GDARD Reference Number: GAUT 002/19-20/E0247

Richbay Chemicals (Pty) Ltd

PROPOSED VOSLOORUS CHEMICAL FILLING PLANT

Environmental Management Programme

Richbay Chemicals (Pty) Ltd

PROPOSED VOSLOORUS CHEMICAL FILLING PLANT

Environmental Management Programme

TYPE OF DOCUMENT (VERSION) INTERNAL

PROJECT NO. 41101911

DATE: SEPTEMBER 2023

Richbay Chemicals (Pty) Ltd

PROPOSED VOSLOORUS CHEMICAL FILLING PLANT

Environmental Management Programme

WSP

1st Floor, Pharos House
70 Buckingham Terrace
Westville, Durban, 3629
South Africa

Phone: +27 31 240 8800

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft EMPr			
Date	September 2023			
Prepared by	Patricia Nathaniel			
Signature	Nathaniel, Patricia (ZAPN05354) Digitally signed by Nathaniel, Patricia (ZAPN05354) DN: cn=Nathaniel, Patricia (ZAPN05354), ou=Active, email=Patricia.Nathaniel@wsp.com Date: 2023.09.14 13:13:13 +02'00'			
Checked by	Anri Scheepers			
Signature	Digitally signed by Anri.Scheepers@wsp.com DN: cn=Anri.Scheepers@wsp.com Date: 2023.09.14 13:11:26 +02'00'			
Authorised by	Patricia Nathaniel			
Signature	Nathaniel, Patricia (ZAPN05354) Digitally signed by Nathaniel, Patricia (ZAPN05354) DN: cn=Nathaniel, Patricia (ZAPN05354), ou=Active, email=Patricia.Nathaniel@wsp.com Date: 2023.09.14 13:13:49 +02'00'			
Project number	41101911			
Report number	01			
File reference	W:\000 NEW Projects\41101911 - Richbay Vosloo Rus Filling Plant\42 ES\2-REPORTS\EMPr			

CONTENTS

TABLES

FIGURES

APPENDICES

APPENDIX A

EAP CV

APPENDIX B

EAP DECLARATION OF INTEREST AND OATH UNDERTAKING

GLOSSARY

Abbreviation	Definition
AEL	Atmospheric Emissions License
AIA	Approved Inspection Authority
AIS	Alien and Invasive Species
AQI	Air Quality Impact Assessment
BA	Basic Assessment
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CRR	Comments and Response Report
DFFE	Department of Forestry, Environment and Fisheries
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMM	Ekurhuleni Metropolitan Municipality
EMPr	Environmental Management Programme
FSR	Final Scoping Report
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development
GHS	Globally Harmonized System
H_2SO_4	Sulphuric Acid
HCL	Hydrochloric Acid
HIA	Heritage Impact Assessment

Abbreviation	Definition
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
MES	Minimum Emission Standards
MHI	Major Hazardous Installation
NEMA	National Environmental Management Act
NEM: AQA	National Environmental Management: Air Quality Act
NEMBA	National Environmental Management: Biodiversity Act
NEM: WA	National Environmental Management: Waste Act
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act
NWA	National Water Act
PIA	Palaeontological Impact Assessment
QRA	Quantitative Risk Assessment
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
ToR	Terms of Reference
WMA	Water Management Area
WML	Waste Management Licence
WUL	Water Use License

1 INTRODUCTION

WSP Group Africa (Pty) Ltd (WSP) was appointed by Richbay Chemicals (Pty) Ltd (Richbay), to undertake a Scoping and Environmental Impact Reporting (S&EIR) process in accordance with the National Environmental Management Act (No. 107 of 1998) (NEMA), Environmental Impact Assessment Regulations, 2014 as amended (EIA Regulations) for a proposed Filling Plant (Proposed Project) in Vosloorus, south-east of Johannesburg, Gauteng Province (**Figure 1-1**)

1.1 BACKGROUND

Richbay Chemicals is a chemical manufacturer and international distributor of various speciality cleaning, maintenance, and water treatment chemical products, and is a major exporter of hydrochloric acid (HCl) and sulphuric acid (H_2SO_4) in packed form. Richbay Chemicals currently undertakes dangerous goods storage (below 80m^3) at the site in Vosloorus, Gauteng, however they are proposing to increase the storage capacity and to install a Filling Plant, as such, Richbay has initiated the Environmental Authorisation (EA) process required for the proposed Vosloorus Filling Plant.

According to the accepted Scoping Report (SR) Richbay Chemicals intended to undertake the following:

- Phase 1 for the construction of a Filling Plant;
- Phase 2 for the construction of an Acid Regeneration Plant; and
- Phase 3 for construction of a Solvent Filling Plant.

However, Richbay now proposes to only construct and operate Phase 1 and Phase 3 of the initial proposal, therefore this EIAR considers Phase 2 in addition to Phase 1 and 3 as an alternative.

The majority (approximately 95%) of the chemicals that will be stored are NSF60 chemicals which is used in the treatment of drinking water.

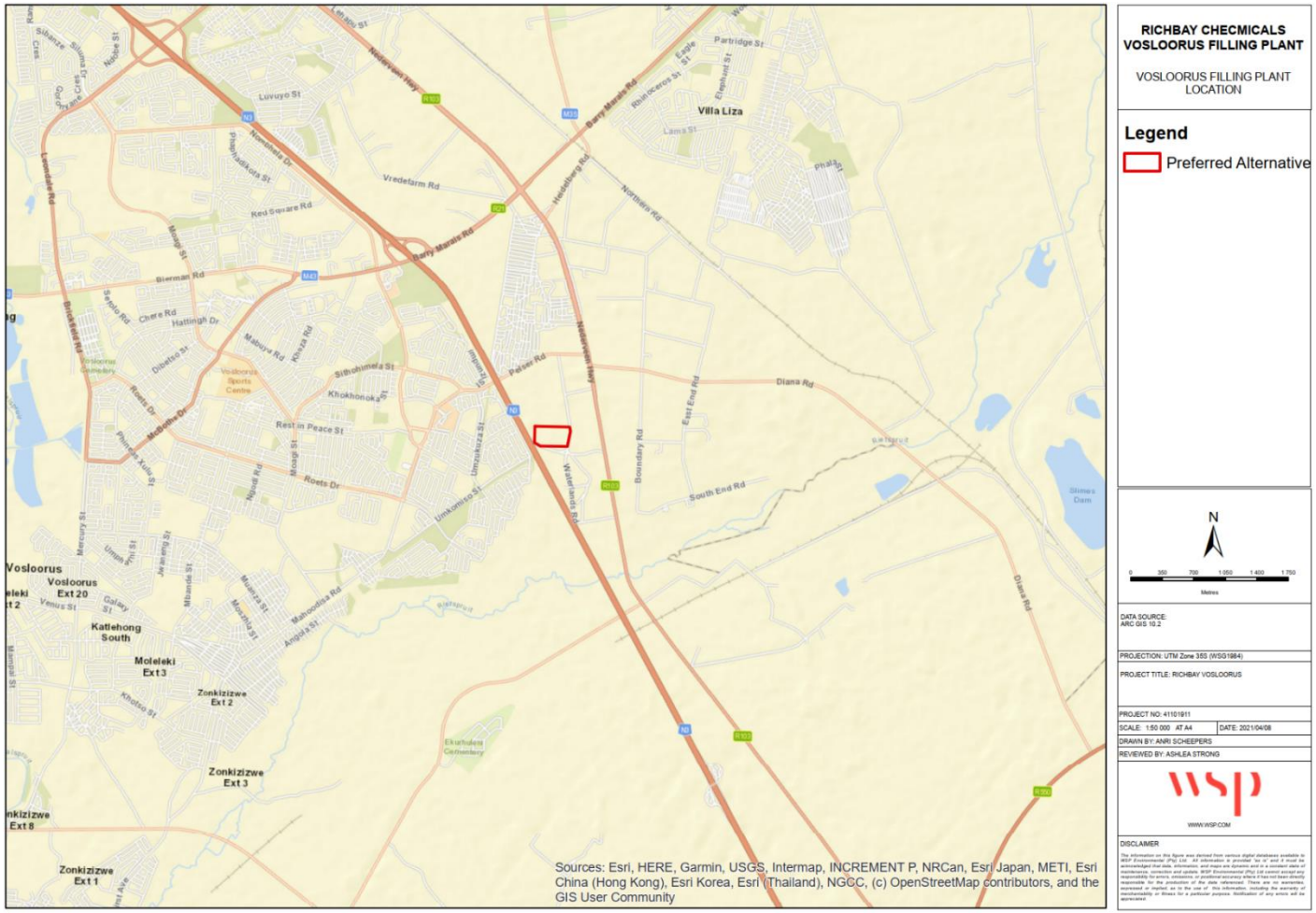

Figure 1-1 – Locality map of the Proposed Project

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Independent Environmental Assessment Practitioner (EAP) to compile the Environmental Mabagemrnet Programme (EMPr) for the Proposed Project. The Curriculum Vitae (CV) and qualifications of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B**. **Table 1-1** details the relevant contact details of the EAP.

Table 1-1 – Details of the EAP

EAP:	**WSP Group Africa (Pty) Ltd**
Contact Person:	Patricia Nathaniel
Physical Address:	1st Floor, Pharos House, 70 Buckingham Terrace, Westville 3629 South Africa
Postal Address:	As above
Telephone:	+27 11 361 1398
Fax:	N/A
Email:	Patricia.nathaniel@wsp.co.za
EAP Qualifications:	BSc (Hons) Geography and Environmental Management
EAPASA Registration Number:	EAPASA (2020/1120)

1.3 PURPOSE OF THE EMPR

An EMPr is defined as "*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced*."

This EMPr has been compiled in accordance with Appendix 4 of the EIA Regulations, in compliance with section 24N of the NEMA, with the purpose of ensuring that negative impacts are reduced, and positive effects are enhanced through a process of continual improvement during the construction, operation and decommissioning phase of the Proposed Project.

To facilitate compliance to the EMPr by appointed contractors and sub-contractors, it is required that all onsite personnel are aware of the requirements of the EMPr as well as the prescribed penalties should a non-conformance be identified during the construction, operation and decommissioning activities.

