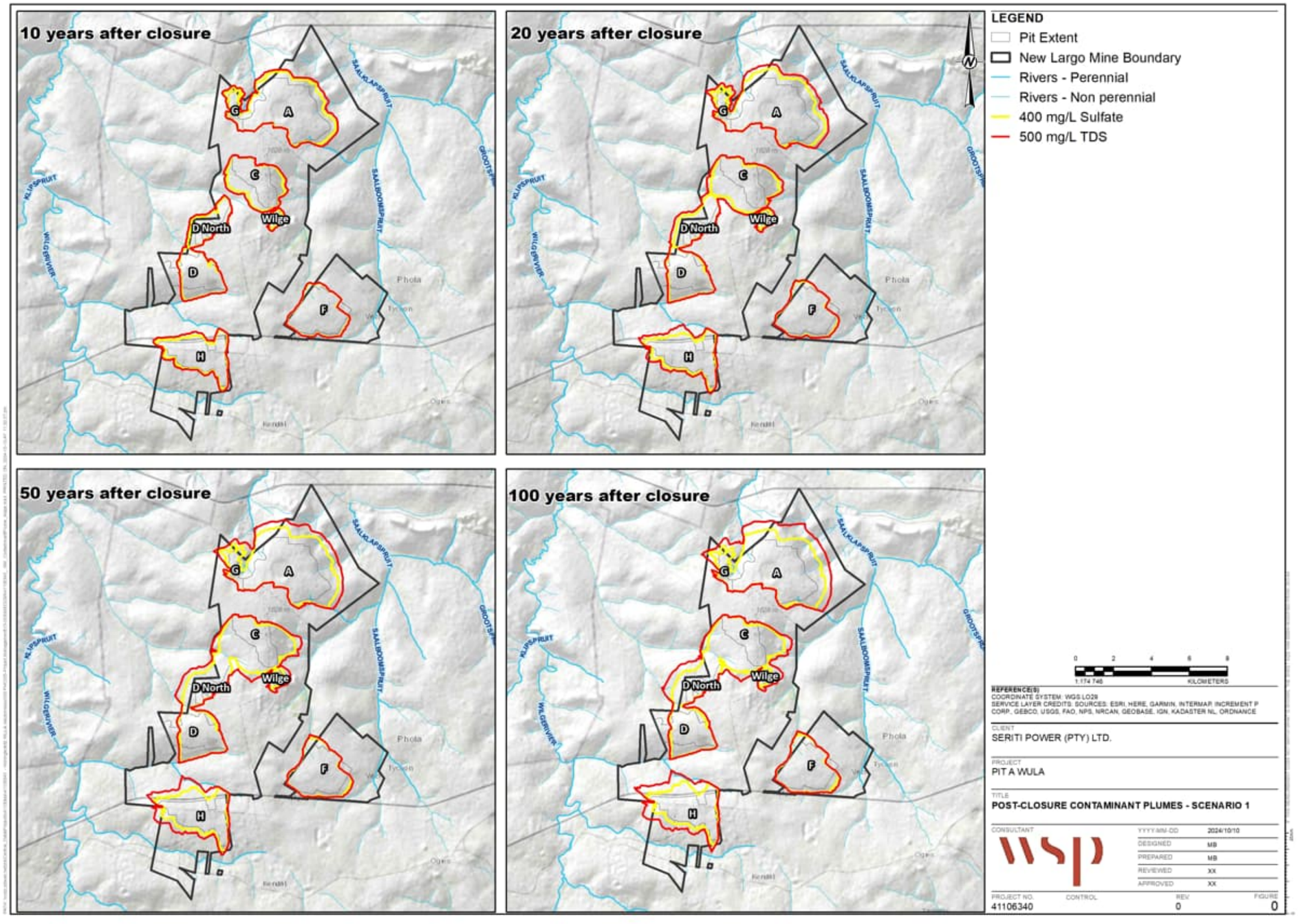


Figure 46: Contaminant plumes for scenario 1 (WSP, 2024b)

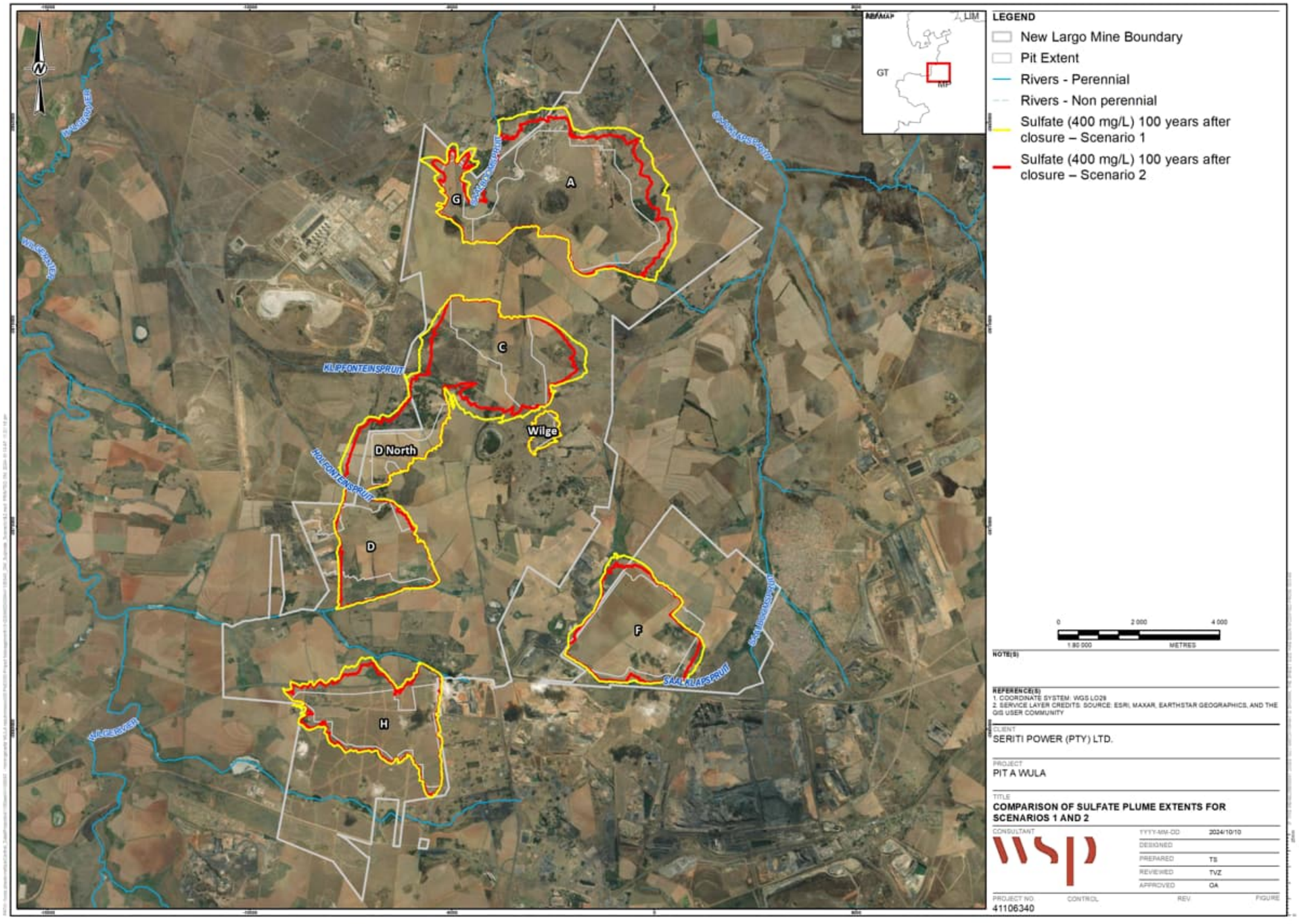


Figure 47: Comparison of Sulfate plume for two scenarios (WSP, 2024b)

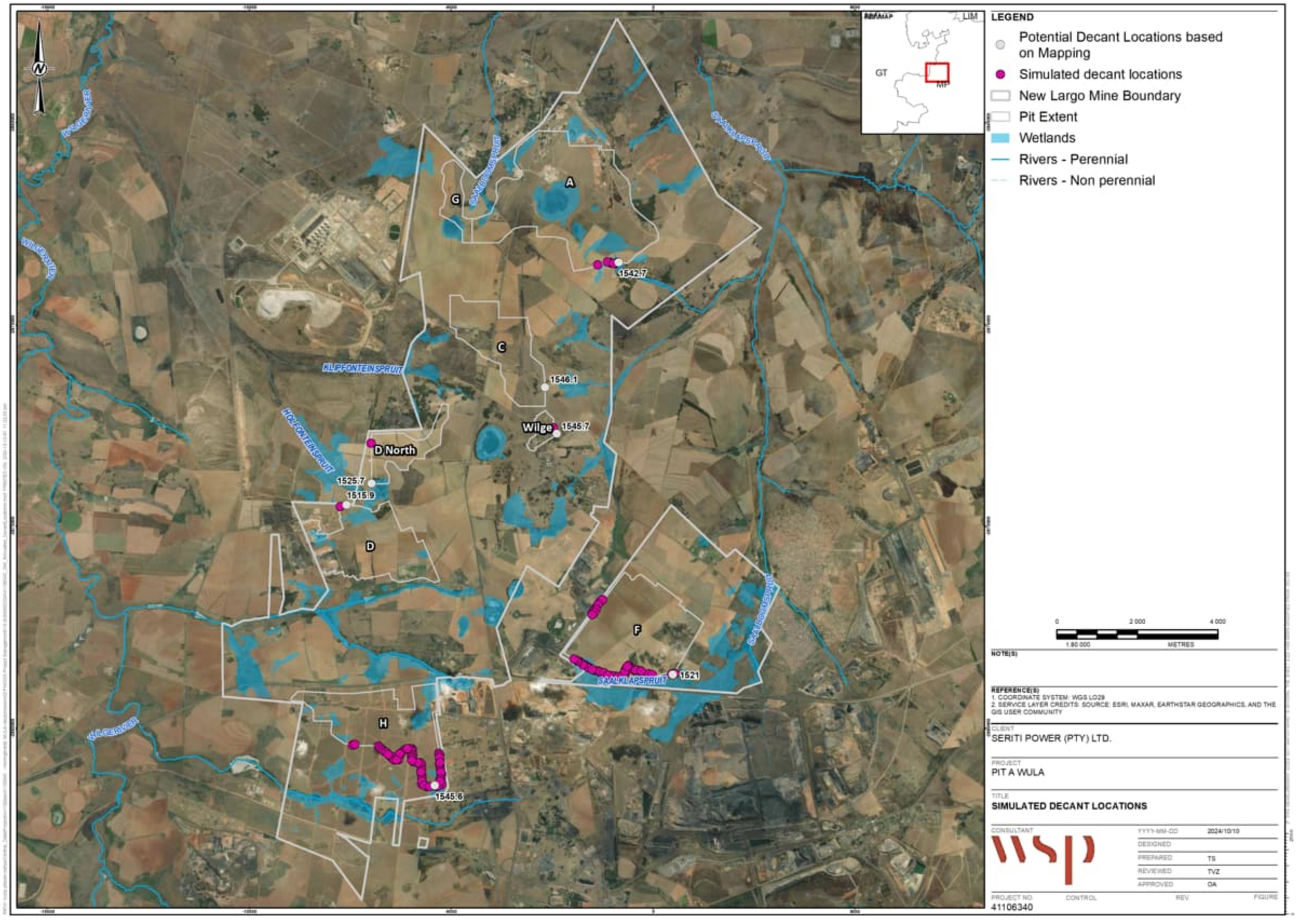


Figure 48: Simulated decant locations (WSP, 2024b)

The decant from the various pit are shown in Figure 49 It was assumed that all the pits will be covered at closure. This will reduce the recharge through the backfill and hence, the decant will be reduced.

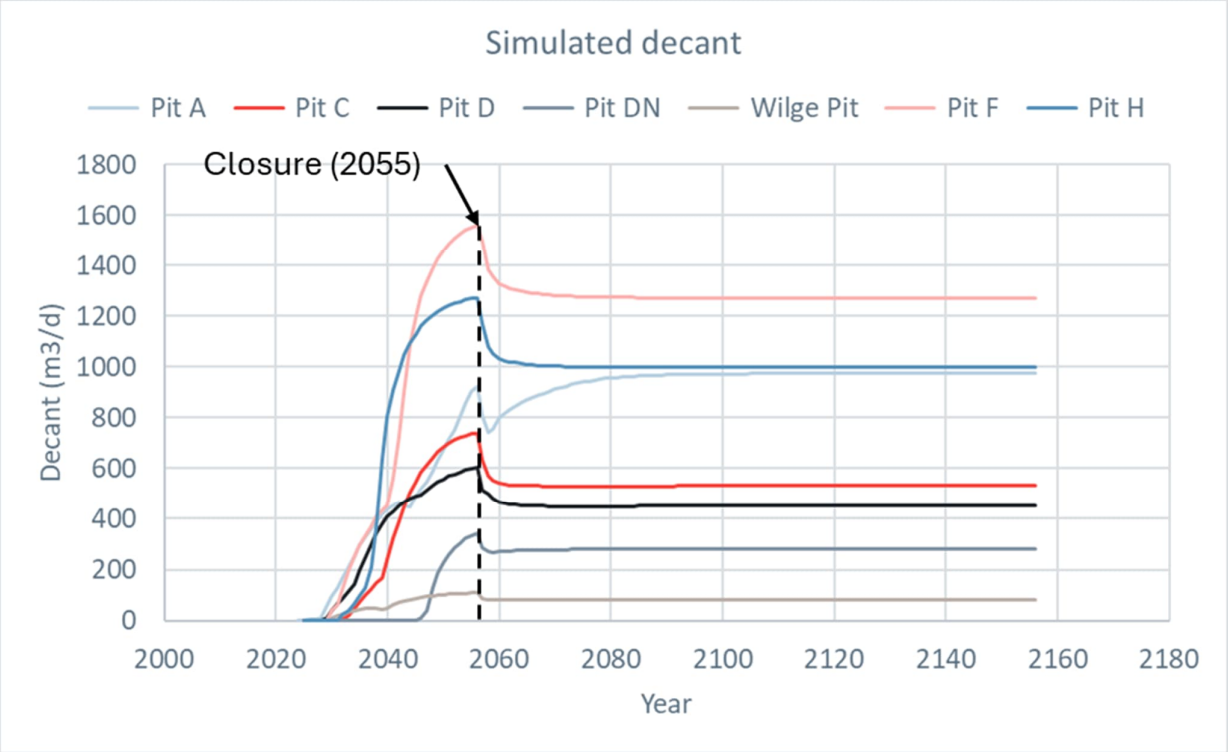


Figure 49: Simulated Decant (WSP, 2024b)

The simulated decant start time and volumes are presented in

Table 45.

Table 45: Simulated decant start time and volumes (WSP, 2024b)

Pit	Start of decant	Decant at end of operations (m^3/d)	Long-term decant (m^3/d)
Pit A	2026	924	976
Pit C	2032	738	531
Pit D	2029	603	452
Pit D North	2044	342	282
Wilge Pit	2029	109	81
Pit F	2030	1560	1273
Pit H	2032	1273	1001

4.18 SOCIO-ECONOMIC ENVIRONMENT

(Golder Associates Africa (Pty) Ltd, 2022)The socio-economic baseline provides macro-level information on a provincial and district level. More details are provided at the eMalahleni Local Municipality level, particularly Wards 28, 29 and 30.

Population

The population distribution on a provincial, district and local municipal level is presented in Table 46.

Table 46: Geographic details of Mpumalanga, Nkangala and eMalahleni (Golder Associates Africa (Pty) Ltd, 2022)

Geographical demarcation	Population	Geographical size	Population density people/km²	Number of households	Average household size	Median age
Mpumalanga Province	4,300,000	76,495 km²	52.8	1,332,000	3.5	23
Nkangala District	1,445 624	16,758 km²	85.5	440,000	3.4	25
eMalahleni Municipality	455 228	2,682.7km²	169.7	150 420	3	27
eMalahleni Municipality Ward 28	12 888	53.6km²	240	3 914	N/A	26
eMalahleni Municipality Ward 29	19 777	230 km²	86	6 254	N/A	25
eMalahleni Municipality Ward 30	13 617	257 km²	53 km²	3 994	N/A	27

The median age of a population is when half of the population is older than that age, and half is younger. It is interesting to note how the median age of the various areas differs, with eMalahleni Municipality being 27, the Nkangala District 25 and the Mpumalanga Province as low as 23 years. The density in eMalahleni is also three times higher than that of the Mpumalanga Province (Golder Associates Africa (Pty) Ltd, 2022).

Ethnicity ratios

Most eMalahleni Local Municipality (ELM) residents belong to the Black/African population. The proportion of people belonging to the Black/African population group in ELM is lower than on district and provincial levels, with a higher proportion of people belonging to the White population group (Refer to Figure 50).

Phola is the township in eMalahleni, directly bordering the Pit F section of the mine and falls in ward 29 of the ELM. The area is 6.35km² in extent and has a population of 31 885 (2011 Census).

The township has a density of 5,000 people per square kilometre. In ward 29, there are 98.3% Black/African residents, 0.61% Coloured, 0.53% White and 0.22% Indian/Asian, while 0.26% classified themselves as other. These demographics include Wilge Village, where the White and Indian minorities reside (Golder Associates Africa (Pty) Ltd, 2022).

Some of the Indian population was relocated from the Klipspruit site. The White population is mostly the ex-Kendal employees that occupy the houses (Golder Associates Africa (Pty) Ltd, 2022).

Nine of the 11 official languages are spoken in the area, with isiZulu leading with 58%.

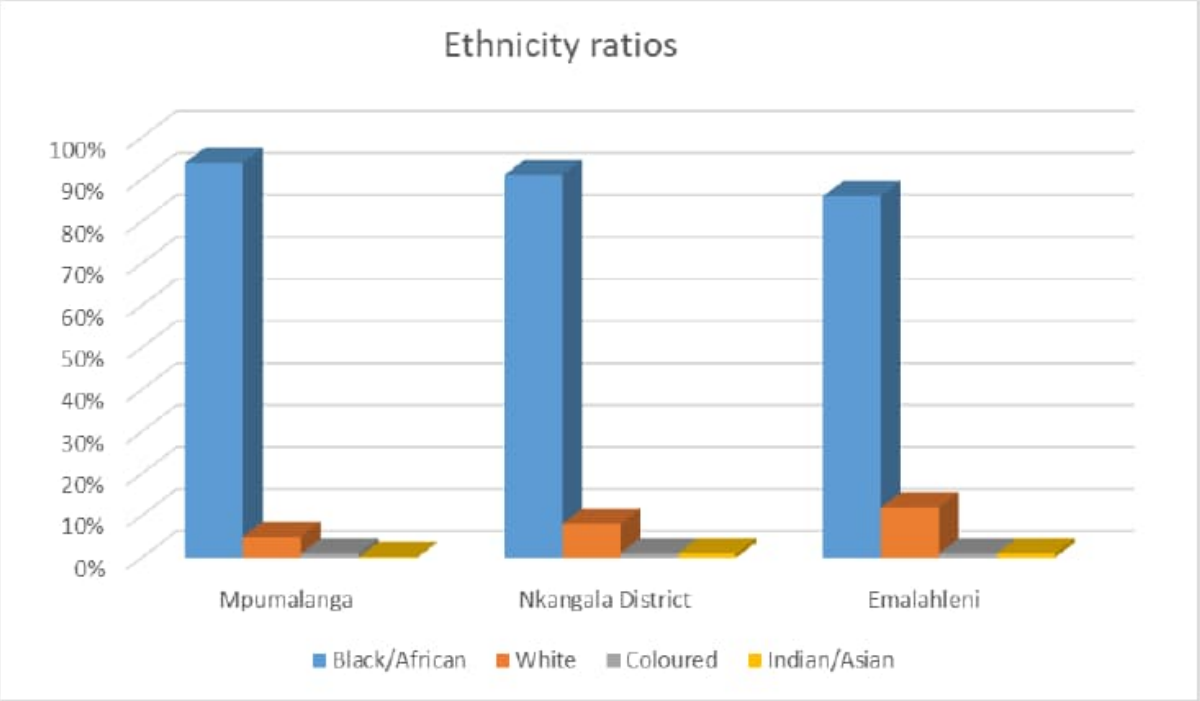


Figure 50: Ethnicity ratios of Mpumalanga, Nkangala and eMalahleni (Golder Associates Africa (Pty) Ltd, 2022)

Age distribution

The age structure of the delineation area is categorised into different age groups, as shown in Figure 51**.** Data from the Community Survey 2016 indicates that more than half the population is of the economically active age, i.e. between the age of 15 and 64, followed by people under 15. Less than 5% of the population is over 65 years old. The structure is typical of a population with a high birth rate and short life expectancy (Golder Associates Africa (Pty) Ltd, 2022).

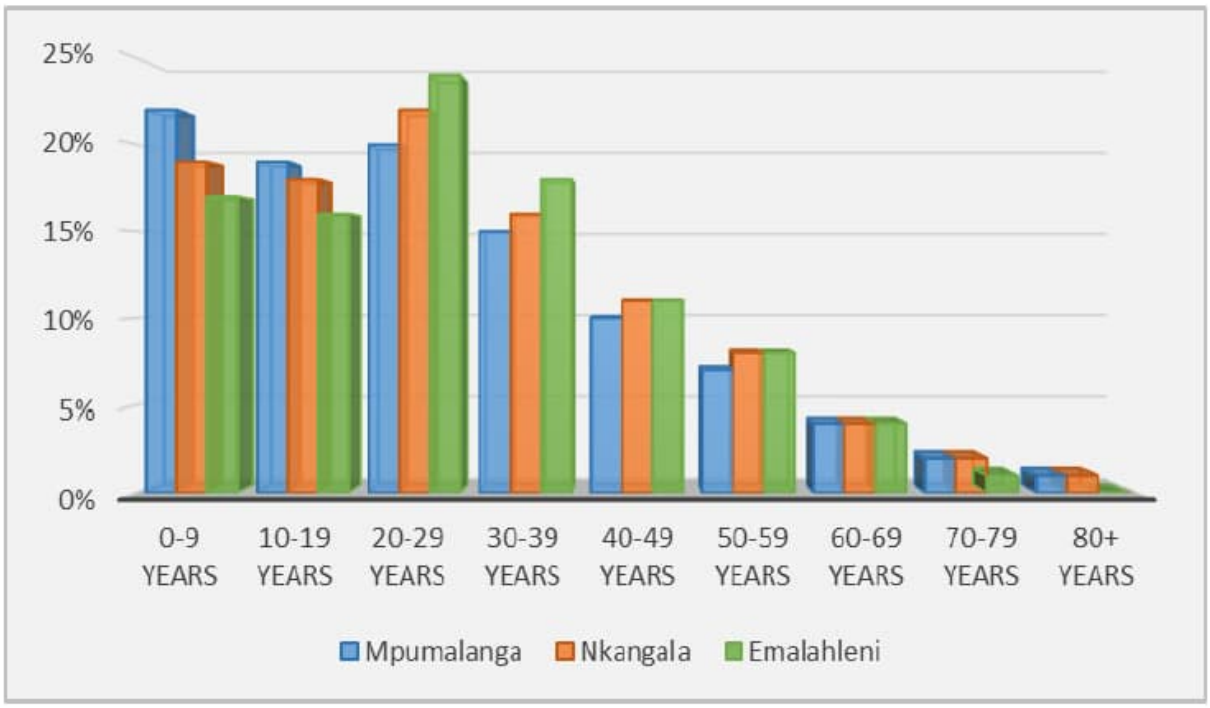


Figure 51: Age distribution in the three districts (Golder Associates Africa (Pty) Ltd, 2022)

Gender

The Mpumalanga Province, Nkangala District and the ELM have a different gender distribution (Figure 52). The percentage of women is higher than men in the Mpumalanga Province. This may indicate that some men leave the districts to seek employment elsewhere (Golder Associates Africa (Pty) Ltd, 2022).

In the Nkangala District, there are more men than women. Amongst others, this may be attributed to the pull of jobs in the district (Golder Associates Africa (Pty) Ltd, 2022).

In eMalahleni, there are significantly more men than women. The implications can be twofold, indicative of more job opportunities in the coal mining area of eMalahleni, and some influx of men seeking jobs in the mines (Golder Associates Africa (Pty) Ltd, 2022).

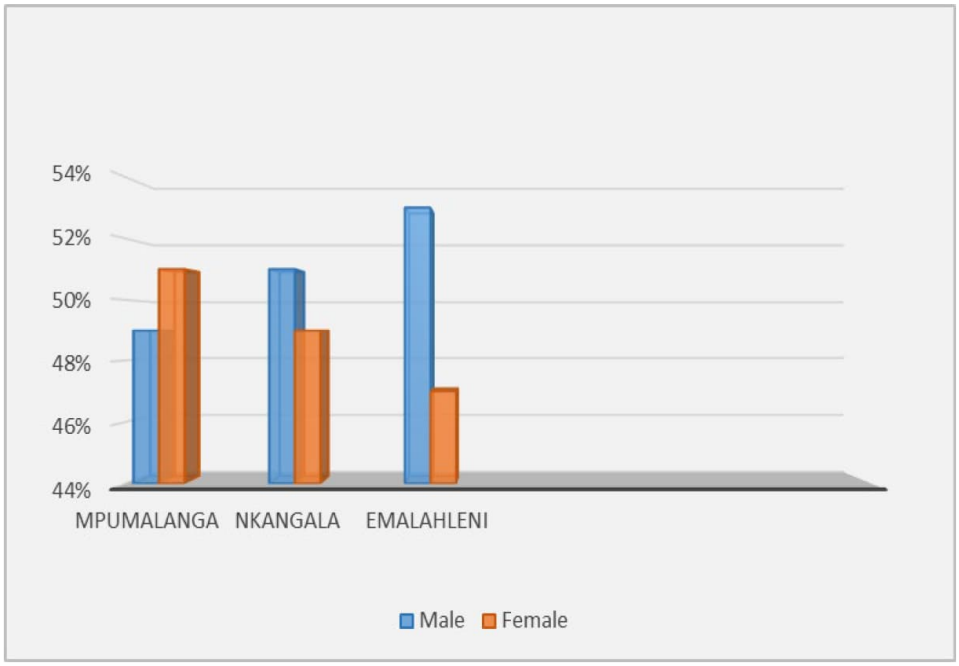


Figure 52: Gender distributions in the three districts (Golder Associates Africa (Pty) Ltd, 2022)

Education

Eleven percent of the Mpumalanga population is uneducated. In comparison, only 5% of the eMalahleni residents have no education. Forty-six per cent (46%) of the population in eMalahleni have passed Grade 12 compared to only 43% in Nkangala and 42% in Mpumalanga (Golder Associates Africa (Pty) Ltd, 2022).

A point of concern is that in 2019, 3,483 eMalahleni learners enrolled for their National Senior Certificate, only 2,869 wrote the exam, and only 2,329 learners passed the matric exam. It means that almost a third of students who entered were unsuccessful in completing their Grade 12. This performance, however, is the third highest in the Nkangala District. Overall, eMalahleni has a total of 112 schools in its municipal district. Figure 53 below indicates the province, district, and municipality education levels (Stats SA, 2016).

The education levels for Wards 28 and 29 are very similar, although ward 29 has a slightly lower percentage of uneducated residents. Ward 30 (at 29%) has the lowest matric pass rate among the three wards and the highest undergraduate rate at 2% (Golder Associates Africa (Pty) Ltd, 2022).

Four percent of the population in eMalahleni has a post-graduate degree compared to the 3% of Nkangala and Mpumalanga.

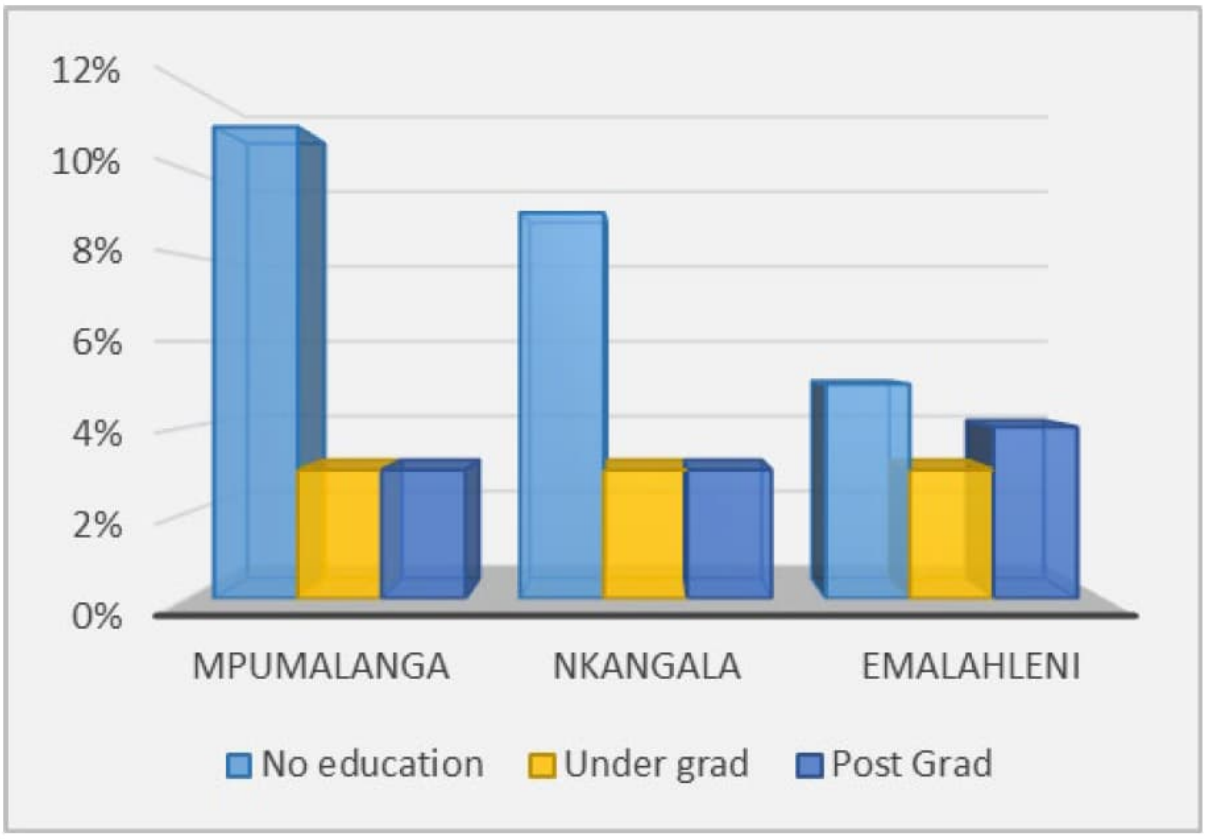


Figure 53: Education levels around impact (Golder Associates Africa (Pty) Ltd, 2022)

Employment

Employment rates within an area are linked to the size of the economy, education level and skills. This section provides a brief overview of the region's employment rates and income levels. Labour market information relates to three groups of individuals: employed individuals, unemployed individuals and those who are not economically active (e.g., homemakers, retirees, full-time students who do not wish to work) (Africa, 2021) (Golder Associates Africa (Pty) Ltd, 2022).

In Figure 54 below, the employment status of the affected areas can be viewed; eMalahleni has the highest employment rate in the three areas under discussion. It is a direct result of the mining activities in the area. Although both wards affected by Pit F have a 33% economically inactive population, ward 29 has a 44% employment rate compared to the 36% in ward 28. The higher employment rate in ward 29 is due to Eskom and mining employees who reside in Wilge Village (Golder Associates Africa (Pty) Ltd, 2022).

The Mpumalanga Province has an employment rate of 37%. The Nkangala District Municipality has a higher proportion of the employed population (41%). The ELM serves as the district's primary employment hub, with 49% of the population employed. eMalahleni serves as an essential supplier of employment for the population in the Mpumalanga Province (Golder Associates Africa (Pty) Ltd, 2022).

Mpumalanga has lower than average levels of unemployment in South Africa, with 43% of the working-age population employed in 2015, compared to 40% nationally. The international standard

is about 60%. In 2014, the median official monthly wage in the province was R4,200, and the median wage for domestic, informal and agriculture workers was R1,800. It compares well to the R4,000 at the national level for official workers and R1,500 for other employees. Relatively high employment and pay levels explain a high degree of immigration in Mpumalanga. Its population grew by 37% between 1996 and 2015, compared with a national average of 35% (Golder Associates Africa (Pty) Ltd, 2022).

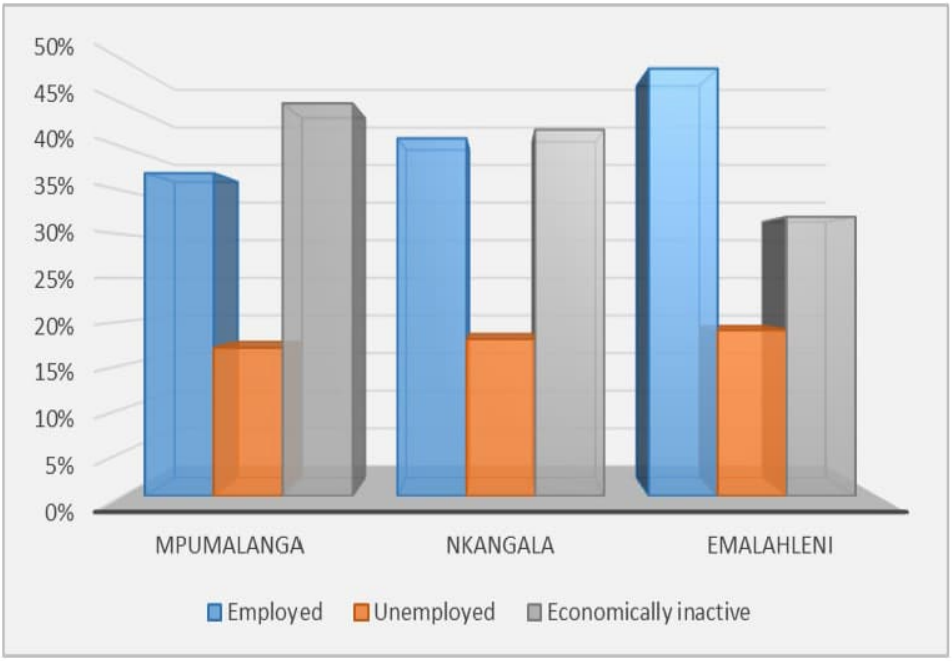


Figure 54: Employment percentage (Golder Associates Africa (Pty) Ltd, 2022)

5 ANALYSES AND CHARACTERISATION OF ACTIVITY

5.1 SITE DELINEATION FOR CHARACTERISATION

A facility has been selected as the unit activity on which the IWWMP was founded. The facilities were identified and delineated based on the following criteria:

- A facility within the overall complex must display a measure of homogeneity;
- In terms of its spatial extent a facility should be confined as far as possible to define a direct interaction/relationship with the receiving water environment and/or within the plant site;
- The sum of the facilities must represent the total activity of the complex which could affect the receiving water body; and
- Clear management responsibility must be assignable to a facility.

The performance of the individual facilities is governed by a site-wide management framework that comprises site-wide performance objectives, associated strategies, as well as management measures. Hence, site-wide management requirements are aligned with facility-level management requirements and vice versa

The entire mine can be delineated into eight areas (Figure 55).

- Pit A;
- Pit C;
- Pit D;
- Pit Wilge;
- Pit F;
- Pit G;
- Mini Pit H; and
- Mine Infrastructure Area (including the product coal off-loading facility).

The infrastructure associated with Pit A is illustrated in Figure 56.

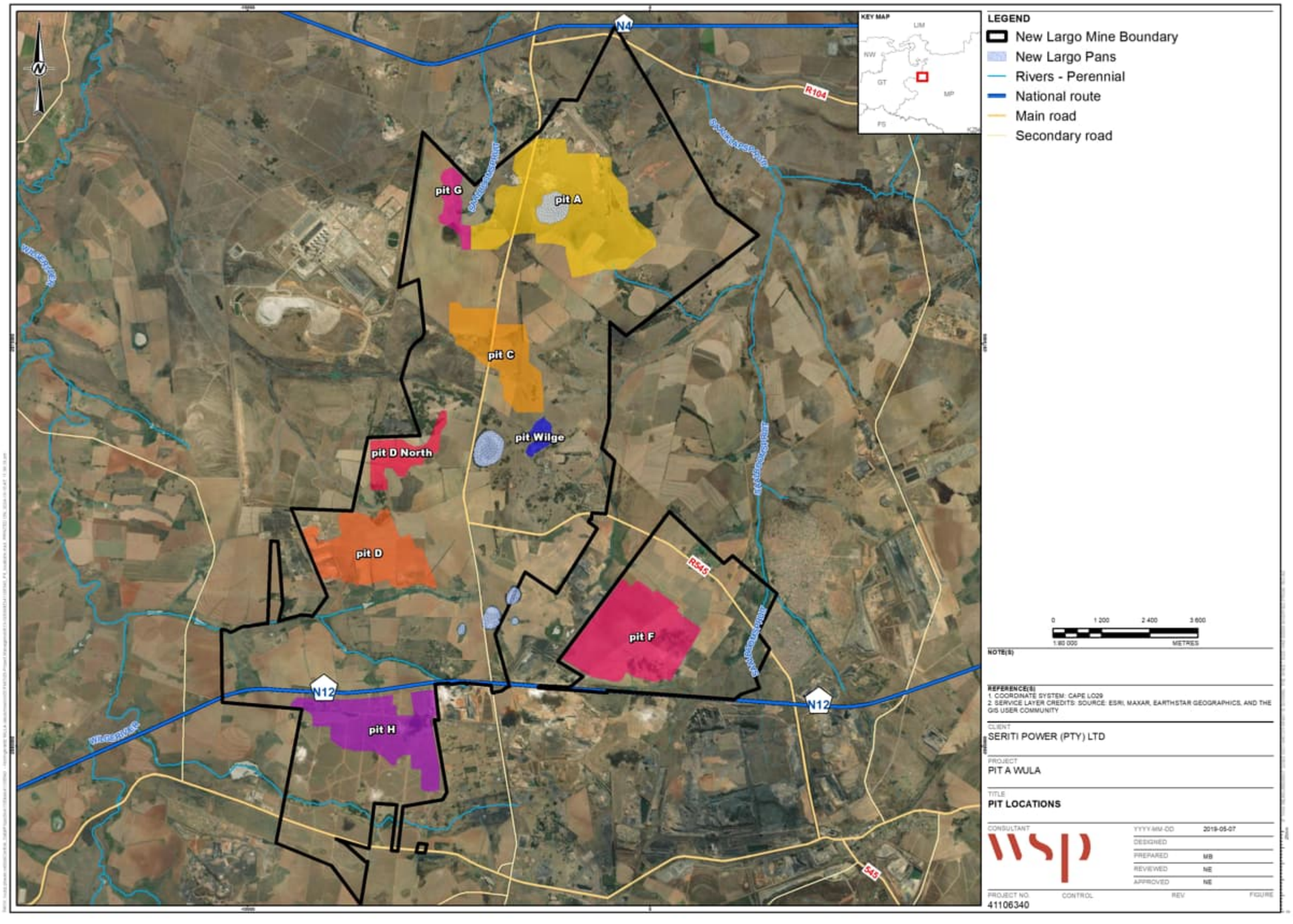


Figure 55: Site delineation layout

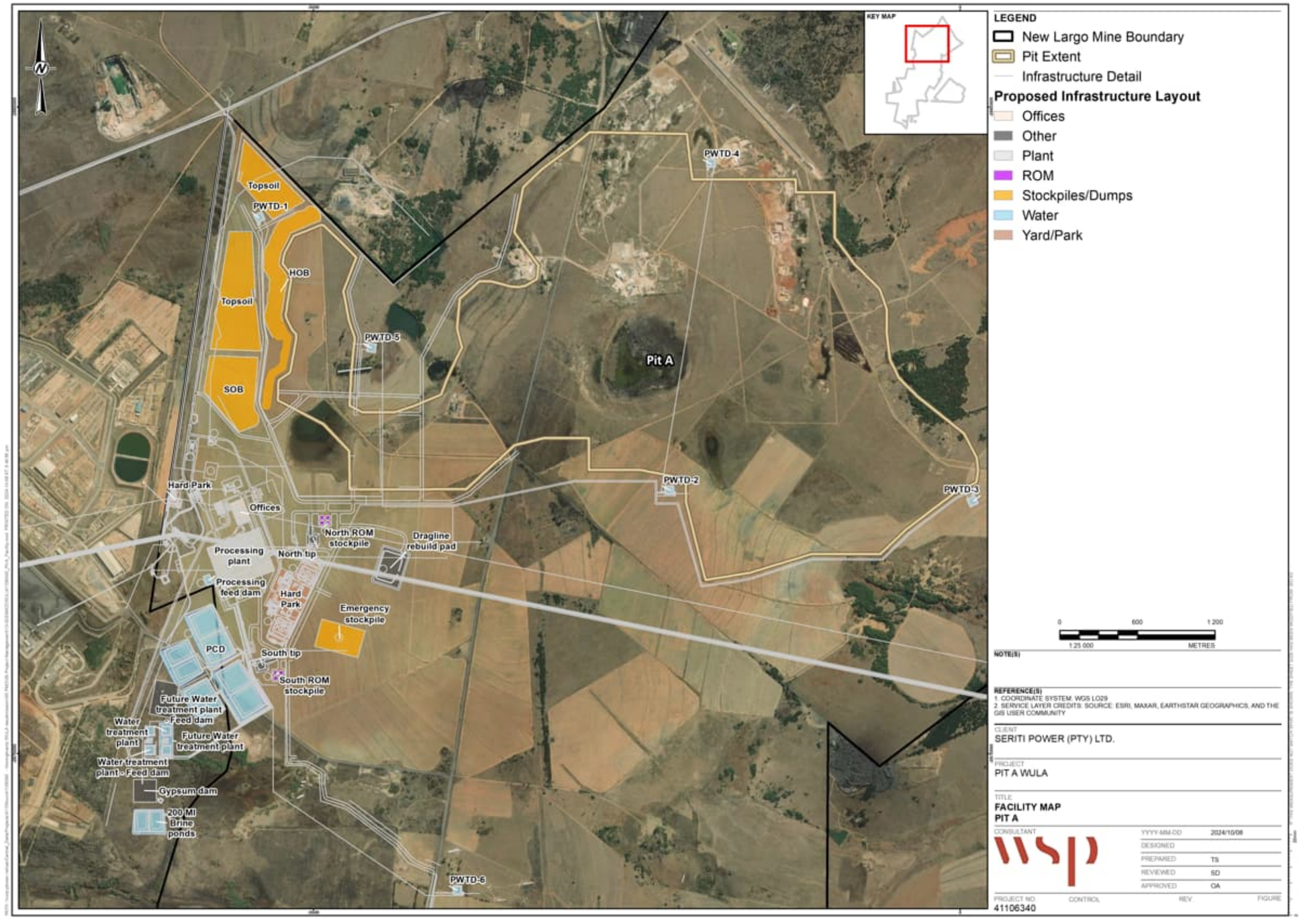


Figure 56: Pit A Facility Map

5.2 WATER AND WASTE MANAGEMENT

Water Storage Facilities

New Largo is also authorised to have various PCD's for the remaining opencast pits within the New Largo Mining Right Boundary as detailed within the New Largo Colliery WUL (No. 04/B20G/ACFGIJ/2538). New Largo also intends to commission additional approved PCD's for Pit A and the proposed opencast pits in the future. The storage capacities have been specified in detail in the Water and Salt Balance report compiled by (JMA, 2023).

5.3 PROCESS WATER MANAGEMENT

The process water information was obtained from Water and Salt Balance report compiled by JMA Consulting (Pty) Ltd in November 2023 (Appendix H). The site wide water process flow diagram is depicted in Figure 57.

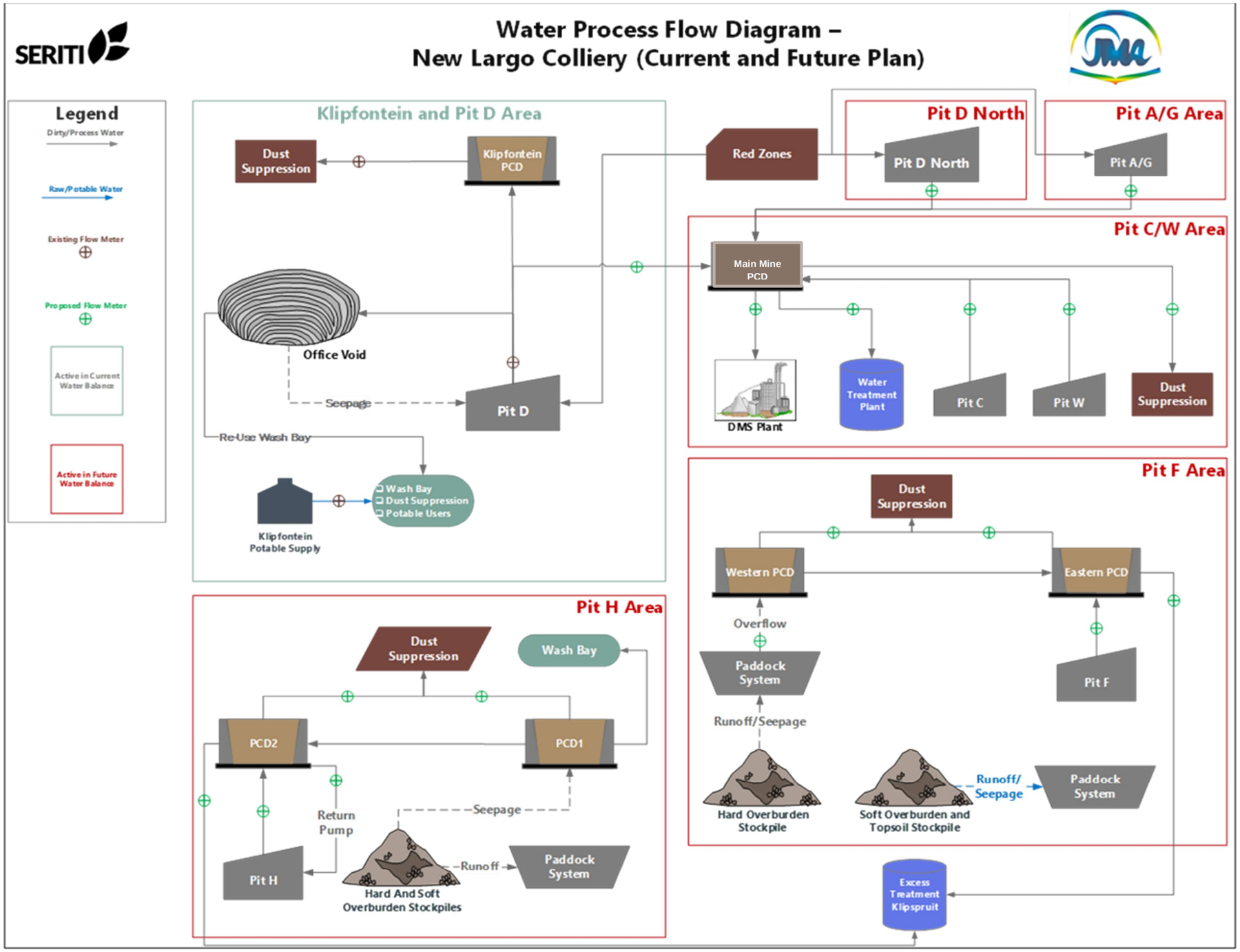


Figure 57: Water reticulation diagram for New Largo

Three (3) water balances were calculated for New Largo Colliery for the upcoming hydrological year (October 2023 to October 2024) by (JMA, 2023). The calculated water balances are calculated for average, wet, and dry conditions, and provide general insight into the overall total water use and consumption of the mine. The GoldSim water balance model simulates the water system for various rainfall sequences, stores the results for all 50 realisations and statistically summarises the results (JMA, 2023)

The average water balance diagrams for the 2023/2024 hydrological year for each of the average, wet and dry conditions are depicted as the following Figures (JMA, 2023):

- Figure 58: Simulated 2023/2024 Water Balance for Average Conditions.
- Figure 59: Simulated 2023/2024 Water Balance for Wet Conditions.
- Figure 60: Simulated 2023/2024 Water Balance for Dry Conditions

Where descriptions are provided in brackets in Figure 58 to Figure 60 it indicates future status' of the opencast pits and has been included for future reference and modelling purposes.

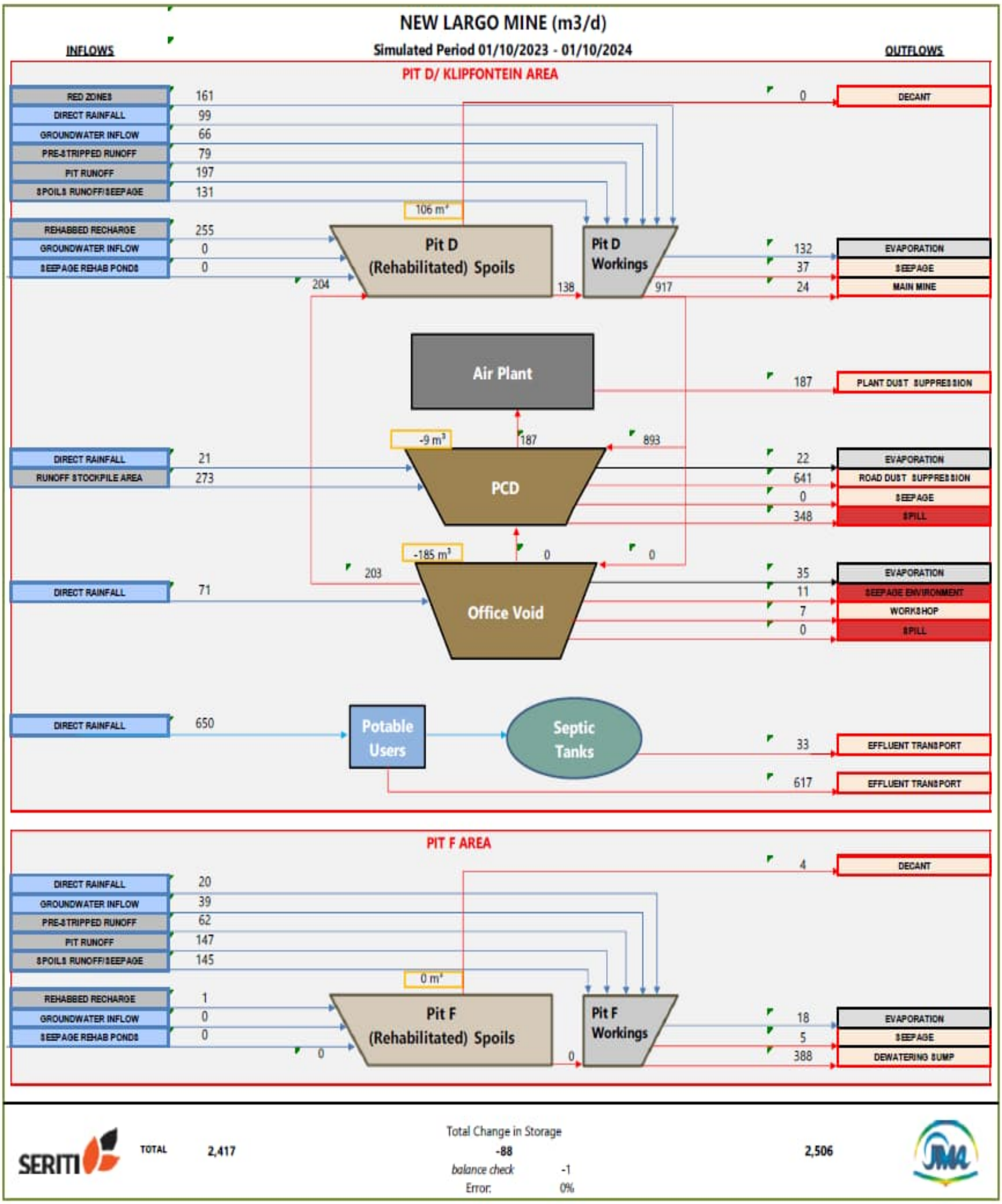


Figure 58: Simulated 2023/2024 Water Balance for Average Conditions (JMA, 2023)