Further to the above, appointed contractors and sub-contractors will also be required to comply with all relevant legislation and standards.

A hard copy of the EMPr must always be in the site office and made available to officials on request.

1.3.1 EMPR OBJECTIVES

The EMPr has the following objectives:

- Identify mitigation measures and environmental specifications which are required to be implemented for the planning, construction, operation, rehabilitation and decommissioning phases of the Project in order to manage and minimise the extent of potential environmental impacts associated with the facility;
- Ensure that all the phases of the proposed Project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced;
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities;
- Create management structures that address the concerns and complaints of interested and affected parties (I&APs) with regards to the proposed project;
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation; Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Train onsite personnel with regard to their environmental obligations; and
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the BA process.

1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, the project proponent must comply with all relevant legislation and standards and make all personnel aware of the requirements of the EMPr, as well as the prescribed penalties should a non-conformance be identified during the different phases of the Proposed Project.

It is recommended that environmental objectives (as outlined in this document) be emphasised as minimum requirements. Objectives include:

- Encourage good management practices through planning and commitment to environmental issues; and provide rational and practical environmental guidelines to:
  - Minimise fugitive emissions;
  - Minimise impact of added traffic into the area;
  - Ensure surface and groundwater resource protection;
  - Prevent or minimise all forms of pollution;
  - Promote sustainable use of resources;
  - Adopt the best practical means available to prevent or minimise adverse environmental impacts;
  - Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment; and
  - Promote the reduction, reuse, recycling and recovery of waste.
- Describe all monitoring procedures required to identify impacts on the environment;
- Define how the management of the environment is reported and performance evaluated; and

- Train onsite personnel on their environmental obligations.

1.4 STRUCTURE OF THE EMPR

For the purposes of demonstrating best practice, **Table 1-2** cross-references the sections within the EMPr with the requirements as per Appendix 4 of the EIA Regulations.

Table 1-2 – Legislation Requirements as detailed in Appendix 4 of the EIA Regulations

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(a)	details of-	
	(i) the EAP who prepared the EMPr; and	**Section 1.2**
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	**Section 1.2** **Appendix A**
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	**Section 3**
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	**Section 3**
(d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	**Section 3.2 and Section 6**
	(i) planning and design;	
	(ii) pre-construction activities;	
	(iii) construction activities;	
	(iv) rehabilitation of the environment after construction and where applicable post closure; and	
	(v) where relevant, operation activities;	
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -	**Section 6**
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
	(ii) comply with any prescribed environmental management standards or practices;	

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	
	(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 5**
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 5**
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	**Section 5 / Section 6**
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	**Section 6**
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	**Section 5**
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	**Section 5 / Section 6**
(m)	an environmental awareness plan describing the manner in which-	**Section 5.2**
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n)	any specific information that may be required by the competent authority	N/A

2 PROJECT DESCRIPTION

2.1 LOCATION OF THE PROPOSED PROJECT

The site is located approximately 26 km Southeast of Johannesburg, between the N3 and the R103 roads, and can be accessed using the Waterlands Road that connects to the R103. It is on Portion 86 of Farm Vlakplaats 138/IR, Vosloorus, Gauteng Province.

The site is surrounded by other industrial holdings including:

- A truck and heavy equipment business adjacent to the site; and
- A corrosion coating (painting, lining, coating etc.) business opposite the site.

Other industrial holdings around the area include scrap yards and salvage yards.

An open grassland is located south of the site, and the township of Vosloorus is located about 150m west of the site, across the N3 highway.

Table 2-1 below indicates the cadastral information of the site and **Table 2-2** includes the co-ordinates of the site.

Table 2-1 –Cadastral Information of the Site

Details required as per GNR 326 ANNEX 1 (3)	DETAIL
21 Digit Surveyor General Code of each Cadastral Land Parcel	T 0IR 0000 00000138 00086
Physical Address and Farm Name	Portion 86 of Farm Vlakplaats 138/IR
Land use Zoning	Industrial
Municipality	Ekurhuleni Metropolitan Municipality

Table 2-2 – Coordinate Points of the Cadastral Land Parcel

Point	Latitude	Longitude
		
Corner 1	26°21.460'S	28°14.046'E
Corner 2	26°21.456'S	28°14.286'E
Corner 3	26°21.579'S	28°14.277'E
Corner 4	26°21.580'S	28°14.057'E
Corner 5	26°21'33.42"S	28°14'3.33"E

Point	Latitude	Longitude
Centre Point	26°21.517'S	28°14.170'E

2.2 PROPOSED PROJECT COMPONENTS AND PROCESSES

Richbay proposes to establish a Filling Plant in phases. Initially, the plant was to be commissioned in three stages during which the following operational activities will be undertaken, however Richbay proposes to only commission Phase 1 and Phase 3, the 2-phased development is therefore the preferred technology option whereas the 3 phased development inclusive of Phase 2, is the alternative.

2.2.1 PHASE 1: FILLING PLANT

Phase 1 of the development is the construction of the Filling Plant. No manufacturing will be undertaken during this phase. All chemicals will arrive with road tanker and offloaded into bulk storage tanks or medium bulk storage tanks.

At the Filling Plant, various chemicals will be decanted from bulk tankers to medium and small sized packages. The packed products will be transferred to the warehouse in preparation for distribution to customers. Palletizing strapping and partial dilutions might be required. Chemicals to be decanted in the Filling Plant are detailed in **Table 2-3.**

It is estimated that at full operational capacity, the Filling Plant will have a maximum of 1 551 m^3 total storage capacity.

There will be individual bunded areas per type of chemical to reduce interaction between different types of chemicals. The bunded areas will be on concreted and the tanks will be covered. Each bunded are will also have an effluent sump that will be linked to an effluent treatment plant, of which the daily throughput will be less than 2 000 cubic metres (approximately 5 m^2). The effluent will be treated in order to be reused in the plant. A graphical representation of the proposed tanks is provided in **Figure 2-1**.

Table 2-3 - Filling Plant Chemicals

Chemicals	Quantity Tanks	Net Throughput per tank (m^3/yr)
Hydrochloric Acid (HCl)	6 x 55m^3	18,701.3
Sulphuric Acid (H_2SO_4)	3 x 33m^3	4,721.3
Ferric Chloride ($FeCl_3$)	2 x 33m^3	1,234.3
Sodium hypochlorite (NaOCl)	4 x 16.5m^3	7,140.5
Sodium chlorite liquid ($NaClO_2$)	2 x 16.5m^3	1,404.9
Sodium metabisulphite ($Na_2S_2O_5$);	2 x 16.5m^3	1,270.6
Nitric acid (HNO_3);	2 x 33m^3	3,200.0

Sodium laureth sulphate (SLES, $CH_3(CH_2)_{11}(OCH_2CH_2)_nOSO_3Na$) 70%;	2 x 33m^3	1,661.6
Linear alkyl benzene sulphonic acid (LABSA, $C_{18}H_{30}O_3S$)	2 x 33m^3	396
Caustic Soda Lye / Soda ash (Na_2CO_3) / Potassium hydroxide (NaOH) liquid	6 x 55m^3	11,520.0
Phosphoric acid (H_3PO_4).	2 x 33m^3	1,016.5

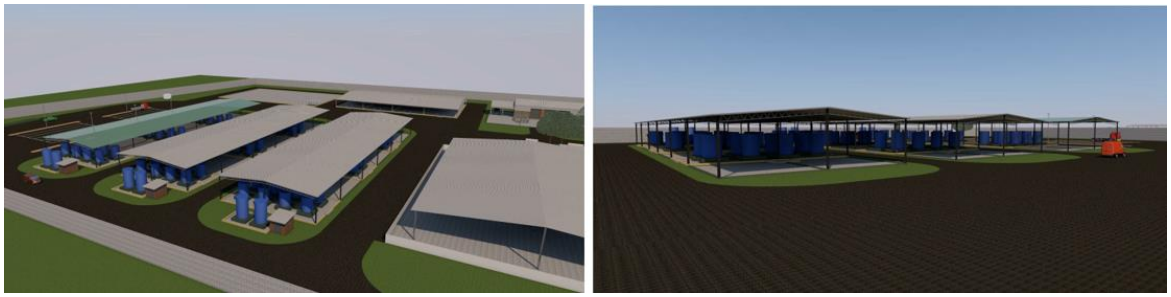

Figure 2-1 - Tank Graphical Representation (Architectural Design Studio)

2.2.2 INITIALLY PROPOSED PHASE 2 (NOW TECHNOLOGY ALTERNATIVE 1)

Initially proposed Phase 2 (now an alternative) included the construction of an Acid Regeneration Plant for the reprocessing of waste HCl into ferric chloride and a small portion of calcium chloride, the chemicals to be used in this process is indicated in **Table 2-4.** This process is detailed as follows:

- Spent acid will be received from galvanizing plants in the area and from other users and producers of acid;
- Waste acid will go through an iron exchange process and strengthened with HCl (from the Phase 1 Filling Plant);
- The mixture will then be put through an evaporation process (with the use of a paraffin fuelled boiler) to increase the percentage of $FeCl_3$ from approximately 30% to 40-44%;
- $FeCl_3$ will be stored in bulk tanks and then decanted into smaller pack sizes or bulk road tankers for distribution; and
- Waste zinc chloride ($ZnCl_2$) will be sold to the market as a dust suppressor or will be used in waste processes requiring Zinc Chloride.

The chlorine will be stored in a purpose-built building. The building will be fitted with a scrubbing system with the capacity to scrub the catastrophic release of a 1ton chlorine cylinder. The building will be fitted with sensors that will activate the scrubber automatically. There will be a total of 80x 1-ton chlorine cylinders stored on site.