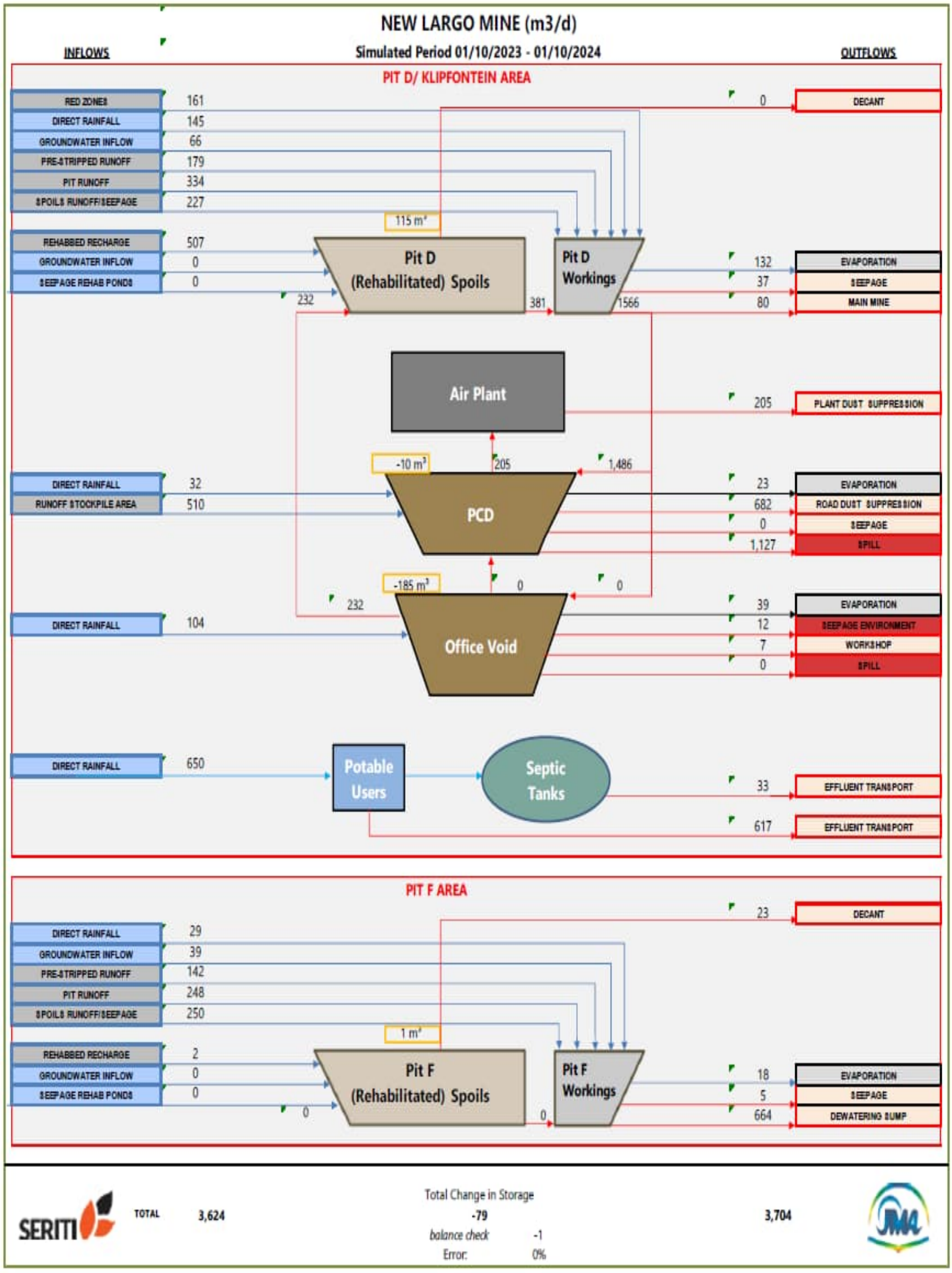


Figure 59: Simulated 2023/2024 Water Balance for Wet Conditions (JMA, 2023)

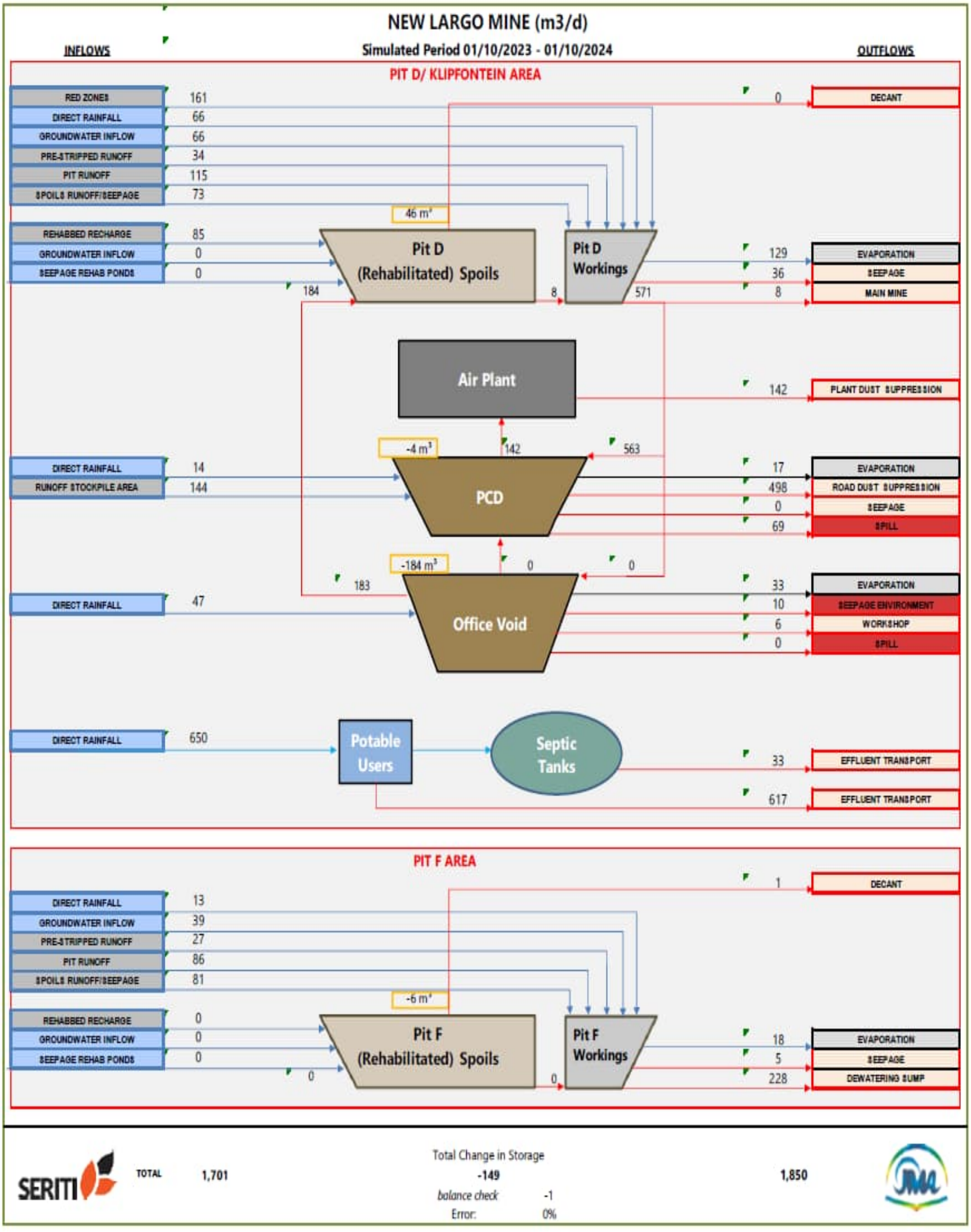


Figure 60: Simulated 2023/2024 Water Balance for Dry Conditions (JMA, 2023)

(JMA, 2023) states that the future LOM water balances (October 2022 to March 2056) were simulated using the annual projected LOM areas for the opencast pits, which were built into the water balance model for each of the mining sections up until the end of mining in 2056. This will result in changes to the total water make to the opencast pit workings and different dewatering rates from the opencast pits, as the extent of mining increases. The flooding status' and available storage capacities were also incorporated into the water balance model for the future scenarios (JMA, 2023).

It was indicated and requested by New Largo Colliery that for the proposed Main Mine, all excess water will be pumped to sufficiently large PCD(s) to handle the total water make from the opencast workings. From PCD(s), dirty water is pumped to the proposed DMS plant, road dust suppression and a proposed water treatment plant (in case of excess) in the same order of priority. Indicative sizing of proposed PCD's and are confirmed in this water balance update as well as the proposed water treatment requirement of 4 Ml/day for the first 5 years and 6 Ml/day thereafter. All model input is based on assumptions received from New Largo Colliery (Ukwazi (2023) and New Largo (2023)) (JMA, 2023).

Opencast Pit Dewatering

Overall mean peak dewatering rates from the opencast pits can be expected at mean dewatering rates between 3 000 m^3/day and 9 000 m^3/day (Figure 61). The highest mean dewatering rates can be expected from Pit A and G with mean dewatering rates exceeding 6 000 m^3/day during the wet season towards the end of LOM in 2056. The variability or seasonality of the water makes to the proposed opencast pits is evident on Figure 61 and will need to be catered for accordingly when pumping to the PCD's. It will require around 684 423 m^3 to dewater red zone from the Pit D and Pit A and G mining area (JMA, 2023).

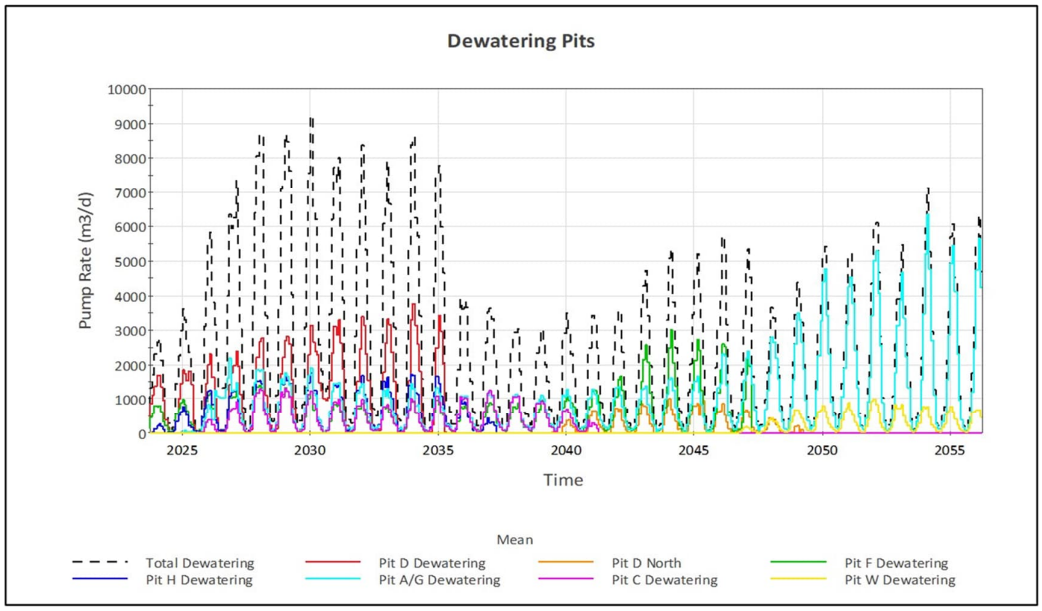


Figure 61: Simulated Mean Dewatering Rates from each Pit over the LOM (JMA, 2023)

Figure 62 depict the total simulated probabilistic dewatering rates for the opencast pits over the LOM and for each opencast separately. Maximum pumping rates during the LOM, using the 99th percentile, will vary between 10 000 m^3/day (2041) and 27 000 m^3/day (2031) as indicated on Figure 62 (JMA, 2023).

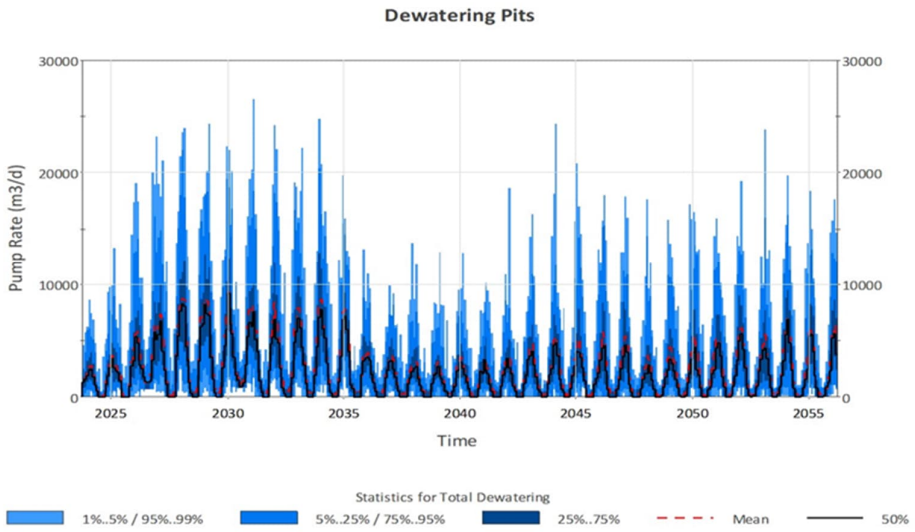


Figure 62: Simulated Probabilistic Dewatering Rates from all Opencast Pits over the Life of Mine (JMA, 2023)

Dewatering of Pit A and G, as depicted in Figure 63, showed that peak dewatering rates were simulated towards the end of LOM form 2050 onwards. A single red zone to be mined include the former underground workings of Hartebeest 2, it is expected that around 243 600 m^3 will be required to dewater from the Pit A/G around 2026. Furthermore, due to limited storage under rehabilitated spoils, increased dewatering rates can be expected from 2044 onwards and simulated peak dewatering rates at the end of mining were calculated at 19 500 m^3/day (JMA, 2023).

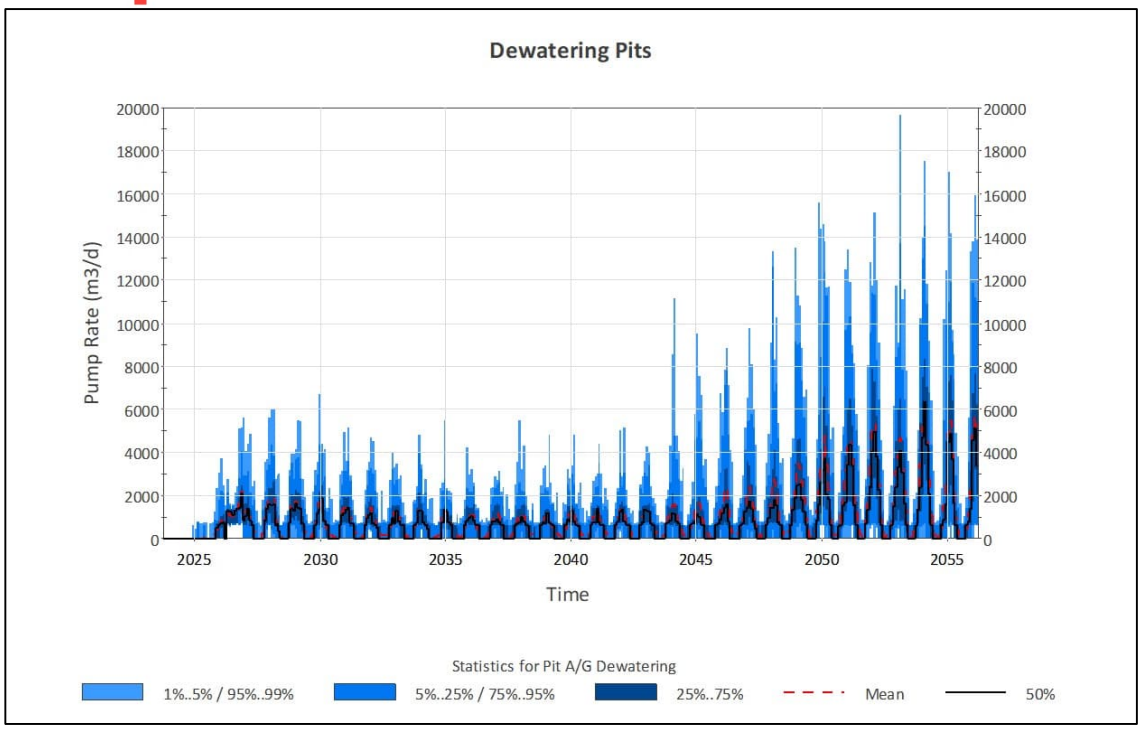


Figure 63: Simulated Probabilistic Dewatering Rates from Pit A/G over the Life of Mine (JMA, 2023)

Pollution Control Dams (PCD)

Probabilistic simulated storage volumes of the proposed Main Mine PCD, Eastern PCD, Western PCD, PCD1 and PCD2 are shown on Figure 64.

Calculated water makes from all Main Mine related opencast pits will be dewatered to potentially four (4) proposed PCD's (Ukwazi, 2023) depending on the total volume of water make emanating from the Main Mine area. Designed and licensed storage volumes for each PCD are as follows (JMA, 2023):

- Phase 1 – 256 Ml
- Phase 2 – 256 Ml
- Phase 3 – 343.8 Ml
- Phase 4 – 343.8 Ml

This will imply that, if all PCD's will be required, a total storage capacity of 1 200 Ml (1.2 million m^3) is available to store dirty water at the Main Mine (JMA, 2023).

Figure 7.4(j) depicts the simulated storage volumes of the Main Mine PCD during LOM. Some of realisations simulated annual overflows to be expected, but the 98th percentile (1: 50-year storage volume) was calculated at 852 313 m^3. As per designed PCD's, a total capacity of 855.8 Ml (855 800 m^3) will be required (i.e. Phase 1 to Phase 3) and constructed. Also, it can clearly be seen that most water will need to be handled around 2030 due to the mining schedule provided (JMA, 2023).

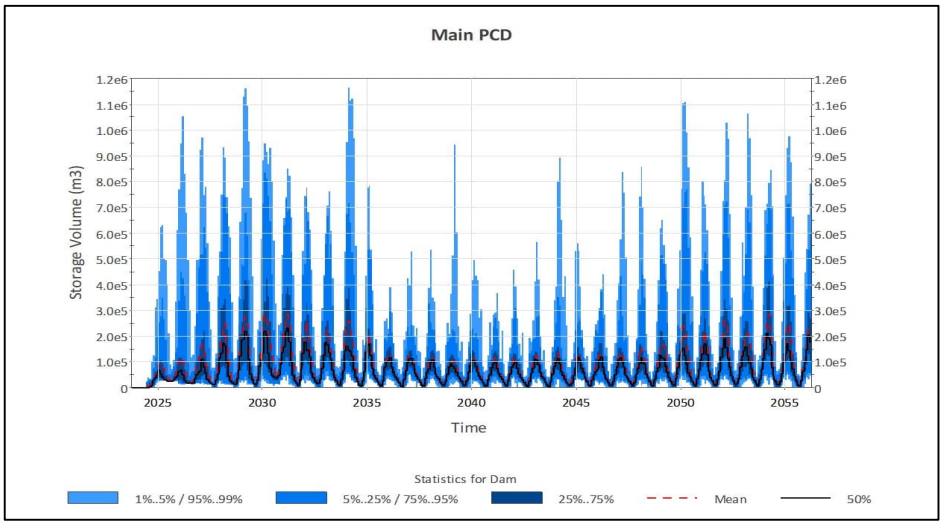


Figure 64: Simulated Probabilistic Storage Volumes in Main PCD over the Life of Mine (JMA, 2023)

Water Treatment

Expected treatment rates at Main Mine were simulated based on proposed treatment of 4 Ml/day for the first five years and 6 Ml/day thereafter (Ukwazi (2023) and New Largo (2023)). Simulated treatment rates are presented in Figure 65. If New Largo Colliery decides to treat the 75th percentile, it will be required to treat up to 4 Ml/day and 6Ml/day during various wet seasons. It appears that the most water on the Main Mine needs to be handled between 2027 and 2031 and between 2049 and 2056. It can therefore be beneficial to move the 6 Ml/day treatment capacity forward (or higher) between 2027 and 2031 and lower the treatment capacity from 2032 onwards to 2048 if actual water make volumes from Main Mine will allow this. If New Largo Colliery considers modular treatment plants, this can potentially be achieved, provided that water balances are updated annually based on actual flow rates from Main Mine (JMA, 2023).

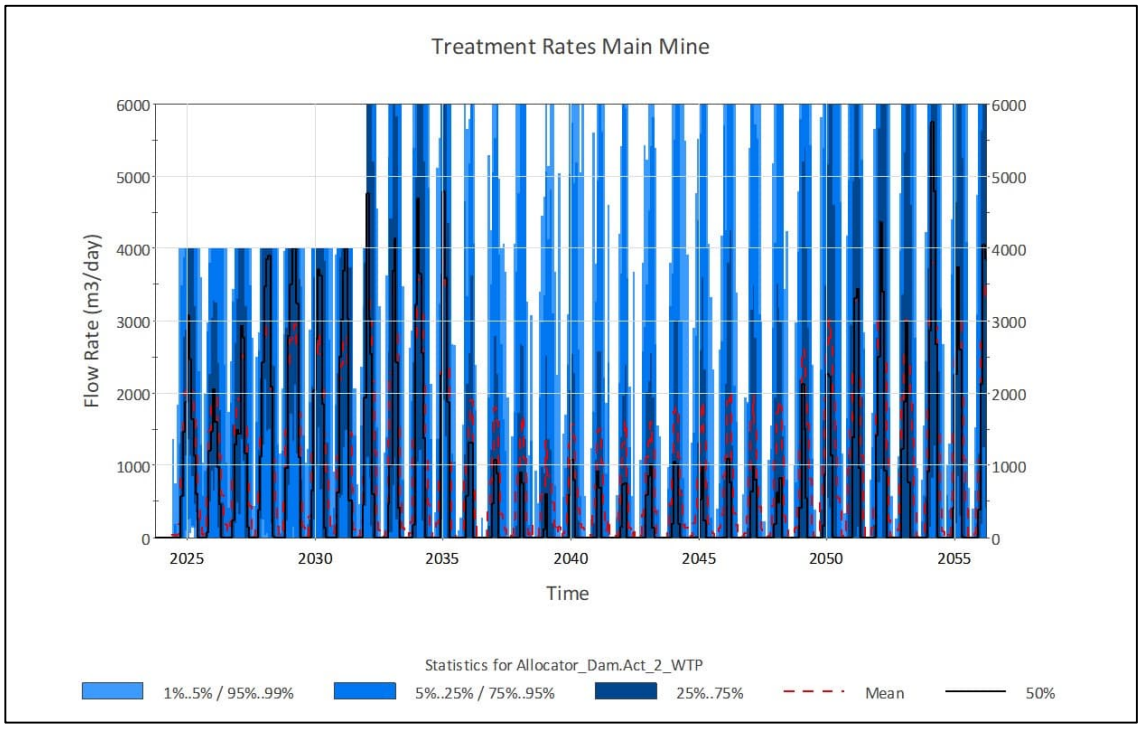


Figure 65: Simulated Probabilistic Treatment Rates required for Maine Mine at New Largo Colliery over the LOM (JMA, 2023)

POST-CLOSURE SCENARIO

The main purpose of simulating the post-closure water balances for opencast pits, is to investigate the time it would take to potentially flood the backfilled pits (JMA, 2023).

According to the communicated New Largo Colliery's post-closure water management strategy, all opencast pits will be backfilled entirely and rehabilitated without a final void. A simulation of recharge into the rehabilitated spoils and groundwater inflow was performed to determine the approximate flooding time and decant rates. Groundwater inflows were linearly modelled from a maximum inflow at (where the mine water levels were dewatered to the bottom of the coal floor) to 0 m^3/day (where the mine water levels had recovered to the average unsaturated zone thickness of 6 m). This is a limitation in the current model and should be improved through means of updated and calibrated numerical groundwater flow modelling (JMA, 2023).

A stochastic post-closure scenario was set-up for the New Largo Colliery opencast pits and was simulated from April 2056 until January 2080, using 50 predictive realisations. Decant elevations of each opencast pit are depicted in Table 47 below and the mean modelled water levels in the backfilled opencast pits in Figure 66.

Table 47: Decant Elevations of New Largo Colliery Opencast Pits Post-Closure (JMA, 2023)

Opencast Pit	Decant Elevation (mamsl)
Pit D	1 515

Opencast Pit	Decant Elevation (mamsl)
Pit D North	1 525.5
Pit F	1 522.5
Pit H	1 545
Pit A/G	1 541.5
Pit C	1 545
Pit W	1 523

Post-closure flooding levels for all opencast pits are presented in Figure 66. Pit H and A and G and C will flood to their decant elevations between 2055 and 2060. The largest mean decant rates can be expected from Pit A and G at approximately 2 300 m^3/day, due to the largest footprint area. Total probabilistic post-closure decant was calculated expected flow rates are between 4 500 m^3/day and 8 500 m^3/day using the 25th and 75th percentile (JMA, 2023).

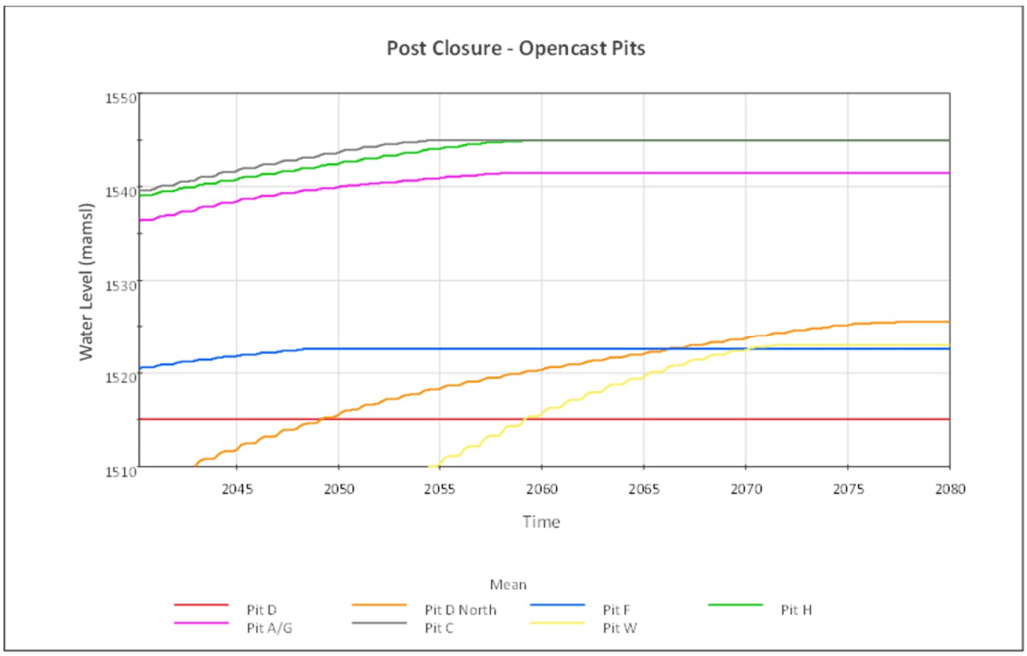


Figure 66: Simulated Mean Water Levels all Opencast Pits Post-Closure (JMA, 2023)

5.4 STORM WATER MANAGEMENT

The information under this section was obtained from the conceptual stormwater management plan that was compiled by Bio-Engineering Africa Consulting (Pty) Ltd in July 2023 (Appendix C).