Exhaust emissions from the evaporator will pass through a scrubber to remove HCl from flue gases prior to release. The acid regeneration process is illustrated in **Figure 2-2.**

Table 2-4 - Acid Regeneration Plant Chemicals

Chemicals	Quantity Tanks	Net Throughput per tank (m^3/yr)
Ferric Chloride (In Regeneration Plant)	3 x 33m^3	4,937.1
Paraffin	1 x 44m^3	264.0

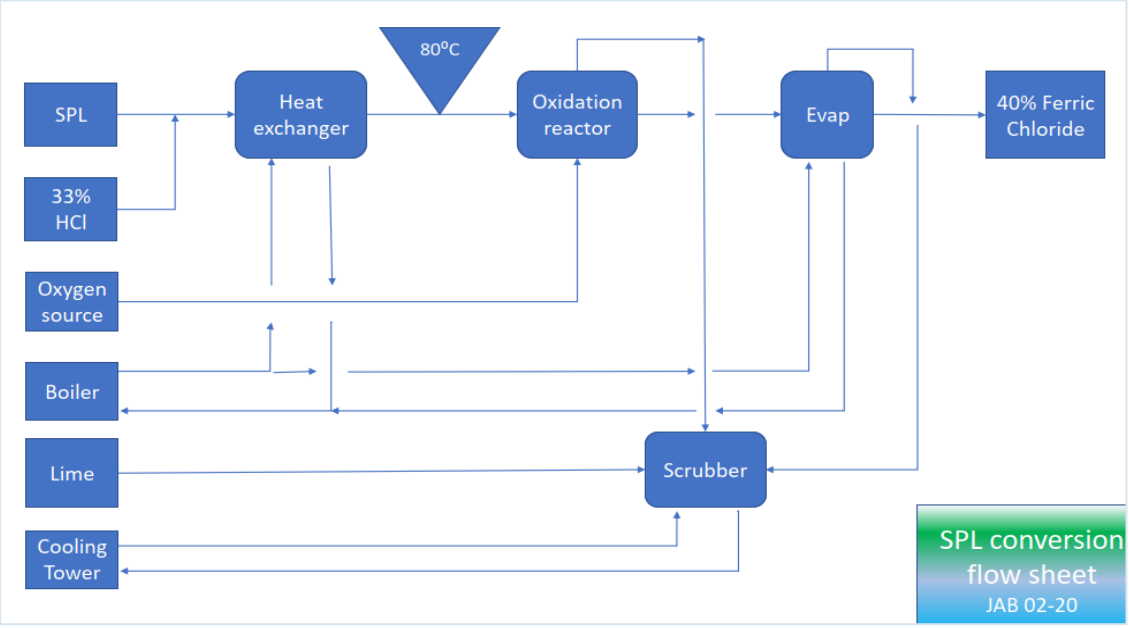

Figure 2-2 - Acid Regeneration Process Flow Diagram

2.2.3 PHASE 3: SOLVENT FILLING PLANT

Phase 3 includes the construction of a Solvent Filling Plant. Products will be decanted from bulk storage tanks to medium tanks and then smaller package sizes as required. The packed product is transferred to the warehouse for distribution. Palletizing and strapping might be required.

It is estimated that at full operational capacity, the Solvent Filling Plant will have a maximum of 352 m^3 total storage capacity. Solvent chemicals to be stored and decanted at the Solvent Filling Plant is outlined in **Table 2-5.**

It is proposed that each of the phases be operated on individual portions of the site, as such a large enough site is required.

Table 2-5 - Solvent Filling Plant Chemicals

Chemicals	Quantity Tanks	Net Throughput per tank (m^3/yr)
Methanol / ethanol	1 off 44 m^3	2,187.3
Thinners	1 off 44 m^3	1,986.2
Shelsol A	1 off 44 m^3	1,986.2
Paraffin	1 off 44 m^3	2,304.0

Benzine	1 off 44 m^3	2,032.9
Toluene	1 off 44 m^3	1,440.0
Acetone	1 off 44 m^3	2,187.3
Diesel	1 off 44 m^3	5,112.4

2.2.4 BULK INSTALLATIONS

There will be two tank farms at the site. The first tank farm will be for the storage of acids and inflammable products.

Tank Farm 1

There will be individual bunded areas per type of chemical to reduce interaction between different types of chemicals. The bunded areas will be on concreted and the tanks will be covered. All the tanks will be vertical.

Each bunded area will also have an effluent sump that will be linked to an effluent treatment plant, of which the daily throughput will be less than 2 000 cubic metres. The effluent will be treated to be reused in the plant.

Tank Farm 2

There will be individual bunded areas per type of solvent to reduce interaction between different types of solvents. All the tanks will be horizontal and located in concreted bunds. The site layout needs to be finalised and the tanker loading and offloading needs to be confirmed. For this Assessment the road tankers were located at the various tanks. Deliveries to be made 2-3 times per day per chemical.

2.2.5 ROADS

Access to the proposed site will be via the existing road network therefore no additional access roads are required. It is not envisaged that any roads upgrades will be required.

2.2.6 MUNICIPAL SERVICES

2.2.6.1 Wastewater

The only wastewater that will be generated should a spill occur inside the bunded area. Each bunded are will have an effluent sump that will be linked to an effluent treatment plant, of which the daily throughput will be less than 2 000 cubic metres. The effluent will be treated in order to be reused in the plant.

2.2.6.2 Solid waste

During construction an estimated 1 500 m^3 of solid waste will be generated. As far as possible non-hazardous construction waste will be used as backfill.

A waste contractor will collect and remove the remaining material from site taking into consideration the National Waste Information Regulations. All waste will be sorted at site and waste manifests will be obtained for the disposal thereof.

During the operational phase it is anticipated that minimal to no solid hazardous waste will be generated, and will consists of damaged containers only, which will be disposed at a licenced facility.

During the operational phase minimal general waste will be generated and will be linked to office activities, this waste will be disposed via the municipal waste collection system.

Sewerage

There are existing ablution facilities that is connected to a septic tank system, should there be capacity available the sewerage from the site will be connected to the nearest municipal sewer system point.

Water Usage

Potable Water usage will be minimal and will be used by the ablutions and offices. The Filling Plant itself will require little to no potable, excluding the fire water system. In order to reduce the use of potable water as far as possible, rainwater will be harvested for use as grey water.

2.2.7 STORMWATER MANAGEMENT

Attenuation has been provided based on the criteria of 350 m^3 of attenuation for every 1ha of hardscaped area. The hardened surface amounts to 48 982,72 m^2 which accounts for 60,6% of the site. The site currently has a workshop structure which will be demolished, and the proposed Filling Plant built on site.

All storm water run-off will be collected through grid inlets and kerb inlets and channelled by stormwater pipes and discharged into an attenuation pond structure.

Stormwater from building roofs will be collected via gutters and rainwater downpipes and discharged into 900 wide concrete V-drains and spread into the surrounding garden by means of multiple spreaders in as many places as possible, to prevent concentration, from where it will follow the natural lay of the land onto the undeveloped low-lying area which forms part of the natural watercourse.

Run-off from the roads and other hardscaped areas will likewise be collected through grid inlets and kerb inlets and conveyed by a network of sub-soil stormwater pipes and channelled towards a new attenuation pond structure located in the undeveloped low-lying area of the site. Roads and parking area will be graded to attain minimum falls towards outlets.

2.3 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

2.3.1 CONSTRUCTION PHASE

The construction process will follow industry standard methods and techniques. Key activities associated with the construction phase are described in **Table 2-6**.

Table 2-6 – Construction Activities

Activity	Description
Establishment of an access road	Access to the proposed site will be via the existing road network therefore no additional access roads are required.

Activity	Description
Site preparation and establishment	Site establishment will include clearing of vegetation and any bulk earthworks that may be required.
Transport of components and equipment to site	All construction material, machinery and equipment (i.e. graders, excavators, trucks, cement mixers etc.) will be transported to site utilising the national, regional and local road network. Larger components (may be defined as abnormal loads in terms of the Road Traffic Act (No. 29 of 1989). In such cases a permit may be required for the transportation of these loads on public roads.
Establishment of a laydown area on site	Construction materials, machinery and equipment will be kept at relevant laydown and/or storage areas. Laydown areas (site camps) of approximately up to 0.25 ha have been proposed. The laydown area will limit potential environmental impacts associated with the construction phase by limiting the extent of the activities to one designated area.
Construction of the Filling Plant	The construction of the Filling Plant will consist of the following material: ▪ Steel strusses ▪ Roof Sheeting ▪ Cement ▪ Reinforced mat ▪ Tanks
Establishment of ancillary infrastructure	Ancillary infrastructure will include a workshop, storage areas, office, and a temporary laydown area for contractor's equipment.
Rehabilitation	Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

2.3.2 OPERATIONAL PHASE

During operation the key activities will include the storage and decanting of the chemicals at the Filling Plant. Key activities associated with the operational phase are described in **Table 2-7.**

Table 2-7 - Operational Phase Activities

Activity	Description
Transport of chemicals	Access to the proposed site will be via the existing road network therefore no additional access roads are required. It is estimated that there will be 8 trucks a day and 15-30 light vehicles. The site has been used as an industrial facility for numerous years and this is not considered a significant increase.
Decanting of chemicals	At the Filling Plant, various chemicals will be decanted from bulk tankers to medium and small sized packages. The packed products will be transferred to the warehouse in preparation for distribution to customers. Palletizing strapping and partial dilutions might be required.

2.3.3 DECOMMISSIONING PHASE

The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 2-6**.

2.4 NEED AND DESIRABILITY

The DEA&DP Guideline (2013) states that the essential aim of need and desirability is to determine the suitability (i.e., is the activity proposed in the right location for the suggested land-use/activity) and timing (i.e. is it the right time to develop a given activity) of the development. Therefore, need and desirability addresses whether the development is being proposed at the right time and in the right place. Similarly, the 'Best Practicable Environmental Option' (BPEO) as defined in NEMA is *"the option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term."*

Richbay has existing chemical Filling Plants in South Africa, however, to be closer to the northern market in South Africa a Filling Plant is required in Gauteng. The site in Gauteng is centrally located and near the major routes in the Province.

Ferric Chloride is used in a wide range of applications in the industrial sector including surface water clarification, heavy metal precipitation, industrial effluent treatment and phosphate precipitation in sewage treatment.

Currently, one company in the country produces and supplies Ferric Chloride to South Africa and other neighbouring countries. This serves as a motivation for Richbay to increase the supply of the product, particularly to the neighbouring countries located further north of the country and a great distance away from the existing supplier. This therefore entails that the Filling Plant located in Vosloorus, will have a competitive advantage owing to the shorter distance to be travelled to transport the product to these neighbouring countries and hence, enhance the economic benefits locally.

Local benefits of the proposed development include benefits to the local economy through possible job creation and local supplier procurement during the construction phase as well as during the operational phase of the development.

The Needs and Desirability Guidelines, in terms of the Environmental Impact Assessment Regulations, Government Notice 792 of 2012, as amended, highlights the need to consider how the proposed project may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. It should also consider how the development may affect or promote justifiable economic and social development. The Need and Desirability is assessed in the table below.

Table 2-8 – Need and Desirability Assessment

PART 1 - NEED	
Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority? Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Based on the SDF, the site is located within Region F in Vosloorus and situated outside of any areas identified with environmental constraints. The site is also zoned for industrial purposes.

Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	Currently, one company in the country produces and supplies Ferric Chloride to South Africa and other neighbouring countries. This serves as a motivation for Richbay to increase the supply of the product, particularly to the neighbouring countries located further north of the country and a great distance away from the existing supplier. This therefore entails that the Filling Plant located in Vosloorus, will have a shorter distance to be travelled to transport the product to these neighbouring countries and hence, enhance the economic benefits locally. Local benefits of the proposed development include benefits to the local economy through job creation and local supplier procurement during the construction phase as well as during the operational phase of the development.
Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development? Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	The site is situated in an area that has existing service delivery by the municipality. Richbay will also investigate sustainable construction alternatives to reduce reliance on electricity and water.
Is the project part of a national programme to address an issue of national concern or importance?	The proposed project does not form part of a national programme. However, it does form part of the supply of chemicals needed for the purification of drinking water.
PART 2 - DESIRABILITY	
Is the development the best practicable environmental option for this land/site?	Despite the site being considered as a CBA: Important Area, the site verification conducted as part of the Biodiversity Assessment confirmed that the site is of low importance from a biodiversity perspective and is in a degraded and transformed state. Based on the SDF, the site is located within Region F in Vosloorus and situated outside of any areas identified with environmental constraints.
Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No, the project is aligned with the SDF and IDP of the EMM.
Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g., as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	Despite the site being considered as a CBA: Important Area in the EMF and the Gauteng C-Plan, the site verification conducted as part of the Biodiversity Assessment confirmed that the site is of

	low importance from a biodiversity perspective and is in a degraded and transformed state. Based on the SDF, the site is located within Region F in Vosloorus and situated outside of any areas identified with environmental constraints.
Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	The preferred location was chosen based on the following factors: ▪ The proposed site is zoned for industrial purposes. ▪ The proposed location is strategically situated in proximity to Gauteng's major transport routes therefore making it a favourable location for the transport of goods to the neighbouring countries. ▪ According to the EMF and the SDF, the site is situated outside of any area with environmental constraints.
How will the activity of the land use associated with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	According to the EMF and the SDF, the site is situated outside of any area with environmental constraints, this was confirmed by the specialist studies undertaken. Mitigation measures were recommended by the specialists where necessary and these have been included in the impact assessment section of this EIAR. Due to the activities associated with the project, an AEL will be applied for in terms of the NEM: AQA.
How will the development impact on people's health and well-being? (E.g. In terms of noise, odours, visual character and sense of place, etc.)?	Based on the impact significant screening, the impacts will range from very low to high without mitigation measures. The specialist studies undertaken during the EIA Phase assessed the potential impacts and provided recommendations to be included in the EMPr. The findings of this S&EIR process and associated Specialist studies conclude that there are no fatal flaws associated with the Proposed Project. Negative environmental impacts associated with the proposed Richbay Filling Plant can be mitigated to acceptable levels. It is therefore the opinion of the EAP that the project can proceed, and that all the listed mitigation measures and recommendations are considered by the GDARD.
Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?	No.
Will the proposed land use result in unacceptable cumulative impacts?	There will be no unacceptable cumulative impacts. Cumulative impacts have been assessed during the EIA Phase.

3 ENVIRONMENTAL SENSITIVITY

3.1 SITE SENSITIVITY

The table below illustrate the overall sensitivity of the site in relation to the proposed project. The environmental sensitivities identified on site are included in **Table 3-1**.

Table 3-1 – Environmental Sensitivities identified by the DFFE Screening Tool

Discipline	Infrastructure Type and Sensitivity Criteria	
	DFFE Screening Tool	EAP/Specialist Verification
Agricultural Theme	▪ The DFFE screening tool identifies the agricultural sensitivity as high.	▪ A site visit was conducted the EAP/Specialists, confirming the development footprint and surrounding areas to be transformed due to industrial activities operating at the site.
Animals Species Theme	▪ The DFFE Screening Tool indicates that the Proposed Project has a medium sensitivity.	▪ The site verification indicates that there is no suitable habitat for these species within the project footprint indicating that the site can be considered low sensitivity.
Aquatic Biodiversity Theme	▪ The DFFE Screening Tool indicates that the Proposed Project has a low sensitivity for the aquatic theme.	▪ There are no aquatic resources in the vicinity of the site therefore the site can be considered low sensitivity.
Archaeological and Cultural Heritage Theme	▪ The DFFE Screening Tool indicates that the Proposed Project falls within an area of low Sensitivity for the Archaeological and Cultural Heritage Theme.	▪ The site verification conducted on by the specialist was able to confirm this low sensitivity of the project footprint.
Civil Aviation Theme	▪ The DFFE Screening Tool rendered the proposed site for the Proposed Project as medium sensitivity.	▪ There will be no impact on the civil aviation aerodromes.
Defence Theme	▪ The DFFE Screening Tool rendered the proposed site as low Sensitivity in relation to the Defence Theme.	▪ The proposed Project will not have any impact on any surrounding defence sites.
Palaeontological Theme	▪ The DFFE Screening Tool indicates that the Proposed Project falls within an area of Very High Sensitivity for the Palaeontology Theme.	▪ Site verification conducted by the specialist was able to confirm this low sensitivity of the project footprint as it has been completely transformed and there are currently operational activities being undertaken at the site.

Plant Species Theme	▪ The DFFE Screening Tool indicates that the Proposed Project falls within an area of Medium Sensitivity for the Plant Species Theme.	▪ The site verification conducted on by the specialist was able to confirm this low sensitivity of the project footprint as it has been transformed and degraded.
Terrestrial Biodiversity Theme	▪ The DFFE Screening Tool indicates that the Proposed Project falls within an area of Very High Sensitivity for the Terrestrial Biodiversity Theme.	▪ The site verification conducted on by the specialist was able to confirm a low sensitivity of the project footprint as it has been transformed and degraded.

4 GOVERNANCE FRAMEWORK

4.1 NATIONAL LEGAL AND REGULATORY FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The applicable legislation and policies are shown in **Table 4-1.**

Table 4-1 – Applicable National Legislation[1]

Legislation	Description of Legislation and Applicability
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998) **The GDARD is the competent authority**	In terms of Section 24(2) of the NEMA, the Minister may identify activities which may not commence without prior authorisation. The Minister thus published GNR 327 (Listing Notice 1), 325 (Listing Notice 2) and 324 (Listing Notice 3) listing activities that may not commence prior to authorisation (7 April 2017). The regulations outlining the procedures required for authorisation are published in GNR 326 [Environmental Impact Assessment Regulations (EIA)] (7 April 2017). Listing Notice 1 identifies activities that require a Basic Assessment (BA) process

[1] It should be noted that all dimensions outlined in relation to Listing Notice 1, 2 and 3 are provisional and are subject to final design.

Legislation	Description of Legislation and Applicability
	to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. WSP undertook a legal review of the listed activities according to the proposed project description to conclude that the activities listed in in this section are considered applicable to the development: A S&EIR process must be followed. An EA is required and will be applied for with the GDARD.
Listing Notice 1: GNR 983 **The GDARD is the competent authority**	***Activity 27*** *- The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for:* *(i)the undertaking of a linear activity; or* *(ii)maintenance purposes undertaken in accordance with a maintenance management plan* **Description:** Based on an initial evaluation during the Scoping Phase it was identified that the site is a total size of approximately 8 ha, of which over 3 ha is potentially covered by natural vegetation. A vegetation assessment was conducted to confirm that the vegetation type for the majority of the site is considered as transformed with the remaining extent of the site considered as degraded grassland. The vegetation species that dominate the site are alien and invasive species with scattered indigenous species that will not account for 1 hectare or more of the site, **therefore this activity is no longer being applied for.**
Listing Notice 1: GNR 983 **The GDARD is the competent authority**	***Activity 67 -*** *Phased activities for all activities—* *(i) listed in this Notice, which commenced on or after the effective date of this Notice similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices.* **Description:** It is anticipated that Phase 1 will be constructed before Phase 3 therefore making this activity applicable.
Listing Notice 2: GNR 984 **The GDARD is the competent authority**	***Activity 4*** *- The development of facilities or infrastructure, for the storage, or storage and handling of dangerous goods, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.* **Description:** Chemicals will be temporarily stored in bulk tanks at the Filling Plant prior to them being decanted and dispatched. At this point, it is anticipated that the plant will have a combined storage capacity of about 2000Mt to 2500Mt. 2500Mt is an approximate equivalent to 1.5 million cubic metres. Therefore, the anticipated combined storage exceeds the combined storage of the storage tanks.

<table>
<tr><th>Legislation</th><th>Description of Legislation and Applicability</th></tr>
<tr><td>Listing Notice 2: GNR 984

The GDARD is the competent authority</td><td>Activity 6 - The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation

governing the generation or release of emissions, pollution or effluent, excluding—

(i) activities which are identified and included in Listing Notice 1 of 2014;

(ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;

(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or

(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.

Description:

The proposed activity falls under Category 6: Organic Chemicals Industry, and Subcategory 7.2: Production of Acids of Government Notice Regulation 893 of 2013, promulgated in line with Section 21 of the National Environmental Management: Air Quality Act 39 of 2004 (NEM:AQA). As such, an Air Quality Impact Assessment (AQIA) is required as part of the EIA process to support the application for an Atmospheric Emissions License (AEL).