Determination of clean and dirty water catchments

The planned mine site has now been classified into “dirty” and “clean” land-use areas. The classification has been based on the DWS Best Practice Guidelines G1: Stormwater Management - August 2006 as summarised in Table 48 below (Bio Engineering Africa Consulting (Pty) Ltd, 2023).

Table 48: Classification of dirty and clean catchments (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

Classification	Area	Comment
Clean	Undisturbed land area	Regional geology or agricultural practices may contaminate runoff.
	Formal residential areas with services	Generally, only suspended solids (SS) and chemical Oxygen Demand (COD) to consider.
	Administrative offices	Generally, only SS to consider.
	Tarred roads	Tarred roads are not expected to be contaminated by waste, coal or discard, but may have a runoff volume implication.
	Newly rehabilitated areas clean water dams	SS to be considered.
Moderately dirty	Workshops and storage yards (where oil is not handled)	Any type of workshop which includes industrial, manufacturing and/or maintenance activities)
	Poorly rehabilitated areas	SS and other contaminants to consider.
	Roads	If it carries traffic which transports materials other than oils leading to a higher concentration of SS.
Dirty	Beneficiation plants and other plants	Special chemicals in use, e.g., cyanide, may also contaminate storm water.
	Workshops and storage yards where oil is handled, or ground is covered in fines	Oils, grease and soap, dissolved and suspended contaminants.

Classification	Area	Comment
	Raw material or product stockpiles	Dissolved and suspended contaminants.
	Rehabilitated areas	Dissolved and suspended contaminants.
	Haul roads	Dissolved and suspended contaminants.
	Pollution control dams	Depends on contents of dams.

Stormwater control measures

Required stormwater control measures have now been sized taking into account the peak flow rates as well as minimum required design stands as per the REG 704 of the SA National Water Act (GN704), Act 36 of 1998). The following standards have been applied (Bio Engineering Africa Consulting (Pty) Ltd, 2023):

- Stormwater and pollution control channels to handle up to a 1:50 year storm event with a 0,5m freeboard. The 1:100-year storm event contained without spillage.
- Stormwater diversion berms to handle up to a 1:50 year storm event with a 0,5m freeboard. The 1:100-year storm event contained without spillage.

Clean and dirty water control measures

Clean water runoff areas have been separated from dirty runoff areas where possible. This will reduce the total storage volume required for the dirty runoff holding facilities.

For the Main Mine area several diversion channels are proposed and have been sized to drain stormwater away from dirty water catchments. The diversion channels and berms will be lined with either stone pitching or a concrete liner in areas of high flow velocities and unsuitable ground conditions. The following criteria have been applied (Bio Engineering Africa Consulting (Pty) Ltd, 2023):

- Maximum flow velocity for channels in the natural rocky areas: 4,5 m/s
- Maximum flow velocity in grouted stone pitching or concrete lined channels: 6,5 m/s
- Minimum gradients of 0,5%
- Minimum flow velocity to prevent excessive siltation: 1,0 m/s.

Several dirty water control measures are required to contain runoff from polluted areas such as the open pit area, waste dumps, workshop areas and haul roads. The runoff from these areas is then channelled and drained into the planned pollution control dams (PCD's) (Bio Engineering Africa Consulting (Pty) Ltd, 2023).

In addition to the catchment control measures it is proposed that all haul roads are designed with a minimum cross fall of 2% and runoff is drained along an erosion protected berm which prevents the runoff from entering clean areas (Bio Engineering Africa Consulting (Pty) Ltd, 2023).

Pipe/culvert crossings have also been planned and sized at all road crossings. The size has been determined such that a 1:100-year flood event can be handled without overtopping.

Further information related to the stormwater Appendix C.

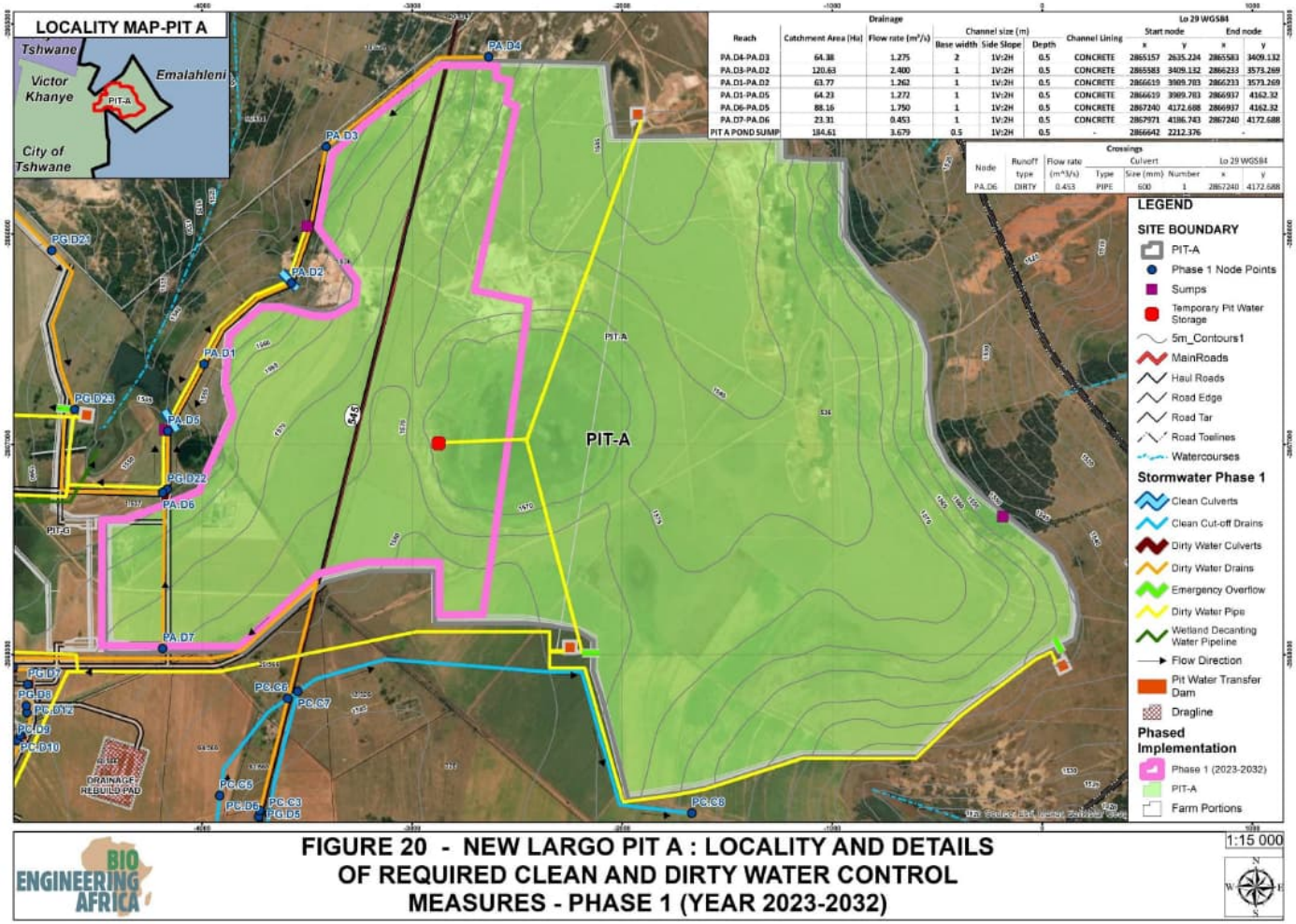


FIGURE 20 - NEW LARGO PIT A : LOCALITY AND DETAILS OF REQUIRED CLEAN AND DIRTY WATER CONTROL MEASURES - PHASE 1 (YEAR 2023-2032)

Figure 67: Pit A - Phase 1 stormwater network node points (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

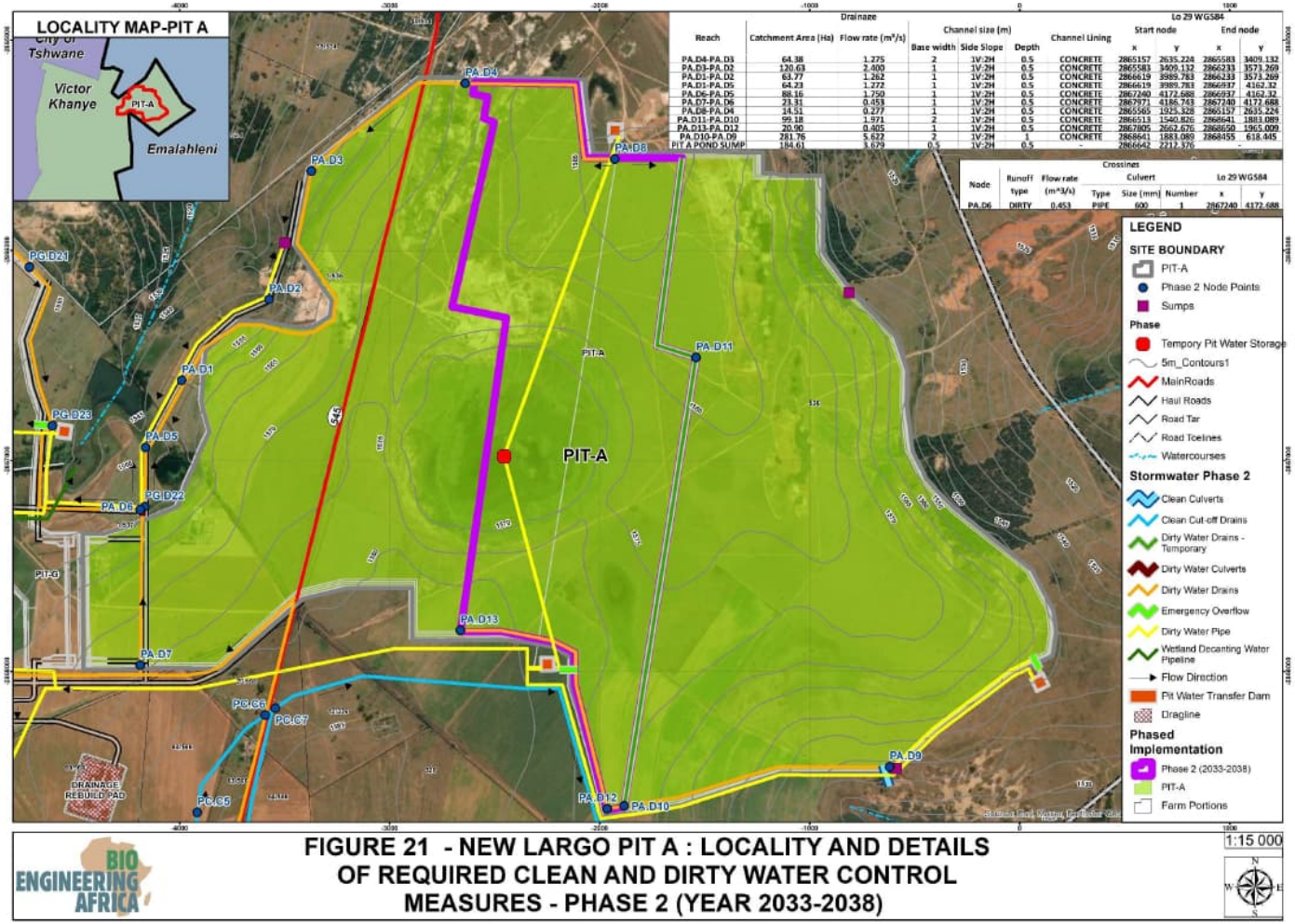


Figure 68: Pit A - Phase 2 stormwater network node points (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

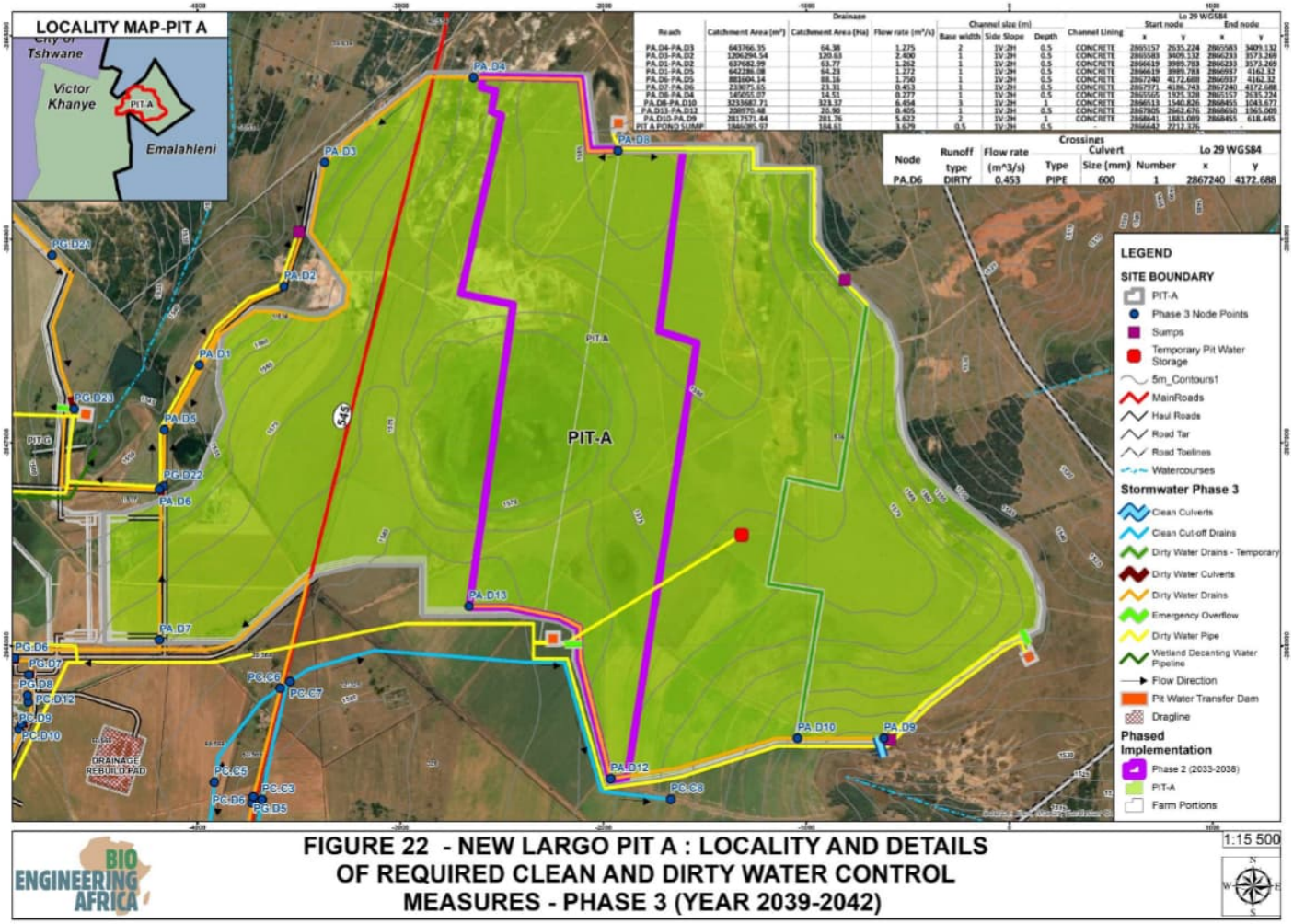


FIGURE 22 - NEW LARGO PIT A : LOCALITY AND DETAILS OF REQUIRED CLEAN AND DIRTY WATER CONTROL MEASURES - PHASE 3 (YEAR 2039-2042)

Figure 69: Pit A - Phase 3 stormwater network node points (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

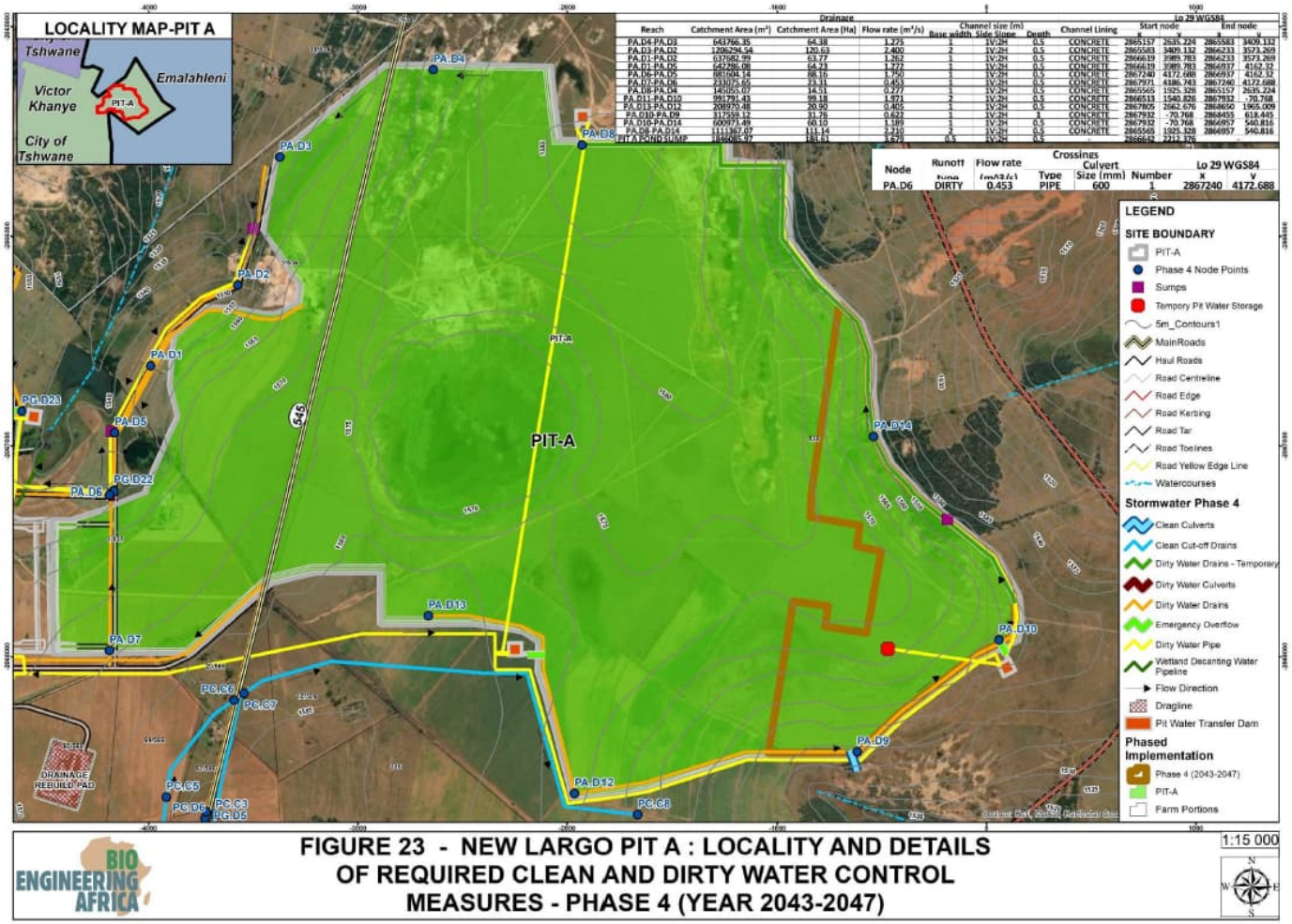


FIGURE 23 - NEW LARGO PIT A : LOCALITY AND DETAILS OF REQUIRED CLEAN AND DIRTY WATER CONTROL MEASURES - PHASE 4 (YEAR 2043-2047)

Figure 70: Pit A - Phase 4 stormwater network node points (Bio Engineering Africa Consulting (Pty) Ltd, 2023)

5.5 GROUNDWATER MANAGEMENT

According to (WSP, 2024b), the recommended mitigation actions can be summarised as follows:

- It is recommended to follow the monitoring stipulations of the WUL in terms of boreholes to be monitored and the frequency of monitoring.
- Since some of the monitoring boreholes will be destroyed during mining it is recommended that these boreholes should be replaced, preferably new boreholes should be drilled in locations to monitor plume migration.

The mitigation measures identified in the original EIA (Synergistics, 2012) and revisited by the (WSP, 2024b) groundwater report. These mitigation measures are:

- Operational:
  - Due to mining, the cone of dewatering may impact water users near the pits. These users should be identified, and their boreholes should be included in the active monitoring system. Proven decrease in ground water quantities should be supplemented by an external source.
  - The loss in catchment reserve should be calculated. It is anticipated that these losses will be temporary but should be made up for where necessary by releasing excess treated pit water to streams where possible in terms of authorisation
  - Keep the barrier pillars intact between the opencast mining and the old workings, where possible
  - Handle all excess water as part of the operational phase water balance. No surface decant will take place from the operational pits due to pro-active pump and treat. Identify all ground water users that can be affected by the cone of dewatering (500 m around all mining activities). Include these boreholes in the active monitoring system. Proven decrease in ground water quantities will be supplemented by an external source.
  - Placement of mineral residue below final in-pit water level.
- Post Closure
  - Manage water levels to prevent decant. Keep water level at least one meter below the decant water level by pumping. A network of shallow capture wells can be installed in the pits or immediately downgradient of the site, to drain contaminated water for treatment before disposal, until such time when the groundwater quality has improved and meets the relevant discharge limits.
  - Monitor water quality within the plume, and when quality deteriorates, pumping should be implemented to contain the plume. Capping of the pits will reduce the magnitude of the impact.
  - Capping of the pits will reduce the magnitude of the impact. All contaminated water to be pumped to the WTP. The treated water will be released according to a Reserve Determination update at the time of closure. Continue to supplement users where necessary.

The newly drilled boreholes (into underground workings) will provide additional information for future modelling and should be included in future model calibrations

5.6 WASTE MANAGEMENT

The waste stream identification and management has already been discussed under Sections 2.6 and 3.6. The purpose of this section is to characterise these waste streams to specifically represent

the situation at New Largo and assess them in terms of the legal requirements of NWA and the National Environmental Management Waste Act of 2008 (NEMWA).

5.7 OPERATIONAL MANAGEMENT

The Environmental Superintendent under the mine managers, as well as the waste contractors, should ensure compliance with and implementation of the water and waste management procedures.

The management responsibilities are set out as follows:

- The Environmental Superintendent and Environmental Officer are responsible for communicating the Environmental Management System to all employees and contractors; and
- The Environmental Superintendent and Environmental Officer are responsible to drive the Environmental Management System, to ensure that legal compliances are met in their respective areas of responsibility.

5.8 ORGANISATIONAL STRUCTURE

An organogram of the organisational structure at New Largo has been included under section 2.7.

5.9 RESOURCES AND COMPETENCIES

Seriti is ensuring that employees and permanently employed contractors within its core business comply with the legislative requirements pertaining to labour relations. Seriti's human resources development strategy incorporates several key focus areas (Seriti, SLP,2023).

These include:

- Talent management
- Performance management
- Competency-based career development, the New Largo Coal bursary scheme and graduate trainee programmes
- Adult-based education and training (AET)
- Empowerment group capacity-building

5.10 EDUCATION AND TRAINING

Seriti is contributing to the economic, social and educational well-being of its host communities. This includes local business development and providing opportunities for workers from disadvantaged backgrounds (Seriti, SLP,2023).

Seriti will fully subscribe to the principles of the Mining Charter III and the undertaking by Seriti regarding the empowerment and employment of HDSAs to achieve the required targets (Seriti, SLP,2023).

These will include meeting the minimum requirements of the Mining Charter III in relation to: STEM, artisans, internships, bursaries, literacy and numeracy skills for employees and non -employees (community members) (Seriti, SLP,2023).

Skills development plan

Seriti will comply with the requirements of the Skills Development Act, which includes the submission of a Workplace Skills Plan and an Annual Training Report as per the Sector Education

and Training Authority's requirements. New Largo levy number is SDL: L600822276. New Largo registered for SDL in FY23 (Seriti SLP,2023).

Seriti will appoint a skills development facilitator (SDF), once fully operational. The SDF will administer the development and submission of the Workplace Skills Plan and Annual Training Report to the MQA (Seriti, SLP,2023).

Learnerships

Seriti recognises the fact that developing learners is an integrated part of the Social Labour Plan commitment.

Coaching and mentoring for employees

As per the Mining Charter's requirements New Largo will, once in full operation, investigate the opportunities to enhance the employees through a mentorship programme. This will provide employees with the opportunity to be mentored as part of the talent management and personal development planning processes. Focus will be given to HDSAs, with particular emphasis on the development of women (Seriti, SLP,2023).

Identified employees will be afforded the opportunity to participate in mentoring relationships with an individual they feel could add value to their growth and development. This will occur particularly at the following levels (Seriti, SLP,2023):

- All graduates brought into the organisation will be assigned 'buddy' and technical mentors who will provide support and guidance in the early stages of their careers.
- Middle to senior management – aimed at employees in D and E Levels
- Executive leadership – aimed at members of the executive committee. The effectiveness of the mentoring relationship is monitored through career development plans

Bursaries and Scholarships

The Seriti Bursary Scheme bursary programme will be targeted at students that want to pursue a career in the mining industry. The programme is developed to build a pipeline of future skills the company needs. The company aims to attract bursars in the areas that surround the operations. Bursaries are awarded to those interested in studying in a variety of disciplines including (Seriti, SLP,2023):

- Geology
- Electrical and mechanical engineering
- Mining engineering
- Metallurgical/ process engineering
- Mine surveying
- Rock engineering
- Environmental management.

5.11 INTERNAL AND EXTERNAL COMMUNICATION

Internal communication will take place accordance with the communication procedure that will be implemented on site.

The need for effective and transparent communication with external parties is recognised in the EMP. A public and community communication and liaison strategy has been developed and

implemented. An Environmental Monitoring Committee has been established to act as a platform between the mine and the community regarding environmental matters.

5.12 AWARENESS RAISING

The following commitments in terms of environmental awareness raising was captured in the EMP and will be implemented on site:

- All workers, suppliers and service providers will attend induction training covering key environmental risks, protection of the natural environment, prohibited activities and areas, key environmental rules and the potential dangers and repercussions of not complying with these rules. Records of all individuals attending an induction session will be kept as evidentiary support for auditing purposes; and
- An ongoing environmental awareness programme is implemented at the mine. The program will involve regular communication of environmental management and protection measures by means of monthly talk topics, newsletters, posters, meetings and/or other suitable means. Records to be kept of activities undertaken, including copies of the material and evidence of where and when these were displayed / distributed.

5.13 MONITORING AND CONTROL

New Largo has developed an extensive water monitoring programme (Appendix E). The objective of the monitoring programme is to assess and quantify the impacts of the activities that will be occurring in the site on the health of the receiving water bodies as well as meeting the water quality requirements for downstream users.

The monitoring program is implemented to generate necessary information to:

- Assess the success or failure of water management options;
- Identify possible groundwater pollution sources/plumes and to provide data for the verification of modelled simulations; and
- Provide quantitative insight into time dependent changes in surface and groundwater quality.

5.14 SURFACE WATER MONITORING

Monitoring points and frequency

WUL condition 5 in Appendix V of WUL (No:04/B20G/ACFGIJ/2538) requires that the following surface water monitoring points (Table 49) be sampled on a monthly basis. The surface water monitoring points in relation to the mining area are depicted in Figure 71. It should be noted that New Largo has a standalone monitoring programme, and the monitoring localities will change as mining progresses (Appendix E).

Table 49: Surface water monitoring points for the main mine

Sampling point name	Locality	Co-ordinates	
NL1	On the Wilge River at a bridge crossing on the R555. This represents the upstream monitoring point for this sub-catchment, as it will not be impacted by any of the New Largo Open Cast Mine activities.	S26°2'40.57"	E 28°52'5.91"

Sampling point name	Locality	Co-ordinates	
NL2	On a tributary of the Wilge River. This point will monitor impacts associated with Pit H.	S 26°2'5.53"	E 28°53'1.39"
NL3	On a tributary of the Wilge River. Will monitor impacts associated with Pit D.	S 26°0'7.49"	E 28°53'8.30"
NL4	On the Klipfonteinspruit (a tributary of the Wilge River). Monitor impacts associated with the Central Pit.	S 25°56'54.38"	E 28°56·10.36"
NL5	On the Klipfonteinspruit (a tributary of the Wilge River), downstream of NL4.	S 25°56'26.92"	E 28°53'58.81"
NL6	On the Klipfonteinspruit (a tributary of the Wilge River), downstream of NL5 and upstream of the confluence of the Klipfonteinspruit with the Wilge River.	S 25°53'20.54"	E 28°51·59.08"
NL7	On a tributary of the Wilge River, downstream of NL22.	S 25°54'0.68"	E 28°54'35.06"
NL8	On tributary of the Wilge River, downstream of NL7 and upstream of Its confluence with the Wilge River.	S 25°52'42.24"	E 28°52'11.50"
NL9	On the Wilge River. This represents the downstream monitoring point for this sub-catchment, reflecting the cumulative impact of the New Largo activities and other activities further upstream on the Wilge River.	S 25°50'38.00"	E 28°52'18.80"
NLS10	On the Saalklapspruit, downstream of NLS19. Monitor impact associated with mining in Pit F.	S 26°0'34.78"	E 29°1'26.87"
NLS11	On the Saalklapspruit, downstream of NLS10.	S 25°58'3.54"	E 29°1'37.06"
NLS12	On the eastern boundary of the mine on a tributary of the Saalklapspruit, downstream ofNLS20.	S 25°57'31.14"	E 28°59'20.04"
NLS13	On the Grootspruit, a tributary of the Saalklapspruit.	S 25°54'31.93"	E 29"3'55.15"
NLS14	On a tributary of the Saalklapspruit. Monitor impact associated with mining in Pit A.	S25°53'59.35"	E 29"0'55.62"
NLS15	On a tributary of the Saalklapspruit. Monitor impact associated with mining in Pit A.	S 25°53'18.31"	E 29"0'38.81"
NLS16	On a tributary of the Saalklapspruit. Monitor impact associated with mining in Pit A.	S 25"52'39.07"	E 29°07.99"

Sampling point name	Locality	Co-ordinates	
NLS17	On the Saalboomspruit Monitor impact associated with mining in Pit A	S25°51'31.58"	E 28°58'12.53"
NLS18	On the Saalklapspruit downstream of all the mining activities and upstream of the confluence with the tributary on which NLS17 is located.	S 25"50'6.68"	E 28°59'28.57"
NLS19	On the Saalklapspruit above the Klipspruit Mine discharge. This is the most upstream monitoring point in this sub-catchment.	S 26°1'4.36"	E 29"0'23.54"
NLS20	On a tributary of the Saalklapspruit, downstream of the Vlakfontein Mine.	S 25°58'49.22"	E 28°59'28.75"
NL21	On the western boundary of the mine and monitors surface water discharge into the Holfonteinspruit, a tributary of the Klipfonteinspruit.	S25°58'32.04"	E 28°55'35.12"
NL22	On a tributary of the Wilge River, upstream ofNL7.	S 25°54'6.71"	E 28°56'13.79"

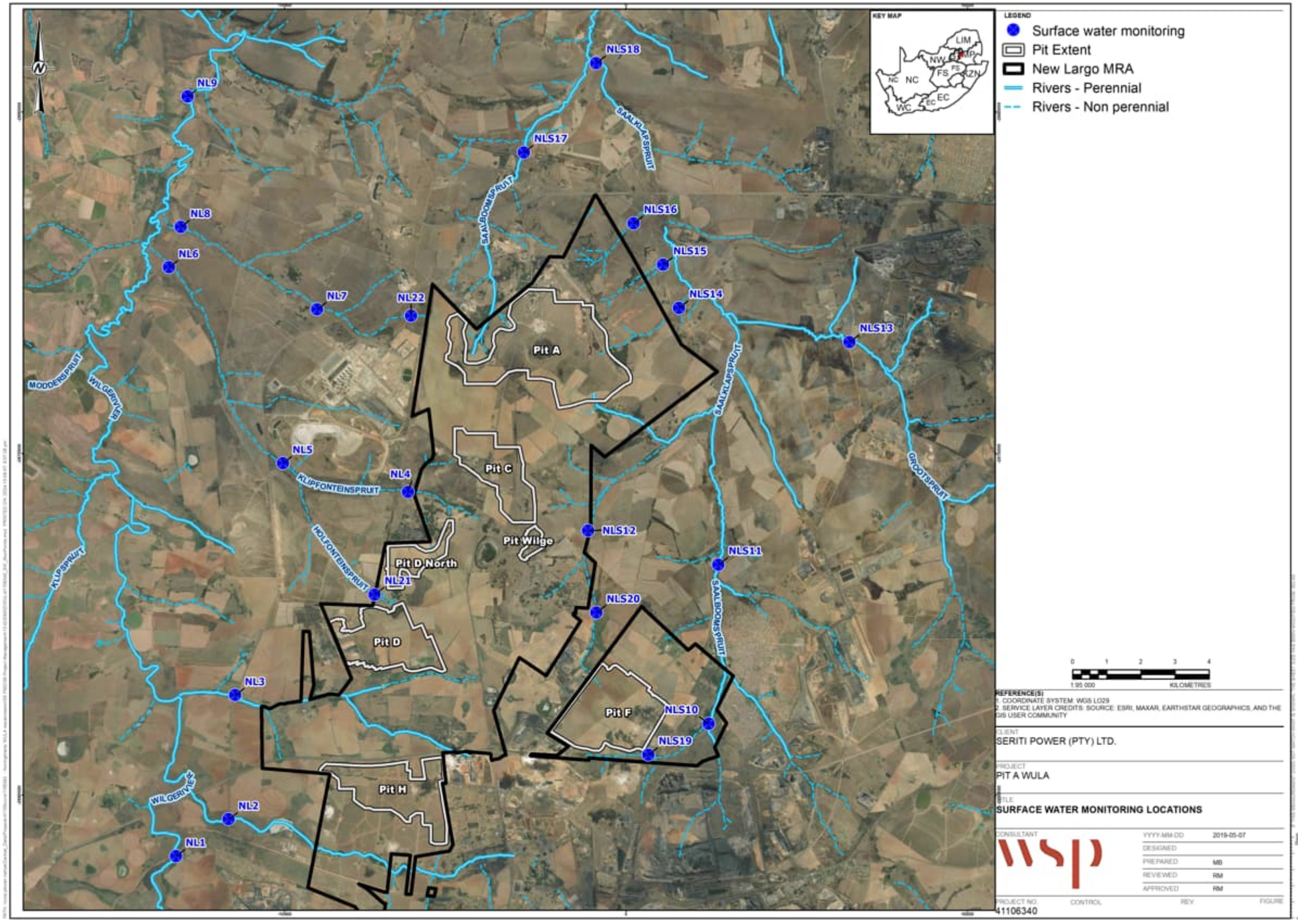


Figure 71: Surface water monitoring points as per WUL

Variables

The Licensee shall monitor surface water resources to determine the impact on the water quality by taking samples at the monitoring points indicated in Table 50.

Table 50: Surface water monitoring variables and frequency (WUL No.: 04/B20G/ACFGIJ/2538).

Variables	Frequency	Baseline groundwater quality
pH	Quarterly	9.03
Electrical Conductivity (mS/m)	Quarterly	96
Total Dissolved Solids (mg/l)	Quarterly	865
Alkalinity (mg/l)	Quarterly	59.9
Nitrate (as N) (mg/l)	Quarterly	< 0.194
Chloride (as Cl) (mg/l)	Quarterly	11.2
Sulphate (as $S0_4$) (mg/l)	Quarterly	585
Sodium (mg/l)	Quarterly	33.9
Potassium (as K) (mg/l)	Quarterly	7.87
Calcium (mg/l)	Quarterly	124
Magnesium (mg/l)	Quarterly	65.8
Aluminum (as Al) (mg/l)	Quarterly	< 0.002
Iron (as Fe) (mg/l)	Quarterly	< 0.004
Manganese (as Mn) (mg/l)	Quarterly	0.031
Zinc (as Zn) (mg/l)	Quarterly	0.611
Fluoride (as F) (mg/l)	Quarterly	< 0.194

Monitoring for quality must be done for the variables in Table 52 at the outlet of the wastewater treatment plants where the water containing waste is discharged into the water resource, and upstream and downstream of the discharge point (Table 51 and Figure 72). These must be identified in consultation with the Provincial Head and approved by the Provincial Head As per the WUL NO 04/B20G/ACFGIJ/2538.

Table 51: Surface water monitoring points for discharge (WUL NO 04/B20G/ACFGIJ/2538).

Locality	Description	Co-ordinates	
NLS20 -Tributary of the Saalklapspruit, downstream of the Vlakfontein Mine	Downstream of Pit F wastewater treatment discharge point	25°58'49.22" S	28°59'28.75" E
NL3 - Tributary of the Wilge River	Downstream of Pit H wastewater treatment discharge point	26°0'7.49" S	28°53'8.30" E

Table 52: Quality of wastewater to be discharged (WUL No.: 04/B20G/ACFGIJ/2538).

Variable	Limits	Frequency
pH	5.5-9.5	Monthly
Electrical Conductivity (mS/m)	70-150	Monthly
Chemical Oxygen Demand (mg/l)	≤ 75	Monthly
Ammonia (mg/l)	≤ 6	Monthly
Nitrate/Nitrite as Nitrogen (mg/l)	≤ 15	Monthly
Chlorine as free Chlorine (mg/l)	≤ 0.25	Monthly
Suspended Solids (mg/l)	≤ 25	Monthly
Orthophosphate as phosphorous (mg/l)	≤ 10	Monthly
E. coli (per 100ml)	≤ 100 Count/100ml	Monthly
Faecal Coliforms (per 100ml)	≤ 100 Count/100ml	Monthly

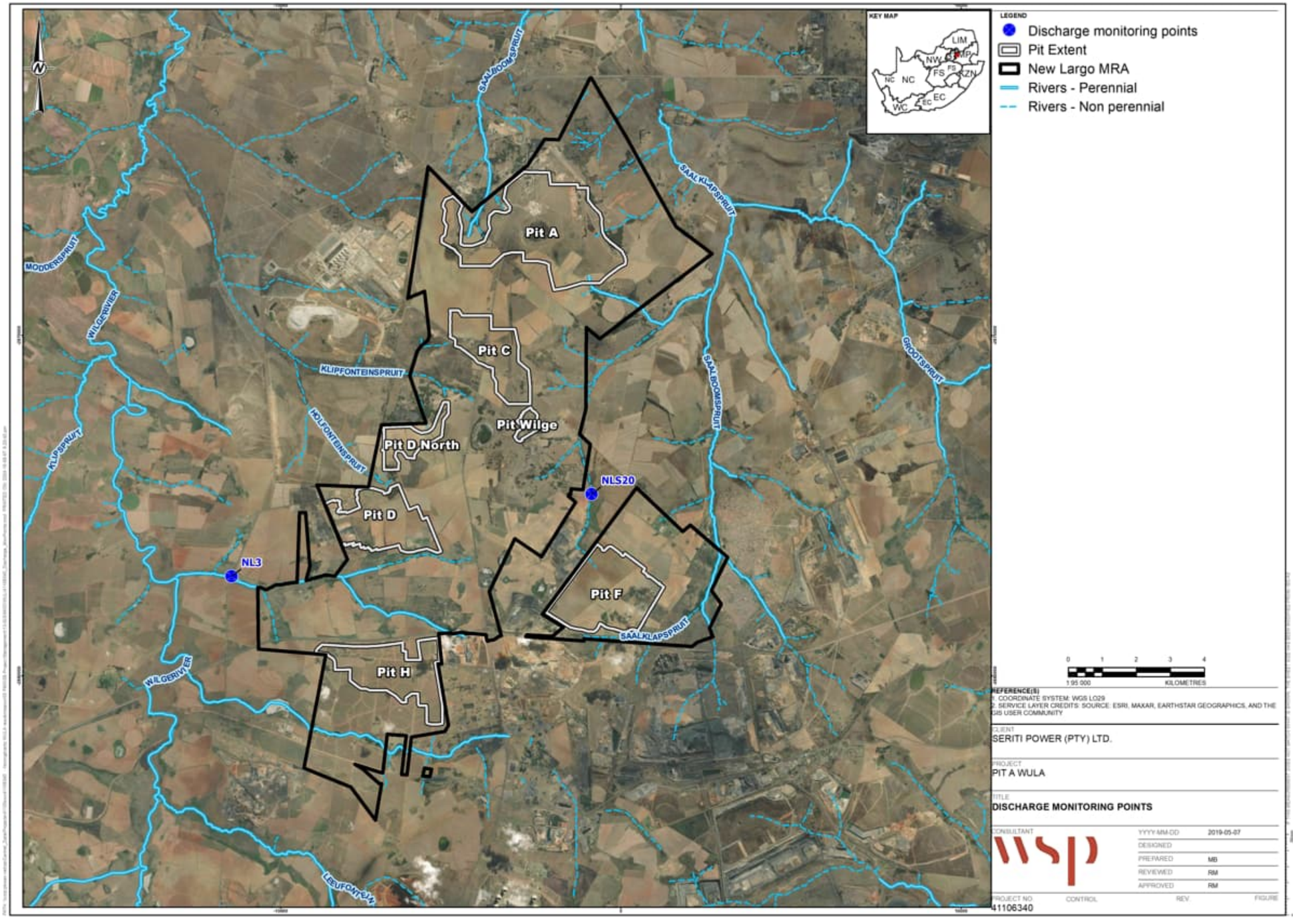


Figure 72: Surface water monitoring points for discharge (WUL No.: 04/B20G/ACFGIJ/2538).

5.15 GROUNDWATER MONITORING

Groundwater Monitoring Network

The groundwater monitoring system at New Largo is extensive and covers most of the New Largo mining area (Appendix E).

Monitoring points and frequency

WUL (No: 04/B20G/ACFGIJ/2538) requires that the following (Table 53) boreholes be monitored on a quarterly basis. The localities of the boreholes in relation to the mine are depicted in Figure 73.

Table 53: WUL Table 6: Groundwater monitoring points (WUL No.: 04/B20G/ACFGIJ/2538).

Sampling point name	Locality	CO-ORDINATES	
LGW- B1	North of Pit A	25° 53' 9.596. S	28° 58' 19.559. E
LGW- B2	Northern Extent of Pit A 1695	25° 53' 40.367" S	28° 58' 15.133" E
LGW-83	Western Extent of Pit A	25° 54' 1.241" S	28° 57' 2.734" E
LGW-84	West of Pit B	25° 55' 59.415" S	28° 56' 35.480" E
LGW-85	North-West of Pit C	25° 57' 27.049" S	28° 56' 24.008" E
LGW- B6	Western Extent of Pit C	25° 58' 53.598" S	28° 54' 45.635" E
LGW-87	Western Extent of Pit A	25° 54' 26.198" S	28° 57' 4.017" E
LGW- 88	South-East of Pit D	26° O· 57.073" S	28" 59' 32.992" E
LGW-89	North-Western Extent of Pit D	25" 59' 41.036" S	28° 59' 27.927" E
LGW-B10	East of Pit C	25° 59' 19.362" S	28° 59' 22.859" E
LGW- 811	Western Extent of Pit A	25" 54' 57.917" S	28° 57' 14.856" E
LGW-812	North-East of Pit C	25° 57' 40.674" S	28° 59' 2.846" E
LGW- 813	Western Extent of Pit C	25° 58' 44.252" S	28° 56' 11.781" E
LGW-B14	South-Western Extent of Pit C	25° 59' 44.399" S	28° 56' 12.145" E
LGW- 815	East of Pit B	25° 57' 1.286" S	28° 58' 32.480" E
LGW-816	South-Eastern Extent of Pit A	25° 55' 28.487" S	28° 59' 27.659" E
BN-2	South-East of Pit G	26° 1' 56.793" S	28° 59' 0.527" E
ED-3	West of Pit A	25° 53' 58.519" S	28° 57' 24.543• E
ED-6	North of Pit A	25° 53' 7.192" S	28° 58' 29.115" E
HFN-3	South-West of Pit F	26° 2' 35.434" S	28° 55' 45.032" E

Sampling point name	Locality	CO-ORDINATES	
HFN - 5	South of Pit F	26° 1' 14.031" S	28° 56' 32.390" E
HFN-6	Central Region of Pit G	26° 1' 41.604" S	28° 58' 25.025" E
HFN- 7	Southern Region of Pit D	25° 54' 39.236" S	28° 57' 27.180" E
HFN- 60	South of Pit F North- Eastern Limb	26° 2' 35.434" S	28° 55' 45.032" E
HZ-1	East of Pit A	25° 54' 39.258" S	28° 59' 47.220" E
HZ-3	North of Pit A	25° 53' 19.932" S	28° 58' 55.776. E
HZ-5	Central Extent of Pit A	25° 54' 21.313" S	28° 58' 27.123" E
KF -13	South-Western Region of Pit C	25° 59' 2.580" S	28° 56' 39.372" E
KF -18	South-West of Pit C	25° 59' 47.256" S	28° 55' 5.448" E
KF -19	South-West of Pit C	25° 59' 42.180" S	28° 54' 41.616" E
KF-6	Southern Extent of Pit C	25° 59' 44.232" S	28° 57' 5.328" E
LGW-817	East of Pit A	25° 54' 51.867" S	28° 59' 53.676" E
LGW-818	North-East of Pit A	25° 54' 0.427" S	28° 59' 37.977" E
LGW- 819	North-Eastern Extent of Pit A	25° 53' 25.753" S	28° 59' 7.981" E
LGW-820	Northern Region of Pit A	25° 54' 21.249" S	28° 58' 34.453" E
LGW-B21	Southern Extent of Pit A	25° 55' 28.833" S	28° 58' 3.356" E
LGW-B22	Central Extent of Pit B	25° 56' 18.543" S	28° 57' 38.796" E
LGW-823	Southern Extent of Pit B	25° 57' 13.652" S	28° 57' 28.030" E
LGW-B24	North-West of Pit C	25° 57' 42.294" S	28° 56' 34.532" E
LGW-B25	Central Extent of Pit C	25° 58' 52.334" S	28° 57' 16.023" E
LGW-B26	Western Extent of Pit C	25° 58' 58.366" S	28° 55' 29.745" E
LGW-B27	Western Extent of Pit C	25° 59' 13.381" S	28° 55' 33.475" E
LGW- B28	South-West of Pit C	26° 0' 39.586" S	28° 55' 29.034" E
KF - 7	South-West of Pit C	25° 59' 47.076" S	28° 56' 43.872" E
KN-4	North-West of Pit B	25° 55' 27.624" S	28° 57' 1.656" E
KN-5	East of Pit B	25° 56' 20.022" S	28° 59' 3.612" E
KN-12	West of Pit B	25° 56' 23.536" S	28° 57' 0.303" E

Sampling point name	Locality	CO-ORDINATES	
KN -14	South-West of Pit A	25° 55' 24.766" S	28° 57' 45.102" E
KN-20	Central Region of Pit B	25° 56' 47.472" S	28° 57' 59.976" E
KN- 24	Northern Extent of Pit C	25° 57' 34.969" S	28° 57' 33.091" E
KN- 34	West of Pit C	25° 57' 18.756" S	28° 55' 49.620" E
NSW-7	South-West of Pit G	26° 1' 48.885" S	28° 57' 46.383" E
NSW-9	Western Extent of Pit F	26° 1' 29.470" S	28° 54' 52.305" E
NSW-10	Eastern Extent of Pit F	26° 1' 31.384" S	28° 56' 46.398" E
RP-4	East of Pit B	25° 56' 32.856" S	28° 58' 33.600" E
VN-1	North of Pit D	25° 59' 21.082" S	28° 59' 2.185" E
VN-6	East of Pit C	25° 57' 40.932" S	28° 58' 44.580" E
VN-8	Eastern Extent of Pit C	25° 58' 0.336" S	28° 58' 33.924" E
VN - 11	East of Pit C	25° 58' 48.720" S	28° 59' 17.844" E
VN-14	Eastern Region of Pit C	25° 58' 52.251" S	28° 58' 12.683" E

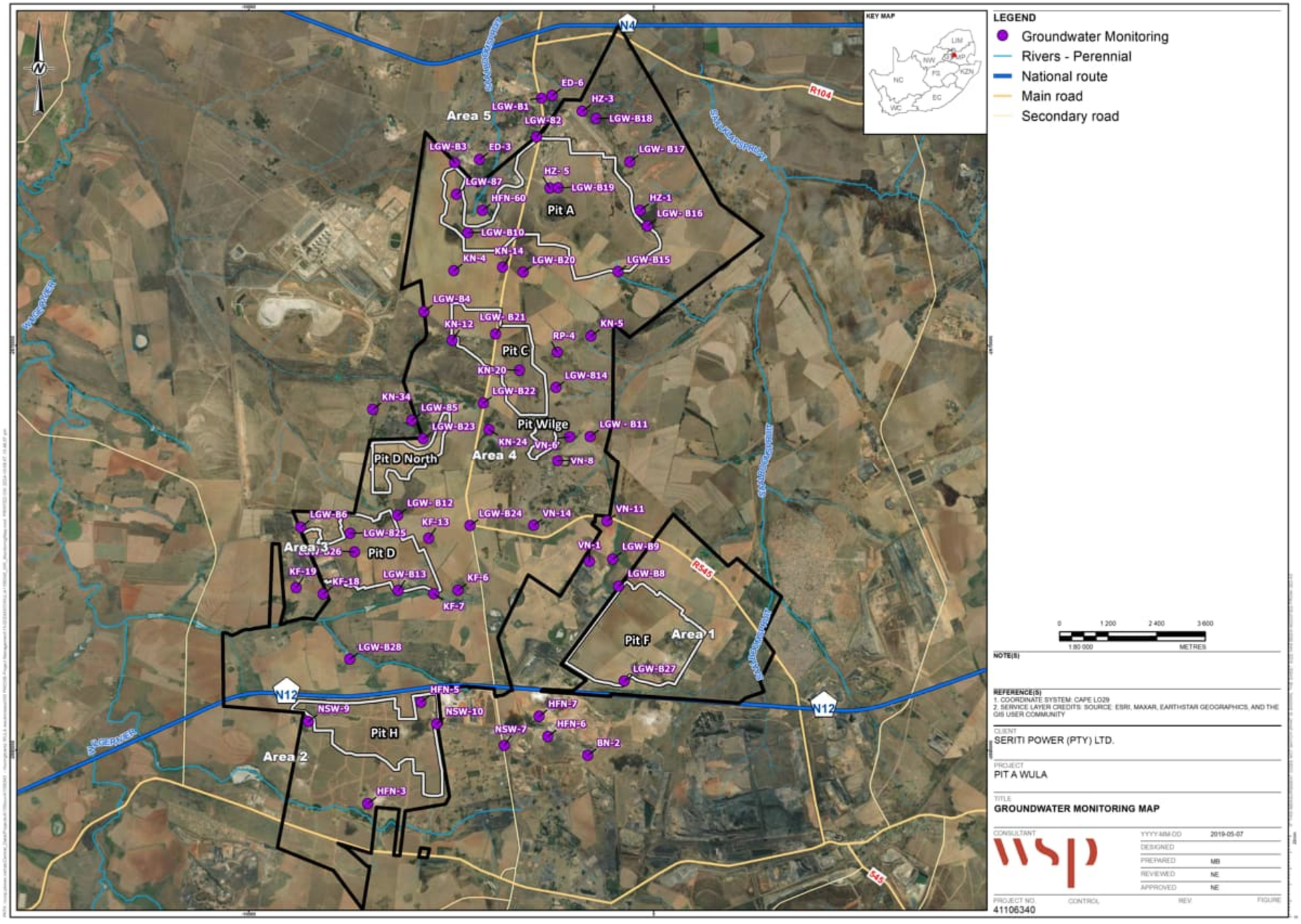


Figure 73: Monitoring boreholes as per WUL (WUL No.: 04/B20G/ACFGIJ/2538).

Variables

The Water Use Licence (WUL NO.: 04/B20G/ACFGIJ/2538) stipulates that the following parameters shall be included in the groundwater monitoring programme (Appendix E):

- pH
- Electrical Conductivity (EC)
- Total Dissolved Solids (TDS)
- Total Alkalinity
- Ammonium (NH_4 as N)
- Nitrate (NO_3 as N)
- Chloride (as Cl)
- Sulfate (as SO_4)
- Sodium (as Na)
- Potassium (as K)
- Calcium (as Ca)
- Magnesium (as Mg)
- Aluminium (as Al)
- Iron (as Fe)
- Manganese (as Mn)
- Fluoride (as F).

5.16 BIOMONITORING

Bio-monitoring requirements are stipulated in condition 3.3 Appendix IV of WUL (No: 04/B20G/ACFGIJ/2538).