<table>
<tr><th>Section 21 category</th><th>Subcategory</th><th>Process trigger</th></tr>
<tr><td>6: Organic Chemicals Industry</td><td>N/A</td><td>The use of organic chemicals including 300 tonnes per annum of Formalin (formaldehyde)</td></tr>
<tr><td>7: Inorganic Chemicals Industry</td><td>7.2 Production of Acids</td><td>Secondary production of hydrochloric acid through regeneration.</td></tr>
</table>
</td></tr>
<tr><td>Listing Notice 3: GNR 985

The GDARD is the competent authority</td><td>Activity 10 - The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such a storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic meters.

(c) In Gauteng:

iv)Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;

Description:

A portion of the site contains natural vegetation that is classified as CBA (Important Area). The Filling Plant will have a combined storage capacity of about 1.5 million cubic metres at full filling production.</td></tr>
</table>

Legislation	Description of Legislation and Applicability
Listing Notice 3: GNR 985 **The GDARD is the competent authority**	***Activity 12*** *- The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.;* ***In Gauteng, province:*** *ii) Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;* **Description:** A portion of the site contains natural vegetation that is classified as a CBA. It is anticipated that more than 300 square meters of the CBA will be cleared for constructing the proposed Filling Plant and its associated infrastructure.
National Environmental Management: Waste Act (59 of 2008) (NEM:WA) **The DFFE is the competent authority**	In terms of section 19 of the NEM:WA, a list of waste management activities that have, or are likely to have a detrimental effect on the environment were published in GNR 921 (November 2013). WSP undertook a review of the listed activities according to the proposed project description to conclude that Listed Activities 2, 4 and 10 under Category B, Listed Activity 2 under Category C are considered applicable to Phase 2 of the project which is now considered as an alternative. A Waste Management Licence is therefore required for Phase 2 and will be applied for with the DFFE if it is to proceed.
GNR 921: Category B **The DFFE is the competent authority**	***Activity 2*** *- The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.* **Description:** Waste HCl will be recycled into Ferric Chloride and a small portion of Calcium Chloride at the acid regeneration plant. It is expected that approximately 30Mt of HCl will be re-processed daily to produce the same amount of Ferric Chloride. A Waste Management Licence is therefore required for Phase 2 and will be applied for with the DFFE if it is to proceed.
GNR 921: Category B **The DFFE is the competent authority**	***Activity 4*** *- The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.* **Description:** Waste HCl will be treated into Ferric Chloride and a small portion of Calcium Chloride at the acid regeneration plant. It is expected that approximately 30Mt of HCl will be re-processed daily to produce the same amount of Ferric Chloride. A Waste Management Licence is therefore required for Phase 2 and will be applied for with the DFFE if it is to proceed.
GNR 921: Category B **The DFFE is the competent authority**	***Activity 10*** *- The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).*

Legislation	Description of Legislation and Applicability
	Description: A Filling Plant, which will include an acid regeneration plant, will be constructed. The plant will be used for the handling & storage of chemicals, as well as the re-processing of waste HCl to produce Ferric Chloride, as well as the manufacturing of caustic soda. A Waste Management Licence is therefore required for Phase 2 and will be applied for with the DFFE if it is to proceed.
GNR 921: Category C **The DFFE is the competent authority**	***Activity 2*** *- The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.* **Description:** The Filling Plant will have a combined storage capacity of about 2 000Mt – 2 500Mt (2 204.6 tons – 2 755.7 tons) at full filling production. A Waste Management Licence is therefore required for Phase 2 and will be applied for with the DFFE if it is to proceed.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI). SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems. The biodiversity assessment identifies CBAs which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. As such, an Ecological Assessment will be undertaken as part of the EIA process. The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the NEM:BA – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the Environmental Management Programme (EMPr).
The National Water Act (No. 36 Of 1998)	The National Water Act (No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment. The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which

Legislation	Description of Legislation and Applicability
	or from which water flows, and any collection of water that the Minister may declare a watercourse. Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses that require a WUL under section 21 are presented below: a) Taking water from a water resource; b) Storage of water; c) Impeding or diverting the flow of water in a watercourse; d) Engaging in a stream flow reduction activity; e) Engaging in a controlled activity; 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. There are no water uses anticipated for the proposed project, therefore, a WUL is not required.
The National Heritage Resources Act (No. 25 Of 1999)	The National Heritage Resource Act (No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA), and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development. In terms of the Section 38 of NHRA, any person who intends to undertake a linear development exceeding 300m in length or a development that exceeds 5 000 m^2 must notify the heritage resources authority and undertake the necessary assessment requested by that authority. In the case of the proposed Filling Plant, a Heritage Impact Assessment (HIA) has been undertaken looking at Archaeology, Heritage and Palaeontology as the site is approximately 80 500m^2. The proposed project have been brought to the attention of SAHRA, as well as the provincial Heritage Resource Agencies, who will provide comment, and provide the required approval.
The National Environmental	According to Section 22 of the NEM: AQA, no person may, without a provisional atmospheric emission licence or an AEL, conduct an activity that is:

Legislation	Description of Legislation and Applicability
Management: Air Quality Act (Act 39 Of 2004) **The EMM is the competent authority**	▪ Listed on the national list anywhere in the Republic; or ▪ Listed on the list applicable in a province anywhere in that province. Listed activities and associated minimum emission standards (MES) were published in Government Notice 248 of 2010, Government Gazette 33064 in-line with Section 21 of NEM: AQA. An amended list of activities was published in Government Notice 893 of 2013, Government Gazette 37054, in Government Notice 551 of 2015, Government Gazette 38863 and further in Government Notice 1207 of 2018, Government Gazette 42013. According to the listed activities and associated minimum emission standards, the proposed operations will trigger the following listed activities: ▪ Category 6 Organic Chemicals Industry; ▪ Category 7, Subcategory 7.2 :Production of Acids; and ▪ Subcategory 7.7 Production of Caustic Soda. An AEL will be applied for due to the associated triggers.
The Hazardous Substances Act (No. 15 Of 1973)	The Hazardous Substances Act (No. 15 of 1973) provides measures for the control of substances and certain electronic products that may be toxic, corrosive, irritant, strongly sensitizing or flammable in nature which may cause injury or ill-health to or death of human beings. The Act divides the substances or products into groups in relation to the degree of danger and makes provision for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products. On review of the national standard SANS 10234:2008 Globally Harmonized System of classification & labelling of chemicals (GHS), WSP noted that a number of the chemicals proposed for storage at the site are listed in Appendix A of the Standard, therefore the Standard is applicable. Where substances are produced, used, handled or stored in such a form and quantity that it has the potential to cause a major accident, a Major Hazardous Installation (MHI) designation may be assigned to the facility. Therefore, a risk assessment was undertaken as part of the S&EIR process by an Approved Inspection Authority (AIA) in order to confirm whether the facility will be an MHI.

4.2 POLICIES AND PLANS

Table 4-2 summarised key policies and plans as an outline of the governance framework for the Project.

Table 4-2 – Applicable Regional Policies and Plans

Applicable Policy	Description of Policy
National Development Plan	The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development.

Applicable Policy	Description of Policy
	Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green low-carbon economy, is one of these challenges. In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place. Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes: ▪ Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. ▪ Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted. The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.
New Growth Path	Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.

4.3 PROVINCIAL AND MUNICIPAL LEGAL AND REGULATORY FRAMEWORK

Table 4-3 – Provincial Plans

Applicable Plan	Description of Plan
Gauteng Conservation Plan	The Gauteng Conservation Plan (Version 3.3) (GDARD, 2014b) classified areas within the province on the basis of its contribution to reach the conservation targets within the province. These areas are classified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) to ensure sustainability in the long term. The CBAs are classified as either 'Irreplaceable' (must be conserved), or 'Important'. CBAs are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met. According to the Gauteng Terrestrial CBA Plan (C-Plan) a portion of the project area falls in a CBA: Important area.
Ekurhuleni Integrated Development Plan (2017/018)	The main purpose of the Integrated Development Plan (IDP) is to foster more appropriate service delivery by providing the framework for economic and social development within the municipality. In doing so it contributes towards eradicating the development legacy of the past, operationalises the notion of developmental local government and foster a culture of co-operative governance amongst the three spheres. Integrated development planning is a process whereby municipalities prepare strategic development plans for a five-year period. IDPs are the main platform through which sustainable provision of service delivery could be achieved. They intend to promote co-ordination between local, provincial and national government. Once adopted by Council, these plans should inform planning, decision making, budgeting, land management, promotion of local economic development, and institutional transformation in a consultative systematic and strategic manner. The main objective of developing an IDP is the promotion of developmental local government, through the following: ▪ Institutionalising performance management in order to ensure meaningful, effective and efficient delivery (monitoring, evaluation and review), speed up service delivery through making more effective use of scarce resources; ▪ Enabling the alignment and direction of financial and institutional resources towards agreed policy objectives and programmes; and ▪ Ensure alignment of local government activities with other spheres of development planning through the promotion of intergovernmental co-ordination. The IDP also aims to: ▪ Create a higher level of focus and thereby improve the strategic nature of the document; ▪ Align this strategic document with the limited financial and human resources; ▪ Align the IDP with the activities of the municipality's departments and other social partners in other spheres of government; and Align the IDP with the various sector and management plans of the municipality.

Applicable Plan	Description of Plan
Ekurhuleni Metropolitan Municipality Environmental Policy	The development of a policy for the EMM is a statutory mandate and responsibility placed on Local Governments to ensure a safe and healthy environment to those living and working within their area of jurisdiction. The purpose of this policy is: ▪ To spearhead sustainable development ▪ To improve the governance function of the municipality ▪ To create environmental awareness within the municipality ▪ To enhance a safe and healthy environment ▪ To direct sustainability and responsible decision-making
Ekurhuleni Environmental Management Framework - 2007	The EMF provides a framework that sets out the environmental attributes of Ekurhuleni in a way that determines environmental opportunities and constraints for development of the area while Spatial Development Frameworks (SDFs) provides frameworks for interpreting the development vision, planning principles and structuring elements of Ekurhuleni. The EMF, in terms of the Environmental Impact Assessment Regulations, 2006, has been taken into account in this application for environmental authorisation.
Ekurhuleni Metropolitan Spatial Development Framework - 2015	The SDF provides the framework for making resource-effective decisions. It can be a powerful lever for transforming cities and is instrumental in the realisation of a city's vision. Furthermore, it is a guide that can have an impact on the development of a city over the next 15 years and more if properly conceived and systematically executed. Thus, the purpose of the compilation of a SDF is to present a clear strategic vision for the future spatial growth of the region.
City of Ekurhuleni Land Use Scheme - 2021	According to Section 25(1) of the Spatial Planning and Land Use Management Act, 2013 the purpose of the City of Ekurhuleni Land Use Scheme, 2021 is to give effect to and be consistent with the approved Municipal SDF and to determine the use of Land and development of Land within the municipal area of City of Ekurhuleni Metropolitan Municipality in order to promote: (a) Economic growth; (b) Social inclusion; (c) Efficient land development; and (d) Minimal impact on health, the environment and natural resources; Based on the Land Use Scheme the appropriate categories of Land Use for each piece of land needs to be determined. The Land Use Scheme defines, Noxious Industry: means an activity where any one or more of the following activities are carried out: Blood boiling; tallow melting; fat melting or extracting; soap boiling; bone boiling; tripe boiling or cleaning; skin storing; bone storing; fellmongering; skin curing; blood drying; gut scraping; leather dressing; tanning; glue making; size making; charcoal burning; brick burning; lime burning; manure making; manure storing; parchment making; malt making; yeast making; cement works; coke ovens; salt glazing; sintering of sulphur-bearing materials; viscose works; smelting of ores and minerals; calcining; puddling and rolling of iron and other metals; conversion of pig-iron into

Applicable Plan	Description of Plan
	wrought iron; reheating; annealing; hardening; forging; converting and carburizing iron and other metals; **works for the production of or which employ** carbon disulphide, cellulose lacquers, cyanogen's or its compounds, hot pitch or bitumen, pulverized fuel, pyridine, liquid or gaseous sulphur dioxide, sulphur chlorides; works for the production of amyl acetate, aromatic esters, butyric acid, caramel enamelled wire, glass, hexamine, iodoform, lamp-black, B-naphthol, resin products, salicylic acid, sulphonated organic compounds, sulphur dyes, ultramarine, zinc chloride, zinc oxide; and all refining and works dealing with the processing or refining of petrol or oil or their products, a Fuel Depot, taxidermist and an abattoir; Provided that where the Municipality adds or excludes to the list of noxious trades, such additions shall also be deemed to be included in the above definition and that all Health requirements are complied with. None of the chemicals outlined in the definition of noxious industry will be utilised at the proposed project in terms of Phase 1 and Phase 3 (Preferred Alternative). The site is currently Zoned as Industrial 2 and a rezoning application to Industrial 1 is currently being undertaken as a separate process.

4.3.1 ADDITIONAL PERMITS AND AUTHORISATIONS

Table 4-4 – Additional Permits and Authorisations required for the Proposed Project

Permits / Authorisation	Legislation	Relevant Authority	Status
Section 38 (8) for the review of environmental documents	Section 38 (1) & (8) of the NHRA	SAHRA	Submitted (Case ID 16738)
Atmospheric Emissions License	Section 21 of NEM: AQA	EMM	Pending Submission

5 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

5.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Table 5-1 provides a high-level outline of the various roles and responsibilities of Richbay's representatives. The overall responsibility for the environmental management and cost associated with the implementation of the EMPr lies with Richbay. Richbay must ensure that all permanent and

temporary staff and suppliers adhere to the EMPr. Observations of non-compliance reported during the internal or external audits against this EMPr are to be closed out by Richbay on approval of suitable rectification / mitigation measures. The sections that follow provide details on the roles and responsibilities of key individuals and role players for the operation of the Richbay Vosloorus chemical filling plant.

Table 5-1 – Roles and Responsibilities

Designation	Roles and Responsibilities
Project Manager Richbay Chemicals (Pty) Ltd	▪ Ensure that the Site Manager and the contractor are aware of all specifications, legal constraints and Richbay's standards and procedures pertaining to the proposed development specifically with regards to environmental and social aspects. ▪ Ensure that all conditions of the EA and EMPr are communicated and adhered to by the Site Manager and its contractor(s). ▪ Employ a suitably qualified ECO to monitor the implementation of the EA conditions and the EMPr commitments throughout the proposed development by means of, but not limited to, site inspections and meetings. This should be documented as part of the onsite implementation records ▪ Be fully conversant with the BAR for the Proposed Project, the conditions of the licenses and authorisations and of the EMPr.
Site Manager – Main Contractor	▪ Be fully conversant with the EIAR, the conditions of the EA and of the EMPr. ▪ Develop method statements. ▪ Provide support to the Designated Environmental Officer (DEO) and ECO. ▪ Be fully conversant with all relevant environmental legislation and Sable's environmental policies and procedures and ensure compliance thereof. ▪ Have overall responsibility for the implementation of the conditions of the EA and the EMPr. ▪ Ensure that audits are conducted to ensure/assess compliance with the conditions of the EA and the EMPr. ▪ Liaise with the Project Manager or his delegate, the DEO, ECO and others on matters concerning the environment. ▪ Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite; and ▪ Confine project activities to demarcated areas. Maintain the following: ▪ A site incident register. ▪ A non-conformance register. ▪ A public complaints register. ▪ A register of audits.
Contractor Designated Environmental Officer (DEO)	▪ A suitably qualified DEO who would, on a daily basis (or as necessary depending on the construction activities), monitor the project compliance with the conditions of the EA and the EMPr. ▪ The costs of the DEO can either be provided by the contractor or Richbay (proof of appointment must be maintained onsite). Responsibilities of the DEO include: ▪ Be fully conversant with the ESIA, the conditions of the EA and the EMPr. ▪ Be fully conversant with all relevant environmental legislation.

Designation	Roles and Responsibilities
	▪ Ensure compliance with environmental policies and procedures. ▪ Ensure that internal environmental performance audits/inspections are undertaken on a weekly basis by the Site Manager or his/her designated representative to ensure implementation onsite. ▪ Remain employed until the completion of the construction activities. ▪ Report all findings identified onsite to the Project Manager.
Environmental Control Officer (ECO)	The costs of the ECO shall be borne by Richbay (proof of appointment must be maintained onsite). Responsibilities of the ECO include: ▪ Be fully conversant with the BAR, the conditions of the EA and the EMPr. ▪ Be fully conversant with all relevant environmental legislation. ▪ Ensure compliance with environmental policies and procedures. ▪ Ensure that external environmental performance audits/inspections are undertaken on a monthly to ensure implementation onsite. ▪ Approve method statements. ▪ Remain employed until the completion of the construction activities. ▪ Hand over responsibilities to the operational team, if necessary. ▪ Report all findings identified onsite to the Project Manager. In addition, the ECO will: ▪ Convey the contents of the conditions of the EA and the EMPr to the relevant site staff and discuss the contents in detail with the Project Manager and contractor(s). ▪ Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the conditions of the EA and the EMPr. ▪ Take appropriate action if the specifications contained in the EA and the EMPr are not followed. ▪ Monitor and verify that environmental impacts are kept to a minimum, as far as possible. ▪ Ensure that activities onsite comply with all relevant environmental legislation.
Richbay Internal Environmental Manager (EM)-Operation	▪ Monitor environmental performance of the facility and its operations. ▪ Ensure all staff remain aware of their responsibilities in terms of reducing environmental impacts.
Contractors, Staff and Service Providers	▪ Complying with Richbay's environmental management specifications. ▪ Be conversant with all conditions of the EA and the EMPr, and ensure compliance thereto. ▪ Adhering to any environmental instructions issued by the Site Manager/Project Manager on the advice of the ECO.

5.2 ENVIRONMENTAL AWARENESS PLAN

5.2.1 TRAINING AND INDUCTION

It is important to ensure that all personnel, contractors and their sub-contractors have the appropriate level of environmental awareness and competency to ensure continued environmental due diligence

and on-going minimisation of environmental harm. As a minimum environmental training must include the following:

- Employees must be trained on the requirements of the protection of the untransformed area and the implementation of the Rehabilitation measures.
- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment.
- Employees will be familiar with the requirements of the EMPr and the environmental specifications as they apply to the segments of the project where they are based.
- Employees must undergo training for the operation and maintenance activities associated with project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated.
- Awareness of any other environmental matters, which are deemed to be necessary by the Internal Environmental Manager.

Training should include the environment, health and safety as well as basic HIV/AIDS education. The following facets of the training form part of this Environmental and Social Awareness Plan:

- Induction: Environmental and social awareness training will be given at induction when personnel join the company. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
  - A briefing on the protection of the untransformed areas of the site and other sensitivities;
  - Employees and visitor must be informed of the no go areas and be advised that no activities are allowed to be undertaken within this area.
  - A general account of how the facility and its associated activities can affect the environment giving rise to what are called environmental impacts.
  - A discussion on what staff can do in order to help prevent the negative environmental impacts from degrading the environment i.e. environmental impact management.
- Job Specific Training:
  - Job specific training programmes will be developed as and when required. The programs will be based on the significant environmental and social aspects/ impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- Competency Training:
  - The DEO will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. The effectiveness of training and development initiatives can be determined through the following methods:
    - Trend analysis of incidents reported; and
    - Analysis of work areas during visits and audits, if deemed necessary.
- Training Records:
  - Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they

have indeed attended a training session and have been notified in detail of the contents and requirements of the EMPr. The attendance registers must be kept on file.

Table 5-2 below provides a summary of the training and induction requirements for the proposed development.

Table 5-2 – Training and Induction Requirements

Awareness Initiative	Purpose	Frequency
Site Induction	The purpose of the induction is to ensure that, as a minimum, all on-site personnel understand the EMPr in terms of: ▪ Waste management and minimisation. ▪ Minimising potential impacts to air, noise and water quality. ▪ Surface and groundwater contamination. ▪ Spill control measures. ▪ Environmental Emergency Plan. ▪ Incident reporting procedures. ▪ Best pollution prevention practices. Roles and responsibility relating to environmental management.	Operational Phase: prior to site access / annual basis
Toolbox Talks	▪ Toolbox talks are intended to deliver specific training in an aspect of work or control including: ▪ Personal Protective Equipment (PPE) requirements. ▪ Waste handling procedures. ▪ Ad hoc training and awareness as required to promote compliance with the EMPr.	Operational Phase: As required.