Biomonitoring should be conducted as follows:

- A qualified, accredited Aquatic Scientist or as approved by the Provincial Head must establish biomonitoring programme within six (6) months of issuance of the licence. The biomonitoring programme must include scope, water quality assessment and invertebrate habitat assessment of the following: reference condition (upstream of discharge point), discharge point and downstream of discharge point.
- The biomonitoring must be undertaken using latest Invertebrate Habitat Assessment System (IHAS) and the South African Scoring System (SASS). Sampling must be conducted seasonally (once in summer and once in winter) and the results must be compared against the selected reference condition or reference condition within the same ecoregion in a case where upstream of selected discharge point is not accessible or representative of discharge point.
- The biomonitoring report highlighting the impacts, changes, deterioration, or improvement of the aquatic ecosystem (trends) as the result of this water containing waste/ effluent discharged must be submitted to the Provincial Head
- The Licensee shall monitor quarterly, the toxicity of the water containing waste/effluent in accordance with Direct Estimation of Ecological Effect Potential (DEEEP) initiative to determine the effect of water containing waste

- The acute biological assay tests must be conducted by a SANAS accredited laboratory using a minimum of at least three (3) or four (4) trophic levels (bacteria, algae, invertebrate and vertebrate) to determine the toxicity impact of the whole effluent on each trophic level
- Should toxicity equal to or greater than 50% be expressed in the undiluted samples (>1TUa), a definitive exposure should be conducted for the relevant bioassay, based on best professional judgement. A Hazard class should always be maintained at less than Hazard Class 111 at the downstream sampling site
- The toxicity report highlighting hazard class of effluent and its impact on deterioration or improvement of the aquatic invertebrates or ecosystem must be submitted with or as part of biomonitoring report to the (Provincial Head) within a month after each assessment.

The locations of the Biomonitoring points are tabulated in Table 54 and depicted in Figure 74.

Table 54: Biomonitoring Locations

Site	Description	Latitude	Longitude
NL1	This site is located near a road bridge, approximately 2.2 km to the west of mining operations on the Wilge River.	26° 2'40.82"S	28°52'4.60"E
NL2	This site lie on an unnamed perennial tributary of the Wilge River between R960 and N12. Multiple large dams are upstream of the site.	26° 2'7.61"S	28°52'55.82"E
NL3	This site is located on an unnamed perennial tributary of the Wilge River near R960 and in between two large dams located upstream and downstream.	26° 0'7.22"S	28°53'2.76"E
NL4	This site is situated on the Klipfonteinspruit, a non-perennial tributary of the Wilge River. It is located approximately 1.5 km south of Kusile Power Station and less than 1 km north of the Malachite mining operation.	25°56'53.41"S	28°56'6.37"E
NL5	This site is located approximately 0.6 km southwest of Eskom Kusile Power Station in the Klipfonteinspruit.	25°56'34.42"S	28°54'7.64"E
NL6	This site is downstream the Klipfonteinspruit and approximately 1.2 km upstream of the confluence with the Wilge River.	25°53'25.98"S	28°52'8.87"E
NL7	This site is located approximately 1.7 km northwest of the Eskom Kusile Power Station separated by the R686 road on a non-perennial tributary of the Wilge River.	25°53'53.27"S	28°54'25.50"E
NL8	This site is located downstream of NL7 approximately 0.9 km form the confluence with the Wilge River.	25°52'42.83"S	28°52'11.53"E
NL9	This site is located within the upper reaches of the Wilge River at a bridge crossing of the R104 road.	25°50'40.56"S	28°52'17.22"E

Site	Description	Latitude	Longitude
NLS10	This site is in the Saalboomspruit located opposite Phola residential area.	26° 0'41.29"S	29° 1'27.23"E
NLS11	This site is in the Saalboomspruit located approximately 4 km downstream of site NLS10 next to the Phola residential area.	25°58'41.29"S	29° 1'37.39"E
NLS12	This site is a perennial tributary of the Saalklapspruit located approximately 2.8 km east of Pan 1.	25°57'41.29"S	28°59'20.74"E
NLS13	This site is a non-perennial tributary of the Saalklapspruit located near the R104 road approximately 2 km southwest from a steel works plant.	25°54'31.05"S	29° 3'55.58"E
NLS14	This site is located on the Saalklapspruit approximately 2.8 km south of the N4.	25°53'37.87"S	29° 1'6.54"E
NLS15	This site is a non-perennial tributary of the Saalklapspruit located approximately 2 km south of the N4 and downstream of site NLS14.	25°53'22.31"S	29° 0'29.71"E
NLS16	This site is a non-perennial tributary of the Saalklapspruit located approximately 0.8 km south of the N4 and at a bridge crossing of R104.	25°52'39.87"S	29° 0'6.97"E
NLS17	This site is located on the Saalboomspruit a tributary of Saalklapspruit in Balmoral area.	25°51'41.29"S	28°58'9.83"E
NLS18	This site is located on the Saalklapspruit approximately 1 km upstream of the confluence of the Saalboomspruit.	25°50'35.60"S	28°59'38.28"E

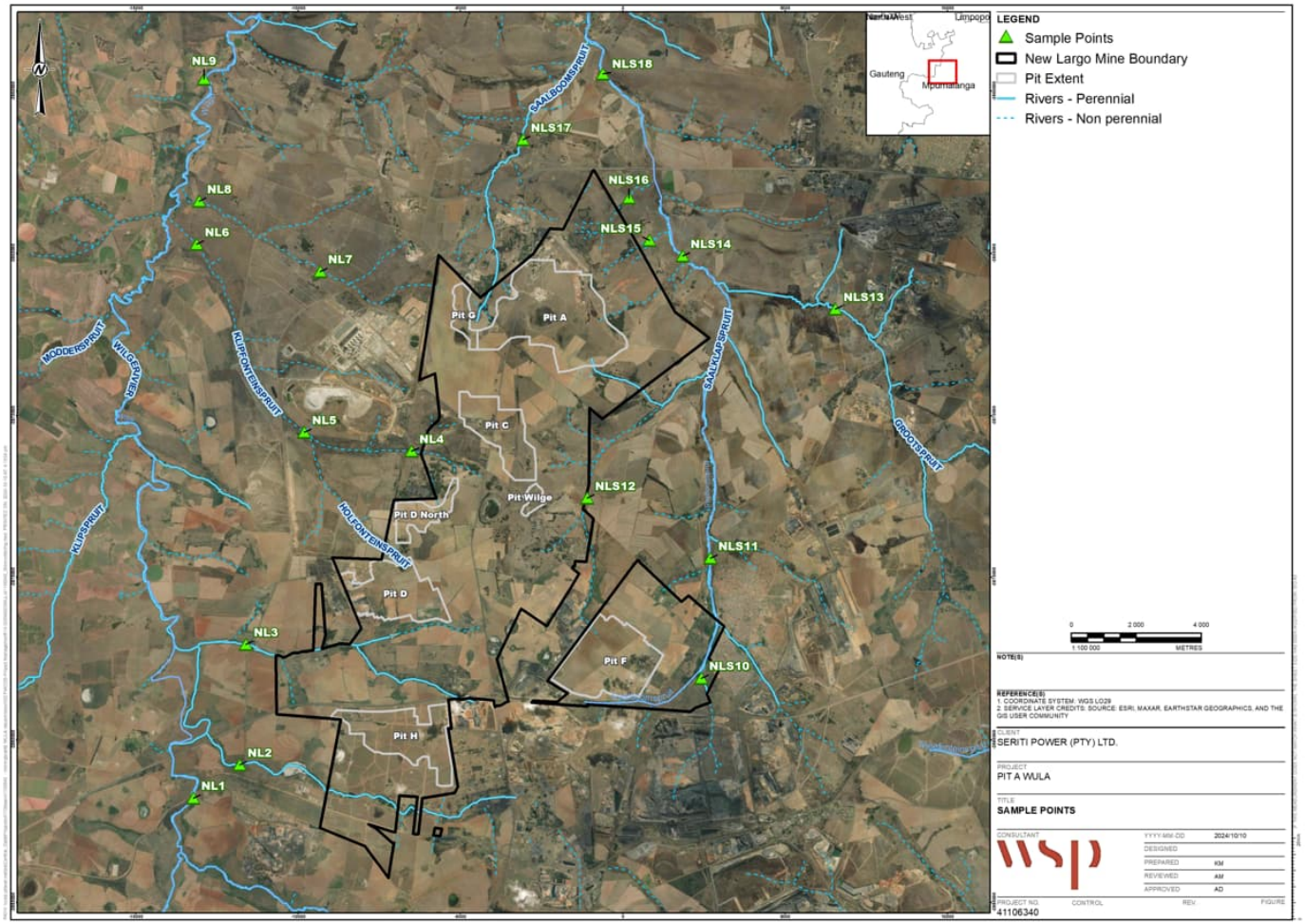


Figure 74: Biomonitoring Locations

5.17 WASTE MONITORING

Contractors manage waste on behalf of New Largo. The contractors report on the volume generated and disposed of. Monthly contract meetings are held, and reports submitted to the mine. The appointed contractors must implement a waste inventory that contains records and monitors the types of waste produced, the volumes, and management measure (i.e., recycled or disposal).

Sewage treatment plant

A sewage treatment plant will be required at the main infrastructure area (already authorised) to treat sewage from the offices, workshops and change house. The sewage plant will be located on the western side of the New Largo plant area. The sewage plant will be a biological filter treatment plant and will adequately cater for the approximately 700 employees during the mine's operational phase. The effluent water will be treated at the WTP, while sewage sludge will be removed at intervals by a contractor and disposed of at a licensed waste disposal facility.

Wash bays

There will be two wash bays on site, for the cleaning of vehicles, equipment, and machinery (LDV wash bay and EMV wash bay). They are located adjacent to each other on the eastern side of the New Largo plant area. Dirty water from the water bays will be collected in silt traps and transported to a PCD. Oil traps will be provided to capture hydrocarbons. Contaminated silt from the wash bay silt traps will be removed for off-site disposal at an appropriate licensed disposal facility.

Silt traps

Silt traps will be located at the plant area wherever dirty and/or polluted water may be generated. These areas include coal stockpiles, wash bays, the waste disposal handling area (salvage yard) and internal coal conveyors. The silt traps will collect all dirty water from an area, from where it will be piped via an underground pipe system to the closest pollution control dam. Silt traps will be cleaned when required and as per a specific procedure that will be developed as one of a number of detailed environmental management procedures.

Waste from water treatment plant

The unused portion of the water will be discharged to streams in terms of the water use authorisation.

Waste handling facilities have been provided in close proximity to the WTP for the gypsum and brine generated from the treatment process in the form of a 100m x 100m bunded concrete slab and a 5Ml plastic lined dam, respectively. There are two alternatives available for the disposal of gypsum; the first is to use the gypsum as part of the backfill in the pit and the second is for the appointed Water Treatment Plant Contractor to dispose it in a licensed off-site waste handling facility. There is also potential for gypsum to be used as part of the rehabilitation process to reduce water infiltration. Gypsum will still be produced post closure and at this stage the gypsum will again be removed from site unless approvals for other management measures have been obtained (Golder, 2020b).

Construction and building rubble stockpiles

Various buildings and structures currently exist throughout the proposed mining area. These structures will need to be demolished before mining can take place. The rubble and building waste

will be stockpiled and will either be re-used, or it will be disposed of into the mine pit. The existing R545 road will also be demolished, and the rubble will be stockpiled on site before being re-used or being disposed of into the mine pit.

General and hazardous waste will be separated into different stockpiles.

There are currently no fixed locations for the positions of the stockpiles. Suitable positions for the stockpiles will be sought, which are outside of the 1:100-year flood line, more than 500 m away from any wetland and outside of any critical biodiversity areas (Golder, 2020b).

Used oils

All used oil generated shall be pumped into storage tanks and at all times take into account the protection of the environment and the risk of pollution and contamination. An oil balance survey should be done and kept up to date, on a bi-annual basis. Under no circumstances may any oil be released directly onto the ground, water or into the environment. When transporting containers, care shall be exercised at all times, to prevent pollution and/or contamination. All used oil shall be held in designated storage tanks for the safe collection and disposal of the used oil by an authorised and permitted contractor and taken to an authorised, permitted, recycling site.

The design, construction and operation of all equipment and facilities required for the effective collection, containment, control, and disposal of used oil shall at all times comply with the current legislation. Suitable spillage kits and absorbent materials shall be available at all times for the containment, clearing and clean-up of any spills. Spillage training should be documented and kept on record. All safety, health and environment requirements shall be considered and adhered too. In the event of a spillage the incident shall be reported immediately, to ensure prompt action (Golder, 2020b).

Attention shall be given to the risk of fire, contamination and pollution and the use of correct personal protective equipment. Monitoring systems should be introduced to record oil volumes used, recycled, and/or disposed of.

Used grease, degreasers, and solvents

This includes used grease drums still containing residue of grease, all current, obsolete, old, or redundant solvents or degreasers that may still be in stock.

All redundant and old or obsolete degreasers and solvents shall be placed in sealed drums and sent to the Scrap Yard area allocated for disposal. Divisions must identify a collection area, at the Scrap Yard, with a cement floor and bund walls where they must store the old grease drums and used oil drums. This arrangement is implemented to prevent double handling and associated possible spillages.

No redundant, old, or obsolete degreasers and solvents shall be poured into sewerage systems or washed into storm water drain systems. Only an authorised and permitted waste removal contractor shall remove all redundant or old degreasers and solvents from the Hazardous Waste Collection Site to a permitted waste disposal site. All redundant, old degreasers and solvents shall be stored separately from other streams, to prevent chemical reaction, toxic fumes and gases contamination and pollution of the environment.

All quantities of redundant, old degreasers and solvents disposed of shall be recorded and form an integral part of the oil balance survey.

PCB (Polychlorinated Biphenyl Waste)

This includes PCBs that were used as the cooling and dielectric fluid in high voltage transformers and power factor correction equipment (capacitors). Mixtures of PCBs were commonly used because of their insulating and fire-resistant properties.

Any leaks or spillages of the PCB-containing oil onto surrounding concrete, soil, and other materials, as well as capacitors and transformers will be regarded as PCB contaminated waste. Only an authorised and permitted hazardous waste removal contractor shall be allowed to remove this type of hazardous waste to a hazardous waste disposal site. The containers for the collection, containment and disposal of PCB's shall be kept separate at all times.

All safety, health and environmental impacts shall be considered and adhered to by all employees at all times. An effective monitoring system shall be implemented and maintained to measure the quantities generated and disposed of, records to be kept of collection for disposal and Safe Disposal Certificates must be obtained and kept on file.

Hazardous waste

Solid hazardous waste matter will include batteries (wet and dry cell batteries), contaminated soil, medical waste - (softs), contaminated medical waste (bandages, sharps, etc), expired medicines (pills, powders etc.), lighting waste (including fluorescent tubes), hydrocarbon contaminated waste (including used oily waste rags), all used aerosol cans (spray paint, furniture polish etc.), empty drums (Solvents, degreasers, electrical cleaners and oil drums), used mobile machine and vehicle filters, contaminated Personal Protective Equipment, electronic waste, ink and toner cartridges. This waste will be handled, stored, and disposed of according to legal requirements.

5.18 RISK ASSESSMENT/ BEST PRACTICE ASSESSMENT

The Department of Water and Sanitation (DWS) adopts a risk-based approach to identifying water and waste management issues. Risk management forms one of the principles of integrated water resource management. The level of management intervention and regulatory control is based on the level of threat that a pollution source poses to the receiving water resource. The risk-based approach therefore assists in identifying those threats. High to medium level risks have been used as a basis to inform the Integrated Water and Waste Management (IWWMP) action plan for New Largo.

Methodology

The methodology used in the risk assessment can be summarised as follows:

- Conduct a risk assessment to quantify all possible risks that are applicable to the proposed water uses associated with New Largo;
- Develop corrective and/or mitigation measures for the remaining high and significant risks;
- Identify initial residual risks;
- Assess the initial residual risks and devise measures to correct and /or mitigate these risks to ensure the successful long-term performance and sustainability of the measures;

- Derive a suite of probable residual risks that require dedicated attention during closure planning; and
- Develop an action plan to document al the required mitigation measures that the mine will have to implement in order to reduce or ultimately avoid adverse impacts on the environment.

It is envisioned that the residual risks will progressively improve during the annual updates of the IWWMP, as illustrated in Figure 75.

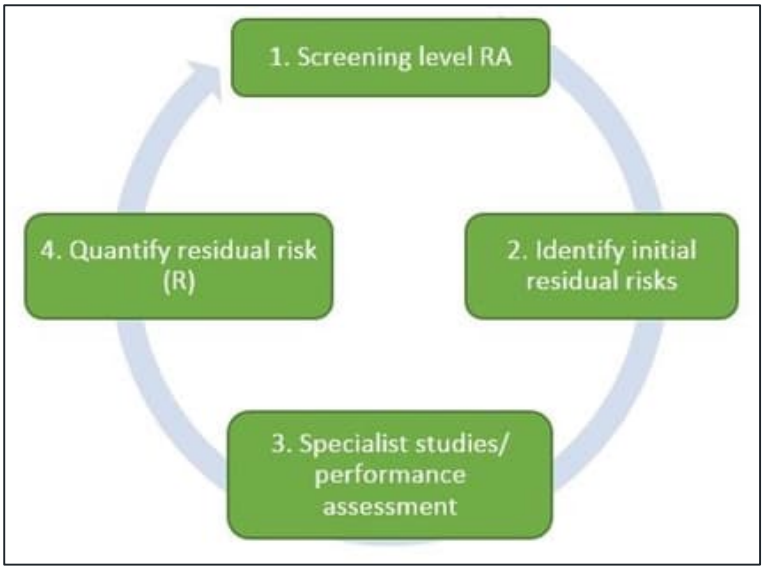


Figure 75: Key Components and Process of Risk Determination

The detailed risk assessment matrix used is tabulated in Table 55 and the outcome of the risks that were identified, based on the current understanding of the site and the specialist studies can be found in Table 56. This table represents the annual update of the New Largo site wide risk assessment and will be updated on an annual basis as part of the IWWMP update.

Table 55: New Largo risk assessment matrix

Consequence Type	1 - Insignificant	2 - Minor	3 - Moderate	4 - High	5 - Major
Schedule	Less than 1% impact on overall project timeline	May result in overall project timeline overrun equal to or more than 1% and less than 3%	May result in overall project timeline overrun of equal to or more than 3% and less than 10%	May result in overall project timeline overrun of equal to or more than 10% and less than 30%	May result in overall project timeline overrun of 30% or more
Cost	Less than 1% impact on the overall budget of the project	May result in overall project budget overrun equal to or more than 1% and less than 3%	May result in overall project budget overrun of equal to or more than 3% and less than 10%	May result in overall project budget overrun of equal to or more than 10% and less than 30%	May result in overall project budget overrun of 30% or more
Quality and Technical Integrity	No significant impact on quality of deliverables or effect on production	Quality issues that can be addressed prior to handover or could affect production by more than 1% and less than 3%	Quality issues that can be addressed during ramp-up or could affect production by more than 3% and less than 10%	Quality issues that require significant intervention to maintain performance or could affect production by more than 10% and less than 30%	Quality issues that require significant intervention to achieve performance or could affect production by 30% or more
Safety	First aid case	Medical treatment case	Lost time injury	Permanent disability or single fatality	Numerous permanent disabilities or multiple fatalities
Occupational Health	Exposure to health hazard resulting in temporary discomfort	Exposure to health hazard resulting in symptoms requiring medical intervention and full recovery (no lost time)	Exposure to health hazards/ agents (over the OEL) resulting in reversible impact on health (with lost time) or permanent change with no disability or loss of quality of life	Exposure to health hazards/ agents (significantly over the OEL) resulting in irreversible impact on health with loss of quality of life or single fatality	Exposure to health hazards/ agents (significantly over the OEL) resulting in irreversible impact on health with loss of quality of life of a numerous group/population or multiple fatalities
Environment	Lasting days or less; affecting small area (metres); receiving environment highly altered with no sensitive habitats and no biodiversity value (e.g., urban / industrial areas).	Lasting weeks; affecting limited area (hundreds of metres); receiving environment altered with little natural habitat and low biodiversity value	Lasting months; affected extended area (kilometers); receiving environment comprising largely natural habitat and moderate biodiversity value	Lasting years; affecting area on sub-basin scale; receiving environment classified as having sensitive natural habitat with high biodiversity value	Permanent impact; affecting area on a whole basin or regional scale; receiving environment classified as highly sensitive natural habitat with very high biodiversity value
Legal & Regulatory	Technical non-compliance. No warning received; no regulatory reporting required	Breach of regulatory requirements; report/involvement of authority. Attracts administrative fine	Minor breach of law; report/investigation by authority. Attracts compensation/ penalties/ enforcement action	Breach of the law; may attract criminal prosecution, penalties/ enforcement action. Individual licence temporarily revoked	Significant breach of the law. Individual or company lawsuits; permit to operate substantially modified or withdrawn

Consequence Type		1 - Insignificant	2 - Minor	3 - Moderate	4 - High	5 - Major
Social / Communities		Minor disturbance of culture/ social structures	Some impacts on local population, mostly repairable. Single stakeholder complaint in reporting period	Ongoing social issues. Isolated complaints from community members/ stakeholders	Significant social impacts. Organized community protests threatening continuity of operations	Major widespread social impacts. Community reaction affecting business continuity. “License to operate” under jeopardy
Reputation		Minor impact; awareness/ concern from specific individuals	Limited impact; concern/ complaints from certain groups/ organizations (e.g., NGOs) period	Local impact: public concern/ adverse publicity localised within neighboring communities	Suspected reputational damage; local/ regional public concern and reactions	Noticeable reputational damage; national/ international public attention and repercussions
PROBABILITY		**RISK LEVEL**				
5 - Almost Certain **>90%**	90% and higher likelihood of occurring	**11 (Medium)**	**16 (Significant)**	**20 (Significant)**	**23 (High)**	**25 (High)**
4 - Likely **30%-90%**	Between 30% and less than 90% likelihood of occurring	**7 (Medium)**	**12 (Medium)**	**17 (Significant)**	**21 (High)**	**24 (High)**
3 - Possible **10%-30%**	Between 10% and less than 30% likelihood of occurring	**4 (Low)**	**8 (Medium)**	**13 (Significant)**	**18 (Significant)**	**22 (High)**
2 - Unlikely **3%-10%**	Between 3% and less than 10% likelihood of occurring	**2 (Low)**	**5 (Low)**	**9 (Medium)**	**14 (Significant)**	**19 (Significant)**
1 - Rare **<3%**	Less than 3% likelihood of occurring	**1 (Low)**	**3 (Low)**	**6 (Medium)**	**10 (Medium)**	**15 (Significant)**

Risk Rating	**Risk Level**	**Guidelines for Risk Matrix**
21 to 25	High	A high risk exists that management’s objectives may not be achieved. Appropriate mitigation strategy to be devised immediately.
13 to 20	Significant	A significant risk exists that management’s objectives may not be achieved. Appropriate mitigation strategy to be devised as soon as possible.

Consequence Type		1 - Insignificant	2 - Minor	3 - Moderate	4 - High	5 - Major
6 to 12	Medium	A moderate risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised as part of the normal management process.				
1 to5	Low	A low risk exists that management's objectives may not be achieved. Monitor risk, no further mitigation required.				

Table 56: Pit A risk assessment

No		Risk Name	Risk Description	Causes	Consequences	Existing Controls	Impact on:	Probability of Occurrence Before Mitigation	Impact of Risk Before Mitigation	Risk Rating Before Mitigation	Mitigation Action
1	Surface Water	Water management - cumulative impact	RQOs have now been set for the downstream EWR4 monitoring location. In the absence of a well-maintained water balance and monitoring system, uncontrolled discharge of mine water could occur. Such discharge from New Largo could contribute to the cumulative impact on the Olifants River catchment area in terms of water quality	Low confidence water balance; potential lack of adequate treatment capacity; other drivers of change in the catchment. Inadequate storm water infrastructure and monitoring or failure to implement storm water designs as planned for life of mine.	Environmental	Can only control the New Largo discharge quality as authorised in the WUL and not any other contributing cumulative sources of impact. Implementation of clean and dirty water separation	Environment	2	2	5 (Low)	1. Ensure that water balances are updated/calibrated on a regular basis. 2. Pro-actively monitor changes in the water make and quality to ensure that water treatment plant upgrades are initiated on time (identify key indicators); 3. Ensure adequate resources (people, skills, and capital) are planned. 5. Demonstrate that their discharge meets the requirements that will be set for NL so that the RQO standards at the point of discharge, are achieved at the site downstream of the mine, to show that they are not contributing to cumulative impacts on water quality in the

No		Risk Name	Risk Description	Causes	Consequences	Existing Controls	Impact on:	Probability of Occurrence Before Mitigation	Impact of Risk Before Mitigation	Risk Rating Before Mitigation	Mitigation Action
											catchment and are not reducing the flow. 6. Implement storm water designs as planned and ongoing monitoring and maintenance of systems
2	Surface Water	Upstream water quality	Multiple point and diffuse sources of contamination of water resource from other role players in both affected/ receiving catchments	Upstream contaminated discharges Unauthorised mining/ other activities from other water users Failure of other upstream water users to implement mitigation measures	Poor water quality abstracted from the instream dams for supply to New Largo - Pit H Potential upfront treatment of water required to meet user requirements	Upstream monitoring and data capturing	Environment / Environmental Cost	4	2	12 (Medium)	1. Implement monitoring of upstream water resource. 2. Notify regulator of any water quality concerns. 3. Determine upfront whether water treatment will be required and make adequate provisions for this.
3	Surface Water	Sand mining in close proximity of the Honingkrantz Pan and other wetland systems by third party not regulated by an authorisation by DWS	Environmental and financial liability due to impacts from illegal mining and related activities may fall under New Largo. (WUL 9.11 under Appendix III)	Sand mining without a required water use licence currently occurring	Non-compliance in terms of the current authorised WUL (04/B20G/ACFGIJ/2538). Third party mining can result in negative impact on biodiversity and wetland functionality of identified wetland improvement areas.	Lease agreement with sand mining company in place to adhere to the New Largo WUL and the NWA	Environment / Legal	4	2	12 (Medium)	1. Illegal mining activity is not within the New Largo control. DWS is required to intervene. 2. Ensure ongoing communication with relevant authorities to ensure liability does not fall under New Largo.

No		Risk Name	Risk Description	Causes	Consequences	Existing Controls	Impact on:	Probability of Occurrence Before Mitigation	Impact of Risk Before Mitigation	Risk Rating Before Mitigation	Mitigation Action
4	Ground Water	Groundwater - impact on other water users	The proposed mining operation can potentially cause a pollution plume during the operational- and post-closure phase. Dewatering cone might potentially negatively impact on existing groundwater users during these phases.	Opencast coal mining activities and related operations -Failure to implement engineered barrier of containment and conveyance infrastructure	Reputational damage / Financial compensation / Supply of water to third parties/ Impact on receiving water quality and quantity	Ongoing groundwater level and quality monitoring Geohydrological model Engineered barrier designs for containment and conveyance infrastructure	Financial/ Environment	1	2	3 (Low)	1. Ensure that adequate surface and ground water baseline data upstream and downstream of the proposed operation is collected prior to construction. 2. Identify all users that may be impacted by the pollution plume and dewatering cone. 3. Develop a procedure for handling claims/complaints. 4. Provision of replacement water. 5. Establish processes to obtain surface rights where possible or needed. 6. Conduct hydrocensus on the key sensitive receptors during operational phase
5	Waste / Geochemical	In-pit mineral residue disposed above final groundwater level	In-pit disposal of discard and mineral residue is done in a way that the discard is placed above the final established (rebound) groundwater level	Operational management not complying to recommended methodology for placement of mineral residue. Site conditions (rainy seasons, failure of beneficiation/	Negative impact on long-term mine water quality resulting in an increased cost associated with long-term mine water treatment and financial provisioning thereof. Impact on receiving environment especially wetlands post closure.	Accurate mine planning Regular surveying of in-pit disposal levels Addressing any deviations/ spills in accordance with procedures	Environment / Cost	2	4	14 (Significant)	1. Determine final in-pit disposal level and ensure in-pit disposal is done according to best practices, i.e., below final in-pit water level as much as possible. 2. Develop and implement an in-pit discard disposal protocol.

No		Risk Name	Risk Description	Causes	Consequences	Existing Controls	Impact on:	Probability of Occurrence Before Mitigation	Impact of Risk Before Mitigation	Risk Rating Before Mitigation	Mitigation Action
				equipment failure) Failure to survey optimal backfilling level (rebound water table level) Deviation from the mine plan							
6	Waste / Geochemical	AMD generation	Uncontrolled discharge of mine affected water from mining voids	The Acid generation properties of the spoils and mineral residue	Poor quality mine water requiring long term water treatment during operational and post closure phases	Authorisation 4 Ml water treatment plant Regular surveying of in-pit disposal levels Addressing any deviations/ spills in accordance with procedures	Environment / Cost	2	4	14 (Significant)	1. Sampling, geochemical characterisation and waste assessment of coal residue (discard) material from process metallurgy laboratory work and from the De-stoning Plant / DMS Plant once it is operational, to confirm or revise the findings of this study;
7	Surface Water	Storm water management during construction	Storm water infrastructure not fully in place	High rainfall event during construction	Carryover of sediment to receiving water courses and wetlands	ECO inspections on a weekly basis and report on it monthly	Environment	2	2	5 (Low)	1. Adequate temporary storm water measures are required to be implemented during construction. 2. Compile work method statements to identify different phases from construction to implementation and risks associated with these phases. Provide adequate mitigation measures in work method statement.

No		Risk Name	Risk Description	Causes	Consequences	Existing Controls	Impact on:	Probability of Occurrence Before Mitigation	Impact of Risk Before Mitigation	Risk Rating Before Mitigation	Mitigation Action
											3. Schedule planning required to ensure that critical elements are implemented first. 4. Ensure sufficient pumping capacity to prevent spillages and overflows
8	Wetlands	Decrease surface water yield through wetland systems	Decrease in surface water yield due to mining through the catchments and wetlands and pans	Change and potential cut-off in movement of water through the soil structure decreasing interflow through wetlands as a result of opencast mining	Altering the wetland functionality and potentially decreasing the yield in the catchment	Planned release of water Functional onsite offset conservation of associated springs and other wetland interventions)	Environment	2	3	9 (Medium)	Implement the wetland offset strategy

5.19 ISSUES AND RESPONSES FROM PUBLIC CONSULTATION PROCESS

Section 41 of the NWA contains the procedures which apply in all cases where a licence is required. Section 41(4) stipulates that a responsible authority may, at any stage of the water use licence application process, require the applicant -

"(a) To give suitable notice in newspapers and other media -

(i) Describing the licence applied for;

(ii) Stating that written objections may be lodged against the application before a specified date, this must be not less than 60 days after the last publication of the notice;

(iii) Giving an address where written objections must be lodged; and

(iv) Containing such other particulars as the responsible authority may require;

(b) To take such other steps as it may direct to bring the application to the attention of relevant organs of state, interested persons and the general public; and

(c) To satisfy the responsible authority that the interests of any other person having an interest in the land will not be adversely affected."

Public participation is a series of inclusive and culturally appropriate interactions to allow stakeholders to express their views so that these can be considered and incorporated into the decision-making process. Effective public participation requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand a project's risks, impacts, and opportunities.

The public must be involved in the process because the environment is held in public trust. Therefore, the public participation process must apply due process as provided for in the WULA's PPP in terms of the National Water Act, 1998 (Act 36 of 1998) ("NWA").

The objectives of the public participation process are as follows:

- Identify relevant individuals, organisations and communities interested in or affected by the process;
- Ensure that relevant decision-making considers outcomes acquired from such processes, applicable legislative requirements, and other company policies;
- Clearly outline the proposed project's scope, including the scale and nature of the existing and proposed activities;
- Identify viable proposed project alternatives that will assist the relevant authorities in making an informed decision;
- Identify shortcomings and gaps in existing information;
- Identify key stakeholder concerns that should be addressed in the subsequent specialist studies;
- Highlight the potential for environmental impacts, whether positive or negative;
- Provide the public with information and an understanding of the proposed project, issues, and solutions; and
- I&APs were initially identified through a process of networking and referral, obtaining information from New Largo's existing stakeholder database, liaison with potentially affected parties,

newspaper advertisements and a registration process involving completion of a registration and comment sheet.

PUBLIC COMMENT PERIOD

The proposed project was announced to the public to submit comment for a period of 60 days from **2 August 2024 to 1 October 2024**. Additional 60 days has been given to stakeholders to comment and review the project technical reports.

An electronic version of the comment sheet was placed on the WSP Group Africa (Pty) Ltd (WSP) website to be accessed by the public at the following link: https://www.wsp.com/en-ZA/services/public-documents.

DIRECT NOTIFICATION

Notification of the proposed project was issued to registered I&APs and stakeholders, via direct correspondence (i.e. email and sms) on 2 August 2024. The purpose of the notification was to offer registered I&APs and stakeholders the opportunity to comment on the WULA.

SITE NOTICES

GNR 267 requires that A2 site notices be fixed at places conspicuous to the public at the boundary or on the fence of the site where the activity (to which the application relates) is to be undertaken, as well as at any alternative sites. Posters (in English and isiZulu), conforming to the size specifications as per the EIA Regulations, 2014 (as amended) were placed on the 2nd of August 2024

ADVERTISEMENT

Notification of the proposed Project as well as opportunity to comment on the WULA was issued to the general public via an advertisement published in Witbank News on the 2nd of August 2024 (Figure 76), in English. As mentioned above, the purpose of the advertisement was to notify the general public and I&APs of the proposed Project and provide an opportunity to register on the project database and provide input into the process.

4 Community | Gemeenskap — Witbank News • Nuus, Friday 2 August 2024

Highveld Park barks back

AfriCoal SA, you have been challenged to equal the SPCA donation delivered by Highveld Park.

On Saturday, July 27, Frik and Estelle van Dyk dropped off a whopping 1.6 tons of food together with pouches, tinned food, a dog kennel, toys, shampoos, and 100kg of cat litter.

This is in reaction to Del Judor X4's challenge when Stanley and Dennene White, representing the ward, dropped much-needed donations to the SPCA.

"Thank you, Highveld Park, for helping with the funds that were able to match the donations. The dogs and cats that have no voice, say thank you for keeping their tummies full for quite some time to come," is the word from the SPCA.

The next big fundraiser is on Saturday, September 7, when a 4.9 fun run and dog walk is planned. You can contact the SPCA for more information: 013 650 2131.

Highveld Park challenges AfriCoal SA to equal or better their donation.

Diary • Dagboek

Blancheville Neighbourhood Watch calls for action

Blancheville Neighbourhood Watch is calling all residents in the area for a community meeting.

The meeting is scheduled for Thursday, August 1 at 18:00 at the NG Kerk Panorama in Adele Street.

"We are currently looking at all the broken street lights in the area and have also put up surveillance cameras to monitor all entry points to the area," said Tertius de Lange from the neighbourhood watch.

A new committee needs to be selected and areas where criminals are busy have to be identified.

"The neighbourhood watch is a civilian-based service aiming to reduce crime in their communities. A good neighbourhood watch works very closely with local law enforcement agencies," said Tertius de Lange, who is heading the initiative.

For more information, contact Tertius: 061 500 3349.

Op soek na eMalahleni se koeksister kampioen

Wat is nou meer eg-Afrikaans as koeksisters? Onthou-dies van ouma se kombuis met die soet reuk van die koeksisterstroop in die lug, roep ou herinneringe op.

Baie van ons het nog ouma se resepteboek waarin die meel- en eierstrepe hul eie stories vertel.

Ons Winkel Witbank en Klipfontein is op soek na die koeksister kampioen.

Dit is so maklik om in te skryf. Diep net ouma se resepteboek op, kry daardie ou resep met ouma se geheime bestanddele in.

Bak en plaas ses koeksisters in 'n geseëlde "zip lock" sakkie met jou naam en kontakbesonderhede duidelik gemerk, en laai dit by Ons Winkel Witbank, in die Werner-gebou in Jeanettestraat af.

Hierdie bobaas koeksister-bakkal moet voor 30 Augustus 11:00 ingehandig wees.

Is jy eMalahleni se koeksister kampioen? (Foto: Centre for Ageing Better op Unsplash).

Die wenner sal op 7 September tydens Helpende Hand Witbank se Motor- en Klankskou aangekondig word.

Vir meer inligting, kontak Annari Swart: 079 234 1313.

NOTICE OF WATER USE LICENCE APPLICATION AT THE SERITI POWER (PTY) LTD NEW LARGO COAL MINE, MPUMALANGA PROVINCE

Notice is issued in terms of Sections 40 and 41(4) of the National Water Act, Act 36 of 1998 (NWA) and the requirements of Government Notice R267 published in Government Gazette 40713 dated 24 March 2017 (Procedural Requirements for the Water Use Licence Application and Appeals).

BACKGROUND AND LOCATION: The Seriti Power (Pty) Ltd, (Seriti) New Largo Colliery is located approximately 4.5 km south east of Ogies, in the eMalahleni Local Municipality, in the Mpumalanga Province. The mine is operational and has three Water Use Licences (WULs) authorised to undertake activities that are described as water uses under Section 21 of the National Water Act, 1998 (Act No. 36 of 1998), namely:

- WUL: 04/B20G/ACFGIJ/2536, File: 16/2/7/B200/C526 dated 31 March 2023, which supersedes the WUL dated 11 January 2015 as amended on 25 October 2019;
- WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C526 dated 22 August 2014; and
- WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/X524 dated 22 September 2013.

Although these water use authorisations are in place, additional water uses associated with the mining of Pit A (Honingkrantz Block specifically) have been identified that require authorisation, as a result of revisions to the mine plan. These water uses include mining of wetlands, location and operation of the New Largo Coal mining operations, pipelines, powerlines, haul roads and associated mine infrastructure in the regulated area of a watercourse; dust suppression; and dewatering in the Honingkrantz Block.

New Largo is applying for a water use licence application (WULA) from the Department of Water and Sanitation, in terms of Section 41 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) for water uses as defined in Section 21 of the NWA. GN R.267 stipulates that a WULA must be supported by an Integrated Water and Waste Management Plan (IWWMP) and a range of technical studies such as wetland and other environmental related specialist studies.

The following water uses form part of the WULA:

- Section 21(c): Impeding or diverting the flow of water in a watercourse;
- Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource;
- Section 21(i): Altering the beds, banks, course or characteristics of a watercourse; and
- Section 21 (j): Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

WSP Group Africa (Pty) Ltd (WSP) has been appointed to undertake the WULA and public participation process in terms of the NWA.

PUBLIC COMMENT INVITED ON THE WATER USE AUTHORISATION PROCESS: Stakeholders are invited to register as Interested and Affected Parties and provide written comments regarding the proposed water use authorisation process by 01 October 2024. The 60-day comment period starts on 02 August 2024 and will conclude on 01 October 2024. The comment sheets are available for download at the following website: https://www.wsp.com/en-za/services/public-documents.

FOR MORE INFORMATION, PLEASE CONTACT: Public Participation Office, WSP Group Africa (Pty) Ltd. PO Box 6001, Halfway House, 1685; Tel: 011 254 4800; Fax: 086 502 1501; E-mail: gid.pp@wsp.com

WSP will be processing certain personal information about you as an interested and affected party (I & AP) for purposes of enabling your registration as an I & AP and for purposes of storing your details on our database. If you consent for us to do so, WSP uses these details to contact you about other projects in the future. WSP will always process your personal information in accordance with the Protection of Personal Information Act 4 of 2013. You are entitled to exercise your rights as a data subject and let us know if you wish to be deregistered as an I & AP or if you no longer want your contact details to be included on our database.

ISAZISO NGESICELO SELAYISENSE YOKUSEBENZISA AMANZI E-SERITI POWER (PTY) LTD NEW LARGO COAL MINE, ISIFUNDAZWE SEMPUMALANGA

- I-WUL: 04/B20G/ACFGIJ/2536, ifayela: 16/2/7/B200/C526 ...
- I-WUL: 04/B20G/CI/2246, ifayela: 16/2/7/B200/C526 ...
- I-WUL: 04/B20F/ACFGI/2310, ifayela: 16/2/7/B200/X524 ...

UKUTHOLA ULWAZI OLWENGEZIWE, SICELA UTHINTE: Public Participation Office, WSP Group Africa (Pty) Ltd. PO Box 6001, Halfway House, 1685; Tel: 011 254 4800; Fax: 086 502 1501; E-mail: gid.pp@wsp.com

wsp

Date: 02 August 2024

IZINQUBO ZOKUGUNYAZWA KWEZEMVELO

ISAZISO SOKUTHUTHUKISWA OKUHLONGOZWAYO KWEZINKHIWO ZE-SOLAR PV engu-500MW E-DORSFONTEIN FARM DUZE KRIEL, UMASIPALA WENDAWO WASE-EMALAHLENI, ESIFUNDAZWENI SASEMPUMALANGA.

UMCULI SICELO: I-Dreamworks Haven Investments (Pty) Ltd

INCAZELO YEPROJEKTHI: I-Dreamworks Haven Investments (Pty) Ltd ("DREAMWORKS") ...

INDAWO: ...

IZICELO ZEMVELO

- Hard copy: Ga- Nala Public Library
- I-Electronic: ...

Isicelo Selayisense Yokusebenzisa Amanzi: ...

UKUBHALISA NJENGEQEMBU elinentshisekelo FUTHI ELITHINTEKILE: ...

IGAMA LOMCULI OKUHLOLA INDAWO (EAP):

Phuka tsa Nong

Thintana: Kelebogile Mogajane

Ikheli: PO Box 13661, Vorna Valley, 1686

Ucingo: 011 312 1800

Ifeksi: 086 572 3779

I-imeyili: phuka@phukatsanong.co.za

PHUKA|tsa|NONG serving sustainable solutions

Figure 76: Tearsheet in Witbank News

5.20 MATTERS REQUIRING ATTENTION/ PROBLEM STATEMENT

The results of the specialist reports and risk assessment processes were utilised to formulate the water and waste related matters which require attention.

Table 57: Matters requiring attention regarding waste and water management at Pit A

Theme	Issue/matter
Waste	▪ Implement the in-pit disposal of discard procedure ▪ Regularly report on waste generated by contractors ▪ Development and implementation of waste monitoring database. ▪ Encourage contractors to implement waste management to minimise waste, re-use, and re-cycle ▪ Deposition of discard pit water level in accordance to deposition plan
Storm water/ Surface water	▪ Implement the planned clean and dirty water management system ▪ Construct the PWTD to contain dirty water ▪ Construct the Phase 1 PCD
Wetlands/ Biodiversity	▪ Review and improve the biomonitoring programme. ▪ Implement and authorise the wetland offset strategy, as proposed by Wetland Consulting Services (2024), and put in place a wetland offset plan. ▪ Develop an implementation plan to execute the offset strategy ▪ Audit and report on the progress of implementation of the wetland offset plan.
Groundwater	▪ Provide additional water supply to affected users. ▪ Supplement flow losses in receiving watercourse. ▪ Treat affected mine water to address water quality issues. ▪ Replace any boreholes destroyed by mining activities and update the monitoring programme.
Process water	▪ Accurate flow measurement of volumes pumped from the pit ▪ Adequate storage capacity in the PCD and PWTD ▪ Siltation of PCD and PWTD resulting in loss of storage capacity

5.21 ASSESSMENT OF LEVEL AND CONFIDENCE OF INFORMATION

All information contained in this IWWMP was sourced from the specialist studies conducted for New Largo. The specialists appointed to undertake the various investigations are competent in their fields. Considering this, the level of confidence with regards to the information and reports used to compile this document is high.

6 WATER AND WASTE MANAGEMENT

6.1 WATER AND WASTE MANAGEMENT PHILOSOPHY (PROCESS WATER, STORM WATER, GROUNDWATER, AND WASTE)

WATER MANAGEMENT PHILOSOPHY

New Largo adopted the water quality management hierarchy advocated by DWS (Figure 77). This philosophy is applied to process-, storm- and groundwater.

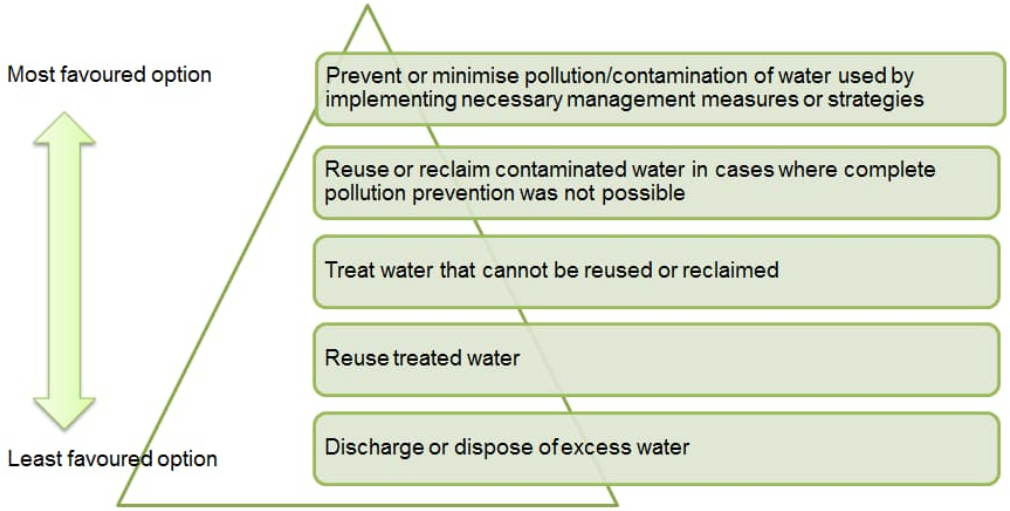


Figure 77: Water Quality Management Hierarchy

PROCESS WATER

The philosophy with respect to process water management during operational phase is to:

- Minimise the amount of process affected water produced (continually investigate emerging technologies);
- Contain all process water to ensure zero discharge of untreated process water to the environment;
- Re-use and recycle process water in the process circuit;
- Collect and contain all contaminated process water in adequately sized, lined containment facilities;
- Treat and discharge excess mine water; and
- Develop a high confidence process water balance to support water management.

STORM WATER

The philosophy for storm water management on site is in keeping with the following principles:

- To effectively separate clean and dirty water and prevent the amalgamation thereof;
- To return clean water to the natural receiving catchment;
- Contain all contaminated water for re-use in the process, treatment, or recycling;
- Ongoing monitoring and measurement of water quantity and quality to support the site wide water balance and water management plan; and

- Establish a free draining surface drainage as far as practicable during decommissioning and closure phase.

GROUNDWATER

The philosophy for groundwater management is:

- The local groundwater resource is recognised as part of the overall water resource within the region in which New Largo is located;
- Water is a scarce and valuable resource and is regarded as important and has to considered and treated as such;
- The maintenance of good housekeeping on-site to prevent any spills and leaks that may seep into the groundwater;
- Implement ongoing monitoring of groundwater quality and levels to inform the detailed geochemical impact predictions and to validate groundwater models;
- Ensure that all potential groundwater impacts are identified and managed; and
- Long term treatment of water to prevent decant and maintain fitness for use.

WASTE MANAGEMENT PHILOSOPHY

New Largo will proactively adopt the waste hierarchy according to Sections 16 and 21 of the National Environmental Management: Waste Act, 2008 (NEMWA) which stipulates that the holder of waste must, within the holder's power, take all reasonable measures to reduce, re-use, recycle and recover waste. This section provides the proposed action plan for ensuring implementation of the waste hierarchy (Figure 78).

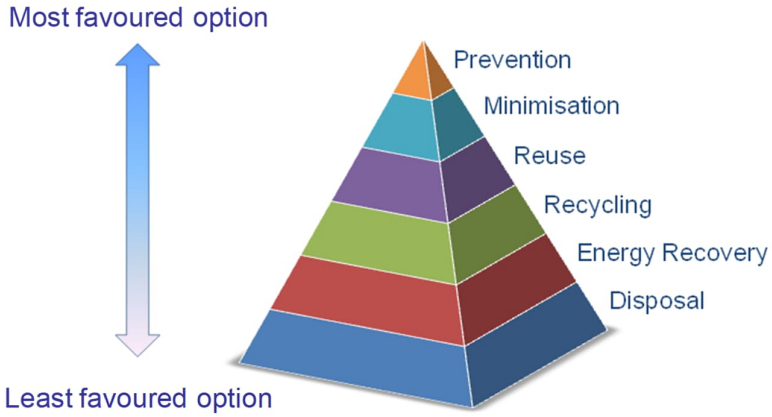


Figure 78: Waste Management Hierarchy

The philosophy for the management of the various waste streams on site include:

- Implement waste separation at source;
- Maximise recycling and reuse of waste streams;
- Dispose of waste at authorised waste disposal facilities in accordance with classification, assessment, and legal requirements;
- Implement on-going waste monitoring to inform waste management; and
- Identification and rehabilitation of contaminated land (if necessary).

6.2 STRATEGIES (PROCESS WATER, STORM WATER, GROUNDWATER, AND WASTE)

In order to give effect to the water and waste management philosophies formulated above, more specific strategies have been formulated to support the individual management actions.

PROCESS WATER STRATEGY

The strategies pertaining to process water at New Largo can be listed as follows:

- Ensure the surety of supply of process water to the operation from treated mine water;
- Investigate and implement new technologies to reduce the use of process water during production;
- Maximise the reuse and recycling of dirty water (including dirty storm water) and minimise the intake of clean water;
- Support the implementation of a water management plan by means of monitoring and measuring in order to maintain a high confidence metered site wide water balance; and
- Prevent uncontrolled discharge of contaminated process water to the receiving environment through the provision of adequate storage capacity, maintenance of related infrastructure and provision of backup pumps.

STORM WATER STRATEGY

The strategies related to the management of storm water at New Largo include the following:

- Collect and contain contaminated storm water runoff to be reused and recycled as process water;
- Maintain effluent and storm water management infrastructure in a functional state;
- Capture runoff in areas generating dirty storm water in storm water drains which reports to a dedicated pollution control dam;
- Route clean storm water runoff emanating from clean areas to the natural receiving environment;
- Implementing strategically placed sediment traps throughout the site;
- Implement monitoring, measuring, and reporting of water quantity and quality; and
- Lining of the PCD to retain the 1:50 year flood event and equip sediment traps with appropriate return pumps and appropriate spillways in the event of exceedance of the 1:50 year flood event.

GROUNDWATER STRATEGY

The strategies related the management of groundwater at New Largo include:

- Prevent the off-site migration of groundwater pollution plumes;
- Update the groundwater model on a regular basis to identify potential pollution sources;
- Maintain fitness for use of groundwater resource;
- Implement and/or maintain the integrity of dam liners to prevent impacts on groundwater resource; and
- Actively treat mine affected water at the WTP and discharge to the surface water resource in terms of water use authorisation.

WASTE STRATEGY

The strategies related the management of waste at New Largo are:

- Implement monitoring, measurement and reporting of waste generated in the operation to facilitate effective waste management;

- Disposal of coal discard and De-stoning plant reject material, in-pit below demarcated groundwater levels;
- Dispose of waste generated at the operation, based on waste stream, in accordance with current waste management guideline; and
- Investigate improved technologies to reduce waste generated by reuse, recycling and/or recovering.

6.3 PERFORMANCE OBJECTIVES/GOALS

New Largo will as far as possible, comply with legal requirements, such as standards set for the surface- and groundwater resources stipulated in a water use authorisation issued to the mine in terms of chapter 4 of the National Water Act,1998 (Act 36 of 1998) (NWA).

The mine will also strive to ensure compliance with the environmental management program (EMPr) and to assess the continued appropriateness and adequacy of the EMPr.

The specific performance objectives and principles for water and waste management during the construction, operation and closure for New Largo are described in Table 58.

Table 58: Performance objectives relevant to Pit A

Theme	Performance objective
Waste	▪ Disposal of all general and hazardous waste in accordance with legislative requirements; ▪ Waste separation at source and increased recycling and reuse of waste streams generated on site; ▪ Disposal of coal discard below demarcated final in-pit groundwater levels; ▪ Implementation of a monitoring programme to collect data to inform effective waste management; and ▪ No residual contaminated land present on the mine at closure.
Storm water	▪ Collection and containment of all contaminated runoff from the mine in adequately sized, properly designed and engineered storm water infrastructure; ▪ Reuse and recycling of contaminated storm water as process water; ▪ Zero uncontrolled discharge of contaminated runoff from the plant area, mine residue facility, stockpile areas and opencast areas and mine infrastructure to the receiving environment; ▪ Diversion and routing of clean runoff to the receiving environment; ▪ Preferential reuse of site runoff for operational use to off-set the intake of uncontaminated raw water from external sources; and ▪ Implementation of a monitoring programme to collect data to inform effective water management.
Groundwater	▪ Maintain the fitness of use of downstream water users; ▪ Disposal of discard below final in-pit water level; ▪ Prevent uncontrolled mine water decant from reporting to surface water resources; and ▪ Implementation of a monitoring programme to collect data to inform effective long term groundwater management.