5.3 MONITORING

The DEO will monitor the day-to-day site activities on an ongoing basis and will produce weekly monitoring reports during construction. The independent, external ECO will undertake monthly audits to ensure compliance with the EMPr during the construction activities and will report to the Site Manager should any non-compliance be identified, or corrective action deemed necessary.

All the conditions outlined in the EMPr will be subject to required internal day-to-day monitoring and external compliance monitoring.

5.4 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction activities may identify non-conformances to the EMPr. Non-conformances may also be identified through incidents, emergencies or complaints recorded. In order to correct non-conformances, the source must be determined, and corrective actions must be identified and implemented.

5.4.1 DUTY OF CARE

All personnel involved with the construction activities onsite will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

5.5 DOCUMENTATION AND REPORTING

The following documentation must be kept onsite in order to record compliance with the EMPr and conditions of the environmental authorisation:

- Record of complaints; and
- Record of emergencies and incidents.

The contractor will be required to report on the following:

- Environmental incidents involving contractor/ employees and/or the public;
- Environmental complaints and correspondence received from the public; and
- Incidents that cause harm or may cause harm to the environment.

The above records will form an integral part of the ECO's reports and records thereof maintained for the duration of the project. These records will be kept with the EMPr and will be made available for scrutiny if requested by the Site Manager or his delegate and the ECO.

The contractor will ensure that the following information is recorded for all environmental complaints/incidents/emergencies:

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;
- Party/parties responsible for causing complaint/incident/emergency;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
- Copies of all correspondence received regarding complaints/incidents/emergency.

5.6 PUBLIC COMPLAINTS

The Contractor shall keep a Complaints Register on site to allow the general public to document any comments on or complaints regarding the activities of the site.

The Complaints Register must:

- Have numbered pages – any missing pages must be accounted for by the Contractor;
- Be tabled during monthly site meetings;
- Be made available to the SE/Contract Manager, the ECO, the Project Company, and/or any authority at any time if requested; and
- Include a section for the documentation of the action taken to address the complaint.

All complaints must be investigated, responded to, and recorded in the Complaints Register within 28 calendar days.

6 SITE SPECIFIC ENVIRONMENTAL CONTROLS

The EMPr contains guidelines, operating procedures, rehabilitation and pollution control requirements which will be binding to the onsite personnel working for, or on behalf of the Proposed Project. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times.

In instances where the method statements provided by the contractor conflict with the EMPr, such conflicts will be discussed between the Site Manager, ECO and contractor and if unresolved the EMPr will take precedent.

The EMPr identifies various actions which are undertaken throughout the construction phase of the Proposed Project. Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described **Table 6-1** below.

Table 6-1 – Structure of EMPr

Column	Description
Activity/Aspect	Highlights the various activities/aspects associated with the project i.e., the contractors' activities that will interact with the environment.
Impact Management Outcome	The desired outcomes from effectively minimising negative impacts and/or enhancing positive impacts.
Impact Management Actions/Measures	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
Indicator and Compliance Management	Items that will assist with determining compliance against management actions.
Responsibility	Indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr. Please note that the Site Manager will have authority to stop works if/as necessary.

Priority Timeframe	Indicates when the actions for the specific aspect must be implemented and/or monitored.

The following assumptions have been made in the development of the environmental specification in this EMPr:

- An environmental file containing the information/documentation required by this EMPr is to remain onsite and to be made available at the request of the auditor or similar monitoring body; and
- For ease of reference, any person(s) employed to assist in the project i.e., contractors, sub-contractor and permanent and temporary staff, will be collectively referred to as 'onsite personnel'.

Table 6-2 – Contractor laydown area and site access: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
CONTRACTOR LAYDOWN AREA AND SITE ACCESS			
Impact Management Outcome: ▪ To implement measures to minimise impacts on the environment from the initiation of construction activities through planning, careful site access route selection and implementation of mitigation measures.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Visual inspection of the signage indicating the 'no-go' areas. ▪ Close-out on incidents. ▪ Monitoring and audit reports. ▪ Inductions training and register. ▪ Environmental awareness programme/toolbox talks.			
Project initiation of Construction Activities	Appoint an ECO to manage and verify compliance with the EA and EMPr. Monthly audits need to be undertaken.	▪ Project Manager ▪ DEO ▪ Contractor (Site Manager)	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Development activities may take place only within the approved areas as. This includes laydown, material storage, cement mixing, earth deposition and storage etc. that will result from the construction activities.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area to inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.		▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Implement the Environmental Awareness Plan outlined in this EMPr.		▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Site clearing must be limited to the approved footprint only.		▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to the approved areas for these activities.		
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	The Richbay existing Fire Management Plan must be implemented for the project. If one does not exist, a fire management plan needs to be compiled and implemented. Natural areas remaining adjacent to the development footprint should be left to naturally regenerate, fire and cutting control methods are not to be used to clear areas containing natural indigenous vegetation.		
	Firefighting equipment must be securely placed and inspected monthly.		
	Any materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. No permanent construction phase structures should be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials.		
	Soft or green engineering should be incorporated into the design of the facility		

Table 6-3 – Vehicle, Equipment and Machinery Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT			
Impact Management Outcome: ▪ To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Close-out on incidents. ▪ Monitoring and audit reports. ▪ Equipment, machinery and vehicle checklists. ▪ Incident classification and reporting procedure.			
Operation of Equipment, Machinery and Vehicles	Ensure that the equipment, machinery and vehicles are adequately maintained so as to: ▪ Reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid. ▪ Ensure road-worthiness. ▪ Reduce emissions. Evidence of such maintenance must be recorded and maintained onsite for verification.	▪ DEO ▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	The movement of vehicles into and out of the site must be managed to ensure that there is no impact on the surrounding landowners. The planned routes and designated vehicle and machinery storage areas must be located within the transformed areas on site. Management measures includes ensuring that abnormal loads are moved outside of peak traffic hours, and reasonable measures are taken to ensure that public and staff safety is managed adequately.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of life. Speed limits must be enforced to ensure that erosion is limited.		
	No storage of vehicles or equipment must be allowed outside of the designated laydown areas.		
	All vehicles and personnel must make use of the existing roads and walking paths, especially construction/operational vehicles.		
	No servicing of plant and equipment should take place on site unless an emergency. Drip trays must be utilized if emergency servicing/repairs are required.		

Table 6-4 – Hazardous Substances and Pollutants Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
HAZARDOUS SUBSTANCES AND POLLUTANTS MANAGEMENT			
Impact Management Outcome: ▪ To ensure the correct storage, handling and disposal of fuels and chemicals in order to prevent impacts to the surrounding environment.			
Indicator and Compliance Mechanism: ▪ Maintenance records ▪ Safe disposal certificates (if applicable) ▪ Material safety data sheets (MSDS) (if applicable)			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
▪ Health, safety, environmental and community incident and complaints management system register. ▪ Chemicals management procedure (to be developed). ▪ Monitoring and audit reports. ▪ Training records.			
Fuel and Chemical Management	Fuel, oil, chemicals and other hazardous materials that will be required for the duration of the construction process must be stored within an area designated for the storage of such hazardous materials.	▪ DEO ▪ Contractor	▪ Pre - Construction ▪ Construction ▪ Decommissioning
	Label all liquids (chemicals and hydrocarbons) stored onsite for easy identification. MSDS for onsite chemicals, hydrocarbon materials and hazardous substances must be readily available. MSDS must include mitigation measures to ameliorate potential environmental impacts which may result from a spill, incorporating health and safety mitigation measures.		
	A spill management plan must be in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		
	No servicing of equipment on site unless an emergency. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers for safe disposal.		
	In cases where a surface leak occurs during loading and off-loading of construction materials, the spill material will be cleaned using a spill kit.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.		
	The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.	▪ DEO ▪ Contractor	▪ Pre-Construction ▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All machinery and equipment should be inspected regularly for faults and possible leaks; these should be serviced off-site or in appropriately bunded areas.	▪ Project Manager	▪ Decommissioning
	Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		
	All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.		
	Chemicals, hydrocarbon materials and hazardous substances maintained onsite must be managed in accordance with the Hazardous Substances Act (No. 15 of 1973) and its relevant regulations.	▪ Site Manager ▪ DEO ▪ Contractor ▪ Project Manager	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Spill kits must be available at all locations where hazardous substances are stored, handled or used, and spills must be cleaned up immediately in accordance with an established protocol applicable to the material.		
	Provide secure storage for fuel, oil, chemicals and other waste materials to prevent contamination of stormwater runoff.		
	A spill management schedule must be in place to prevent any incompatible chemicals ending up in the same pit.	▪ Project Manager ▪ Site Manager	▪ Operation
	Compatibility charts will be developed, and employees trained thereon.		
	Ensure product segregation as per SANS 10263.		
	Ensure secondary containment as per SANS 10263 and the National Buildings Regulations.		
Health and Safety	Display “no smoking” and “no naked flame” signs in and around the project area, as well as near the hazardous material store (if any).	▪ DEO ▪ Contractor	▪ Pre-Construction ▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills		▪ Operation ▪ Decommissioning
	Ensure that operators are well informed of the impacts of toxic releases that have been included in the MHI.	▪ Project Manager ▪ Site Manager ▪ DEO	Operation
	Ensure that operators are well informed of the impacts of toxic releases that have been included in the MHI.		
	The training programmes should enable them to understand how to respond after an incident i.e., emergency planning and training.		
	Forklift drivers must be licenced and well trained to minimise the likelihood of forklift accidents when carrying toxic chemicals.		
	A copy of this risk assessment should be available on the site at all times for inspection by the authorities.		
	Consider having curbing with drain to sump/ collection pit in the chemical offloading area to reduce the impact of toxic release from spills after a drum / pallet with drums has ruptured while offloading.		
	A spill management schedule must be in place to prevent any incompatible chemicals ending up in the same pit.		
	Ensure suitable ventilation through the warehouse.		
	There are Emergency Procedures for the RichBay group, and the plan must be revised to include the proposed project. The Emergency procedures must comply with SANS 1514 Codes and the MHI Regulations.		
	Annual Emergency drills are required.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Richbay should have segregation of incompatible materials for any accidental mixes and a natural ventilation system in place.		
	Installation must comply with local by-laws and applicable SANS 10087 Codes.		
	Risk reduction programmes should continually be investigated to reduce the impact from accidental fires and explosions on surrounding communities.		
	Town Planning should be made aware of which areas could be affected, in order to manage the approval of new developments in the vicinity of this MHI.		