Theme	Performance objective
Process water	▪ Install flow meters in all key process water circuits to informal the water balance ▪ Conveyance and containment of all process water in adequately sized, properly designed and engineered process water infrastructure; ▪ Preferential reuse and recycling of process water and contaminated storm water resulting in the prevention or reduction of the intake of fresh water into the process; ▪ Zero unauthorised discharge of process water to the receiving environment; ▪ Implementation of water conservation and water demand management; and ▪ Develop a high confidence water balance for New Largo.
Surface water	▪ Zero unauthorised discharge water to the receiving environment that does not meet the water quality requirements or water use licence conditions; and
Wetlands	▪ Implementation of the approved comprehensive and appropriate wetland rehabilitation and management programme; and ▪ Prevent adverse impacts on wetlands outside the mining area.

6.4 MEASURES TO ACHIEVE AND SUSTAIN PERFORMANCE OBJECTIVES

The measures which have been identified in order to achieve the set performance objectives for the New Largo operations are contained in the IWWMP action plan.

6.5 OPTIONS ANALYSES AND MOTIVATION FOR IMPLEMENTATION OF PREFERRED OPTION

Different options were considered in terms of wetland mitigation strategy as part of the Pit A WULA by Wetland Consulting Services in 2024 (Appendix F).

6.6 IWWMP ACTION PLAN

Based on the specialist studies, the current understanding of the mine as well as the risk assessment, the following action plan was developed.

Table 59: IWWMP Action plan for Pit A

Theme	Performance objective	Action	Implementation date	Responsible Person
Waste	Disposal of all general and hazardous waste in accordance with legislative requirements Waste separation at source and increased recycling and reuse of waste streams generated on site	Implement the Seriti waste management procedure, taking into consideration all the anticipated waste streams on site.	Ongoing once mining has commenced	Environmental Superintendent
	No residual contaminated land present on the mine at closure	Ensure that in-pit disposal of mine residue is done to minimise AMD generation (below final in-pit water level) as far as practically possible; and Conduct regular inspections to ensure disposal of discard does take place in accordance with deposition plan.	Ongoing once mining has commenced	Operations Manager/ Environmental Superintendent
		Update the Rehabilitation Strategy and Implementation Plan (RSIP) as required according to WUL to look at short- and medium-term rehabilitation measures required on site.	Annually	Environmental Superintendent
	In-pit disposal of mineral residue material in accordance with Best Practices and WUL	Deposit discard in the pit below final post mining water level.	Once mining has started and progressed sufficiently	Operations Manager/ Environmental Superintendent
Surface/Storm water	Collection and containment of all contaminated runoff from the mine in adequately sized, properly designed and engineered storm water infrastructure Zero uncontrolled discharge of contaminated runoff from the plant area, stockpile areas, opencast areas, and mine infrastructure to the receiving environment	Implement adequate storm water measures (temporary/ permanent) prior and during construction to prevent the amalgamation of clean and dirty water; and Construct temporary berms around the construction site, where possible.	Prior to construction	Operations Manager/ Environmental Superintendent
		Progressive development and implementation of a site wide storm water management plan.	Ongoing	Engineering Manager/ Operations Manager
	Implementation of a monitoring programme to collect data to inform effective long term surface water management.	Implement the site-specific monitoring programme	Ongoing	Environmental Superintendent
Wetlands	Prevent adverse impacts on wetlands outside the mining area Effective wetland and pan management.	Implement of wetland management and rehabilitation strategy to compensate for functional and ecosystem services loss associated with the loss of wetlands onsite. Implement wetland offsets as per the accepted offset plan, in consultation with appropriate specialists. Audit and report on the progress of implementation of the wetland offset plan. Review and update wetland offset plan.	Commence once WUL is issued	Environmental Superintendent
		Implement a comprehensive biomonitoring programme, including sampling points, frequency, and variables.	Ongoing	Environmental Superintendent
		Conduct biomonitoring and submit reports to the Department.	Biannually	Environmental Superintendent
Groundwater	Minimise the impact of contaminated groundwater on the fitness of use of downstream water users Minimise the generation of ARD through the implementation of best practice with in-pit discard disposal	Compile hydrocensus update to identify external groundwater users. i Identify all groundwater users that can be affected by the cone of dewatering (500m around all mining activities). Include these boreholes in the active monitoring system. Proven decrease in groundwater quantities will be supplemented by an external source. Regular update of a site wide groundwater model is required every 5 years or if the mine plan changes.	Five years after issuance of WUL	Environmental Superintendent/ Operations Manager

Theme	Performance objective	Action	Implementation date	Responsible Person
		Develop an in-pit coal discard/deposition plan Implement level beacons in the pit to ensure the discard is placed at a safe level below final water table as recommended in the groundwater report; and Conduct regular inspections of in-pit disposal practices on the mine to ensure that it is conducted in terms of the recommended levels for deposition.	Ongoing once mining has commenced	Environmental Superintendent/ Operations Manager
	Prevent mine water decant from reporting to surface water resources	Continue monitoring of groundwater qualities and levels for early detection of pollution plume migrations.	On-going	Environmental Superintendent
	Minimise the impact of contaminated groundwater on the fitness of use of downstream water users;	Deposition of discard below final in-pit water level Regular sampling, geochemical characterisation and waste assessment of coal discard material	Every five years after issuance of WUL	Environmental Superintendent
		Develop and implement an ARD monitoring programme to collect and characterise additional carbonaceous and non-carbonaceous material (representing the pillars, roof, and floor material for the underground mine) and discard (coarse and fine) material samples is recommended.	Two years after issuance of WUL and then ongoing	Environmental Superintendent
	Implementation of a monitoring programme to collect data to inform effective long term groundwater management	Compile a standalone monitoring programme which provides for compliance monitoring and impact monitoring and provides for the progressive nature of mining.	Ongoing	Environmental Superintendent
	Long term treatment and discharge of mine water	Validate groundwater model to determine if predicted groundwater make is aligned actual groundwater make and quality predictions; Re-assess capacity of treatment plant for long term groundwater management; and Understand and provide for changes in pit water balance, to accommodate potential additional water from or to neighbouring operations. Monitor groundwater levels in all pits and surrounding external user's boreholes.	Every 5 years	Environmental Superintendent/ Operations Manager/ Engineering Manager
Process water	Develop a high confidence water balance for New Largo	Install flow recording devices required in key circuits to support a high confidence water balance and water management; and Develop and implementation of a system capturing the readings from the flow meters.	During construction	Engineering Manager / Operations Manager
	Conveyance and containment of all process water in adequately sized properly designed and engineered process water infrastructure	Update water balance annually and submit it to the Department.	Annually	Environmental Superintendent/ Operations Manager
		All dams which exceed 50Ml and wall heights exceed 5m, requires the appointment of an Approved Professional registered dam engineer. Dams will also have to be registered with the Dam Safety Officer of the Department of Water and Sanitation.	As required	
	Reuse and recycling of process water and contaminated storm water	Use site wide water balance to identify areas of increase recycling and reuse to improve water use efficiency. Treatment of pit water for further use or discharge to the river systems to maintain the ecological flow required at the Ecological Water Requirements (EWR4) site downstream of the New Largo MRA. Initiate the development of the initial WTP to treat mine affected water. Pump and treat all excess water at the WTP. Development a plan to ensure discharge of treated water at relevant points to the Saalklapspruit-Saalboomspruit and Wilge River. Ongoing monitoring to ensure negative trends are picked up timeously for further intervention to be implemented and to assess measures implemented.	Annually	Environmental Superintendent
	Zero uncontrolled discharge of untreated process water to the receiving environment	Regular maintenance and inspections of wastewater containment infrastructure, with specific focus on adequate housekeeping.	Ongoing after construction	Environmental Superintendent

6.7 CONTROL AND MONITORING

6.7.1 MONITORING OF CHANGE IN BASELINE (ENVIRONMENT) INFORMATION (SURFACE WATER, GROUNDWATER, AND BIOMONITORING)

Reports will be submitted to various government departments and formal institutions as requested by management objectives, conformance targets and applicable legislation and other legal requirements. All results will be made electronically available to DWS. New Largo has an approved WUL with monitoring requirements have been outlined in Section 5.13 to 5.17. It is recommended that reference be made to the standalone monitoring programme in the authorised WUL. Should this application be successful, as also set out in the WUL Amendment application that was submitted to the Department.

6.7.2 AUDIT AND REPORT ON PERFORMANCE OF MEASURES

New Largo adheres to the performance requirements as stipulated in the WUL's or alternatively as stipulated in the relevant environmental authorisations received. New Largo will undertake internal and external legal compliance audits and water use licence audits and submit these audits to the applicable authority in accordance with the requirements in the respective authorisations.

6.7.3 AUDIT AND REPORT ON RELEVANCE OF IWWMP ACTION PLAN

The IWWMP action plan will be reviewed and updated annually or alternatively as required in terms of the water use licence.

7 CONCLUSION

7.1 REGULATORY STATUS OF ACTIVITY

All the other water uses applicable to the mine have been authorised in the existing WUL's. It is requested that the proposed water uses, associated with the mining at the Pit A be authorised.

7.2 STATEMENT ON WATER USES REQUIRING AUTHORISATION, DISPENSING WITH THE REQUIREMENT FOR A LICENCE AND POSSIBLE EXEMPTION FROM REGULATIONS

The new water uses that require authorisation are tabulated in section 3.5 of this report.

GNR. 704 EXEMPTION

Government Notice 704 was promulgated by the Minister on 4 June 1999 in Government Gazette vol. 408, No. 20119. The GN 704 Regulations were published in terms of Section 26(1), (b), (g) and (i) of the NWA and pertain specifically to water uses for mining and related activities.

In terms of regulation 3 of GNR. 704 the Minister may in writing authorise an exemption from the requirements of regulations 4, 5, 6, 7, 8, 10 or 11 on his or her own initiative or on application, subject to such conditions as the Minister may determine

In terms of the Water Quality Management, Operational Guideline M6.1: Guideline document for the implementation of Regulations on the use of water for mining and related activities aimed at the protection of water resources, an exemption from any requirements of the GNR. 704 regulation

imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations.

It further states that the following clause needs to be incorporated into the water use licence: In terms of the conditions of this licence, the Licence Holder is exempted from the clause of the regulations on use of water for mining and related activities aimed at the protection of water resources (GNR. 704).

WUL: 04/B20G/ACFGIJ/2538 authorises in-pit disposal of discard, and this licence has higher authority that GNR. 704.

The DWS required the mine to apply for authorisation of backfill with overburden. A total of ten (10) samples were analysed as per the laboratory programme to classify and assess the waste streams. On waste assessment (GN R. 635 2013) all the samples did not meet the full definition of Type 3 waste, as although one or more constituents exceeded the first total concentration threshold (TC > TCT0), no constituents exceeded the first leachable concentration threshold (LC < LCT0). The overburden samples are therefore conservatively assessed as Type 3 waste per regulation 7(6) of (GN R. 635 2013) but present a leachable constituent risk similar to Type 4 waste.

DWS is requested to exempt New Largo from the requirements of Schedule 4a, 4b,4c, 7a as outlined in the motivation in Table 13: GN 704 Assessment for New Largo.

7.3 MOTIVATION IN TERMS OF SECTION 27(1) OF THE NWA

The motivation in terms of Section 27 of the NWA is listed in the table below.

Table 60: Section 27 motivation

Section	Content	Description
27(1)(a)	Existing lawful water uses	New Largo has the following water use licences: WUL: 04/B20G/ACFGIJ/2538, File: 16/2/7/B200/C528 dated 31 March 2023 (Integrated WUL); WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C528 dated 22 August 2014 (R545 Provincial Road Re-alignment); and WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/K524 dated 22 September 2013 (Conveyor).
	New uses	The new water uses that require authorisation are tabulated in section 3.5 of this report.
27(1)(b)	Need to redress the results of past racial and gender discrimination	In line with the intentions of the Employment Equity Act, New Largo is committed to the strategic objectives to include individuals from historically disadvantaged South African (HDSA) groups to be represented in all positions of skill and responsibility at all levels. New Largo accepts that this is only possible through pro-active interventions like culture equity and building on the strengths that diversity brings forward. The New Largo employment equity plans aim at the following: ▪ To promote diversity within the New Largo Complex in order to reflect a truly South African company that is world class;

Section	Content	Description
		▪ To eliminate unfair discrimination; ▪ To ensure New Largo is an equal opportunities employer; ▪ To establish and exceed the required degree of representation of designated groups in all occupations; ▪ To integrate the New Largo Complex's employment equity initiatives with the Skills Development Act, as far practically possible; and ▪ To increase the number of women as well as HDSA's in management positions, over time and in line with the targets.
27(1) (c)	Efficient and beneficial use of water in public interest	New Largo is committed to best practice in terms of water use and will implement a system for collecting and containing all the polluted storm water runoff arising on site and re-use it in its processes. No abstraction of clean water from the catchment will take place due to the preferential reuse of dirty mine water. New Largo will adhere to a zero uncontrolled discharge policy and will provide for the treatment of mine water when it becomes necessary. New Largo will contribute to the management and protection of the water resources through the waste discharge charge system and other catchment levies.
27(1)(d)(i)	Socio-economic impact of the water uses if authorised	Authorisation of the water uses will allow New Largo to proceed with its planned activities, which will mean considerable economic benefits, both locally and within the greater area of the province and country. The development of Pt A will provide the local communities with direct jobs on the site. Furthermore, income generated by the jobs created at New Largo will result in disposable income of households in the local area, which will further benefit the local economy. Certain operational expenditures at New Largo will benefit the local economy, as New Largo supports various industries through its supply chain processes by creating wealth, jobs, and taxable income within the larger district municipality. The local community of Ogies and eMalahleni will benefit from employees' compensation and spending. New Largo will also spend money on businesses and contractors in the Local and District Municipality, which will in turn spend money on other businesses and contractors. Spending by the employees and the industry's spending on businesses and contractors will generate a strong economic multiplier effect in the community. The New Largo operation is intended to be the base supplier of coal throughout the life of Kusile, providing an estimated 70% of the required coal annually. Eskom maintains that the proposed New Largo expansion is required to: ▪ Ensure a secure and long-term supply of coal to Kusile;

Section	Content	Description
		▪ Enable Kusile to provide power to the national electricity grid on schedule; ▪ Address power shortages in the national grids since there are no short to medium term options to replace Kusile's energy generation capacity at a national level; ▪ Avoid negative impacts of energy shortages on national economic growth and development; and ▪ Achieve the objectives and targets set out in IRP2010 and thus the National Government's national electricity generation strategy.
27(1)(d)(ii)	Socio-economic impact of failure to authorise water use or uses	Failure to authorise the water uses will mean the local community will not have the opportunity to benefit from job opportunities that would have been provided and therefore the area will not receive the considerable economic benefits that the operation would have brought, both locally and within the greater area of the province and country. New Largo will not be able to provide a sustainable long term coal supply to the Kusile Power station. Coal will then be required to be transported by road trucks to supply Eskom, as great cost to the condition and safety of the roads, as well as significant increases in greenhouse gas emissions.
27(1)(e)	Catchment Management Strategy applicable to the relevant water resource	DWS has a mandate to manage water resources in a sustainable manner, however, development and socio-economic growth also needs to be stimulated, and this will have an impact on the environment. The main objective is therefore to ensure a sound and reasonable balance between development impacts and the protection of the resource. There is currently no Catchment Management Strategy (CMS), however many studies have been undertaken and legislation is in place and needs to be implemented. The aspects described below will ultimately inform the CMS. The Reserve, classification of the resources and Resource Quality Objectives have been promulgated for the Upper Olifants Water Management Area (WMA) in which the New Largo mine is located; The Wilge River catchment has been classified as a Class II River and the Saalklapspruit as a Class III river, in Government Gazette No 39943, 22 April 2016, Notice No 466, National Water Act, 1998 (Act No.36 of 1998) Classes and Resource Quality Objectives of Water Resources for the Olifants Catchment; Resource Quality Objectives (RQO) have been gazetted for the Wilge River catchment. Site EWR 4 is the site at which RQOs (quantity and quality) have been set; An integrated Water Quality Management Plan was developed for the entire Olifants WMA, with a sub-catchment Plan for the Upper Olifants Catchment (Report No: P WMA 04/B50/00/8916/8). As part of this management units were described: the Wilge River falls into MU22 and the Saalklapspruit into MU20 and 21;

Section	Content	Description
		As part of this, Water Quality Planning Limits (WQPL) were set to support the implementation of the RQOs. The setting of WQPLs ensures water quality planning at a finer scale and ultimately assists in achieving the downstream RQOs; and A Reconciliation Strategy is in place for the Upper Olifants catchment.
27(1)(f)	Likely effect of the water use to be authorised on the water resource and other water users (quality and quantity)	Only treated water, that aligns with the RQO or specified WUL limits will be discharged into the receiving environment. New Largo will implement the revised wetland offset strategy, which now includes rehabilitation and protection of pan wetland habitats to offset functional and ecosystem conservation service losses caused by mining. To mitigate these losses, the strategy aims for a 'No Net Loss' or even a 'Net Gain' in functional outcomes. Through rehabilitation, conservation, and protection of targeted wetlands, the offset strategy anticipates achieving: ▪ Net Gain of 8.07 ha-eq for Water Resources and Ecosystem Services ▪ Net Gain of 74.22 ha-eq for Ecosystem Conservation The offset for the Honingkrantz Pan is calculated at 45.78 ha-eq (Water Resources and Ecosystem Services) and 132.60 ha-eq (Ecosystem Conservation). Category 3 and 4 wetland offsets are expected to compensate for these losses with a combined contribution of 37.95 ha-eq for Water Resources and 418.93 ha-eq for Ecosystem Conservation.
27(1)(g)	Likely effect of the water use on the class and resource quality objectives	All the water and waste management infrastructure for the mine has been authorised in these licences. All excess water will be pumped to sufficiently large PCD(s) to handle the total water make from the opencast workings. From PCD(s), dirty water is pumped to the proposed DMS plant, road dust suppression and a proposed water treatment plant (in case of excess) in the same order of priority. According to the communicated New Largo Colliery's post-closure water management strategy, all opencast pits will be backfilled entirely and rehabilitated. Expected treatment rates at Main Mine were simulated based on proposed treatment of 4 Ml/day for the first five years and 6 Ml/day thereafter. Mine water treatment will be implemented and only treated water will be released in line with the required water quality limits, which will have a positive impact in terms of water quality. New Largo will implement a water monitoring programme to measure surface water quality upstream and downstream of the

Section	Content	Description
		site and groundwater to demonstrate that the water quality is not detrimentally impacted on by the mining activities.
27(1)(h)	Investments already made and to be made by the water users in respect of the water use	Millions of Rands have already been invested by New Largo to undertake the necessary specialist studies, Pre-feasibility Study, Bankable Feasibility Study, and the Water Use Licence Application.
27(1)(i)	Strategic importance of the water use to be authorised	Electricity supply is a critical issue in South Africa and the proposed mining is expected to improve the stability of the service. From a greater societal perspective, the mine will therefore have a positive impact. From an industrial perspective, the water use is of national strategic importance contributing to the GDP of the country. It will allow the industry to continue in the area with associated continued economic growth. It will also provide resources for assisting in alleviating the country's electricity crisis and this contribute to national economic growth. The New Largo Coal is of National interest as there is a synergy between New Largo and Kusile Power Station as the power station has 50-year life and the mine has a 50-year reserve. The site selection for Kusile was governed by the New Largo coal reserve and it was envisioned from the start that New Largo will contribute the majority of coal to Kusile. Supply of coal directly from New Largo (fed by conveyor belt) to Kusile Power station will prevent the need to truck in coal, which would have detrimental consequences to the state and safety of the roads in the area.
27(1)(j)	Quality and quantity of the water in the water resource which may be required for the Reserve and for meeting international obligations	Section 16 of the National Water Act requires that the Minister of DWS determine the Reserve for the WMA before any license can be issued. The Reserve, classification of the resources and Resource Quality Objectives have been promulgated for the Upper Olifants Water Management Area (WMA) in which the New Largo mine is located. The Wilge River catchment has been classified as a Class II River and the Saalklapspruit as a Class III river, in Government Gazette No 39943, 22 April 2016, Notice No 466, National Water Act, 1998 (Act No.36 of 1998) Classes and Resource Quality Objectives of Water Resources for the Olifants Catchment. Resource Quality Objectives (RQO) have been gazetted for the Wilge River catchment. Site EWR 4 is the site at which RQOs (quantity and quality) have been set.
27(1)(k)	The probable duration of any undertaking for which a water use is to be authorised	The operational life of the New Largo mine was estimated to be until 2055 (50 years)

8 REFERENCES

Aquatico Scientific (Pty) Ltd., 2018. New Largo Coal (Pty) Ltd Pit H Hydrocensus Report.

CSIR. 2009. Leachate studies for acid mine drainage and prediction from coal samples - a kinetic test investigation. Report No. 1. 09 July 2009.

Delta BEC. 2019. Bankable Feasibility Study - New Largo Coal Main Mine – Engineering and Infrastructure Report. Report reference: F18111929. October 2019.

Dela BEC. 2020. New Largo Pit H – Water Use Licence Application: Technical Design Document for Pit H.

Delta H. 2014. Wetland Consulting Services (Pty.) Ltd. Honingkrantz – Numerical Groundwater Flow Model. Project Number: Delh.2012.020-1.

Delta H. 2019. New Largo Colliery Groundwater Model Updates.

Department of Water Affairs. 2013. Classification of Significant Water Resources in the Olifants Water Management Area (WMA 4): Management Classes of the Olifants WMA. Report No: RDM/WMA04/00/CON/CLA/0213.

Department of Water and Sanitation (DWS). 2016. Development of an Integrated Water Quality Management Plan for the Olifants River System: Upper Olifants Sub-catchment Plan. Report No: P WMA 04/B50/00/8916/8.

Department of Water and Sanitation (DWS). 2017. Development of an Integrated Water Quality Management Plan for the Olifants River System: Overarching IWQMP for the Olifants River System. Study Report No. 13. Report No: P WMA 04/B50/00/8916/14.

Department of Water and Sanitation. 2015. Olifants River Water Supply System Reconciliation Strategy. Report No. P WMA 04/B50/00/8715.

Department of Water and Sanitation. 2016. Determination, Review, and Implementation of the Reserve in the Olifants/ Letaba System: Ecological Specifications Report. Report No: RDM/WMA02/00/CON/0516.

Golder Associates Africa (Pty) Ltd. 2011. Pre-Feasibility Study Mine Water Management New Largo Project. Report No. 13054-10360-1.

Golder Associates Africa (Pty) Ltd. 2019a. Bankable Feasibility Study - New Largo Coal Main Mine – Site and Infrastructure Chapter. Report reference: 18111929/D1. October 2019. Midrand.

Golder Associates Africa (Pty) Ltd. 2019b. Bankable Feasibility Study - New Largo Coal Main Mine – Hydrology and Hydrogeology Study. Report reference: 18111929-328938-3-D01. October 2019. Midrand.

Golder Associates Africa (Pty) Ltd. 2019c. Geochemistry Specialist Report - Bankable Feasibility Study. Report reference: 18111929-329260-1. November 2019. Midrand.

Golder Associates Africa (Pty) Ltd. 2020a. Pit H Mine Water Balance. Report reference: 19119420-333592-4-Rev2. October 2020. Midrand.

Golder Associates Africa (Pty) Ltd. 2020b. Bankable Feasibility Study - New Largo Coal Main Mine – Environmental Chapter: Report refence: 18111292. March 2020. Pretoria.

Golder Associates Africa (Pty) Ltd. 2020c. New Largo Mine Catchment Management Framework. Report reference: 18111929A-333747-3, August 2020. Midrand.

Golder Associates Africa (Pty) Ltd. 2020d. Geochemistry Assessment for EMP Amendment and Pit H Water Use Licence Application. Report reference: 19119420-336564-6. Dated: October 2020. Midrand.

Golder Associates Africa (Pty) Ltd. 2020e. New Largo Coal Project – Updated Surface Water Impact Assessment. Report reference: 19119420-336973-9. Dated: November 2020. Midrand.

Golder Associates Africa (Pty) Ltd. 2020f. New Largo Coal Mine: EMPr Amendment – Updated Groundwater Impact Assessment. Report reference: 19119420-337102-14. Dated: November 2020. Midrand.

Golder Associates Africa (Pty) Ltd. Golder, 2020g. New Largo Water Balance for the Bankable Feasibility Study. Report number 18111929-329509-6.

Golder Associates Africa (Pty) Ltd. Golder 2021a. New Largo Coal Project: EMPr Amendment - Updated Surface Water Baseline and impact Assessment for Pit F. Report reference: 21465149-347368-11. Dated: October 2021. Midrand.

Golder Associates Africa (Pty) Ltd. Golder 2021b. New Largo Coal Project: EMPr Amendment - Updated Wetland Impact Assessment for Pit F. Report reference: 21465149-348392_16. Dated: November 2021. Midrand.

Golder Associates Africa (Pty) Ltd. Golder 2021c. New Largo Coal Project: EMPr Amendment - Updated Groundwater impact Assessment for Pit F. Report reference: 21465149-347361-4. Dated: November 2021. Midrand.

Golder Associates Africa (Pty) Ltd. Golder 2021d. New Largo Coal Project: EMPr Amendment - Updated Geochemical impact Assessment for Pit F. Report reference: 21465149-347360-3. Dated: November 2021. Midrand.

Hodgson F. 2010. Mine –Water balance for New Largo Colliery Report no 2010/19/FDIH. 10 November 2010.

JMA. 2011. Technical Memo. Expected water qualities based on additional ABA samples and the latest mining schedule. February 2011.

JMA. 2012. Groundwater specialist study report for New Largo -version 02/2012. Report no. JMA/10343/2011, July 2012.

Junkoon And Associates (Pty) Ltd. 2022. Pit F Mining Area Report SWMP Preliminary Design Report. Project number 0227-000005. February 2022

Appendix A

NEW LARGO WATER USE LICENSES

Appendix B

WASTE ASSESSMENT

Appendix C

STORMWATER MANAGEMENT PLAN

Appendix D

WATER QUALITY MONITORING REPORT

Appendix E

WATER QUALITY MONITORING PLAN

Appendix F

WETLAND OFFSET STRATEGY

Appendix G

HYDROGEOLOGICAL REPORT

Appendix H

WATER AND SALT BALANCE REPORT

Appendix I

GEOCHEMISTRY REPORT

Appendix J

NEW LARGO PAN SOIL REPORT

Appendix K

DOCUMENT LIMITATIONS

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