Table 6-5 – Waste Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
WASTE MANAGEMENT			
Impact Management Outcome: ▪ To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Waste Management Protocol ▪ Relevant SANS Codes of Practice. ▪ Waste manifests and safety disposal certificates (all waste streams). ▪ Emergency preparedness and response procedure. ▪ Incident classification and reporting management procedure (to be developed). ▪ Health, safety, environmental and community incident and complaints management system register.			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
▪ Monitoring and audit reports.			
General Waste Management	General waste generated as a result of construction and operational activities must be managed in accordance with a waste management protocol for the Project.	▪ DEO ▪ Contractor ▪ Site Manager	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal.		
	Place an adequate number of labelled or colour coded general waste bins around the laydown area and at the construction area in order to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site as and when required basis to prevent rodents and pests entering the site.		
	Any litter, spills, fuels, chemical and human waste in and around the project area must be removed and disposed of timeously and responsibly.		
	Refuse bins shall be emptied as required and secured.		
	Temporary storage of domestic waste shall be in covered waste skips.		
	Maximum domestic waste storage period shall be weekly.		
	Retain records such as waybills and waste manifests associated with waste removal, transportation and disposal (safe disposal certificates).		
	Prohibit the mixing of general waste with hazardous waste. Should general waste be mixed with hazardous waste, it will be considered hazardous waste.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	There should be waste segregation implemented on site (e.g. chemicals, oil contaminated rags, paper, plastic) and management on the site.		
	Waste may never be stored in an open pit where it is susceptible to the elements such as wind and rain.		
	Recover, recycle and reuse general waste as far as possible.		
Hazardous Waste Management	Hazardous waste generated as a result of construction, operational and decommissioning activities must be disposed of to a registered landfill.	▪ ECO ▪ DEO ▪ Site Manager ▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / bunded areas		
	Train and inform all onsite personnel regarding hazardous waste minimisation, management and disposal.		
	Ensure that all hazardous wastes temporarily stored on site are stored in a covered sealed skip.		
	Clean areas where hazardous waste spills have occurred and dispose of the hazardous material appropriately. Key personnel must be trained on handling spillages.		
	Retain records of appropriate safety disposal certificates associated with hazardous waste removal, transportation and disposal.		
	Ensure that waste manifest documentation (as per the Waste Classification and Management Regulations – GNR 634) is prepared and maintained for the generation, transportation and disposal of waste.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All spills should be reported to the authorities as per the emergency preparedness and response frequencies / specifications.		

Table 6-6 – Health and Safety: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
HEALTH AND SAFETY			
Impact Management Outcome: ▪ To ensure communication with members of the public and Contractor Personnel to promote safety awareness. ▪ To prevent public access to construction sites and storage areas. ▪ To ensure safety for all onsite personnel. ▪ To ensure the health and safety of all site personnel, landowners and communities that may emanate from proposed Receiver Station			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Monitoring and audit reports. ▪ Incident classification and reporting management procedure (to be developed). ▪ PPE Register. ▪ Occupational health and safety plan (to be developed). ▪ Health and safety protocol (to be developed). ▪ Competency certification. ▪ Health and safety file for Developer and contractors. ▪ SANS certification. ▪ Compliance with OSHACT, Act 85 of 1993. ▪ Legal Register.			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
▪ Legal Appointments as per OSHACT.			
Health and Safety	The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of health and safety requirements.		
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to. The existing Richbay health and safety plan must also be adhered to.	▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.		
	Provide and wear appropriate PPE onsite.	▪ Contractor ▪ Site Manager	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Compile detailed Risk Assessments for all aspects of construction and operational activities prior to work.		
	Ensure all contractor's safety files are in place and up to date prior to commencement of their work.		
	All necessary good hygiene practices to be in place, e.g., provision of toilets, eating areas, infectious disease controls.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
			▪ Decommissioning
Facility emergencies	Emergency Response Plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as: ▪ appointment of emergency controller, ▪ provision of PPE for hazardous materials response, ▪ provision of first aid facilities, ▪ first responder contact numbers ▪ Anti-venom, snake bite treatment and facilities	▪ Site Manager	▪ Operation
	A detailed risk assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning.	▪ Site Manager	▪ Operation
Fire risk	Suitable fire-fighting equipment on site.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.		
	Ensure regular testing of emergency alarm systems are undertaken.		
	Emergency Response plan in compliance with SANS 1514 to be compiled if one does not exist, e.g., plan from transport and construction phase to be extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.		
	A fire management plan needs to be compiled and implemented to restrict the impact that fire would have on remaining natural and newly rehabilitated areas. Natural areas remaining adjacent to the development footprint should be left to naturally regenerate, fire and cutting control methods are not to be used to clear areas containing natural indigenous vegetation.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Public Safety	Restrict public access to the site.	▪ Site Manager ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning

Table 6-7 – Water Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
WATER MANAGEMENT			
Impact Management Outcome: ▪ To implement measures to prevent the contamination on surface and groundwater resources. ▪ To prevent erosion.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Incident classification and reporting management procedure (to be developed). ▪ Environmental awareness programme/toolbox talks. ▪			
Water Management	Stormwater control measures as per the approved Stormwater Management Plan (SWMP) must be implemented for the duration of the construction phase of the project.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction
	Containment of all contaminated water by means of careful run-off management on site.	▪ Site Manager ▪ Contractor	▪ Pre-Construction ▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Special foundation precautionary measures are recommended due to the medium potential for expansiveness and the dolomite classification. Total potential heave for the thick residual dolerite soil profiles encountered varies between 20 mm to 25 mm.	▪ DEO	▪ Operation ▪ Decommissioning
	Founding options for the structures include either stiffened or cellular rafts, or split construction with proper site drainage and plumbing requirements. Since the site must adhere to dolomite requirements in terms of SANS1936-3, drainage and plumbing precautions will in any event be required. Given the dolomite requirement stipulated SANS 1936-3 that 5m loss of support must be accommodated, raft foundation solution is proposed. This will override any small geotechnical problems that might be associated with the site. Structure specific geotechnical conditions are to be confirmed in the design level geotechnical investigation which will include footprint drilling for the relevant structures.		
	Old trenches are to be excavated, backfilled and recompacted to limit any differential settlements of foundations at these positions.		
	All stormwater should be effectively captured and led off the site.		
	A one metre wide concrete apron should be constructed around buildings which is designed to shed stormwater away from the structure.		
	No ponding of water should be allowed in this area, both during and after construction.		
	All courses in the plinth wall should be reinforced with brickforce. Brickforce should be incorporated in every fourth course thereafter and in at least three courses above all openings such as doors and windows.		
	Construction joints, to allow relative movement, should be incorporated at intervals of not more than 5 m in linear walls or at points to be determined by the structural engineer.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All yard walls, steps and similar structures should be isolated from the main structure.		
	Flexibility should be incorporated into wet services where they enter or leave buildings in order to ensure that relative movement does not result in leaking pipes.		
	Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out for the project and strictly enforced.		
	Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage. All spillage incidents must be reported to the responsible site officer as soon as they occur.		
	Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment.		▪ Construction ▪ Decommissioning
	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities and protection against exposure to environmentally dangerous or unhealthy situations or conditions.		▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Appropriate ablution facilities should be provided for construction workers during construction.		
	Seepage of liquid material into the ground will be prevented and accidental spillage will be cleaned immediately.		
	Implement the Stormwater Management Plan outlined in **Appendix D**.	▪ Site Manager	▪ Operation
	Contaminated stormwater will not reach environment as water will pass sump, hydrocarbon trap or filter prior to being released into the environment or stormwater system		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Rainwater collection / harvesting tanks will be installed for grey water usage.		
	Low flush toilets and low flow taps and showers will be installed.		

Table 6-8 – Air Quality: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
AIR QUALITY			
Impact Management Outcome: ▪ To ensure that impacts to air quality of the surrounding environment are minimised.			
Indicator and Compliance Mechanism: ▪ Complaints register. ▪ Incident reporting system. ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Equipment, machinery and vehicle maintenance.			
Dust Management	Before the commencement of any site works and during the operation, as much vegetation as possible must be retained, including patches and strips to minimise dust.	▪ DEO ▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	All stockpiles (if any) must be restricted to designated areas and may not exceed a height of two (2) metres;		▪ Pre-Construction ▪ Construction ▪ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Excavation activities have the potential to generate large amounts of dust. Pre-planning of earth-moving works can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following: ■ Plan excavation activities so that they are completed just prior to the time they are needed; ■ Observe weather conditions and do not commence or continue excavation activities if conditions are unsuitable e.g., under conditions of strong winds; and ■ Pre-water areas to be disturbed.		
	Cover trucks hauling any loose material that could produce dust when travelling. Minimise transfer points.		
	Re-vegetate disturbed areas as soon as possible to prevent excessive dust from occurring.		
	Dampen exposed soil to suppress dust if required. Use watering sprays on materials to be loaded and during loading. No non-environmentally friendly dust suppressants may be used.		
	Where possible, minimise speed limits and vehicle weights.		
	Limit the duration of the construction phase to as short a timeframe as possible.		
	Where possible, minimise the area under construction.		
	Make use of wet suppression techniques to minimise dust entrainment during periods of high wind speeds.		
	Where possible, minimise speed limits.		
	Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and soil/material stockpiles especially. This includes		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	wetting of exposed soft soil surfaces and not conducting activities during high wind periods which will increase the likelihood of dust being generated.		
	Ensure that all vehicles, machines and equipment are adequately maintained to minimise emissions.		
	It is recommended that the clearing of vegetation from the site should be selective, be kept to the minimum feasible area, and be undertaken just before construction so as to minimise erosion and dust potential.		
	All materials transported to, or from, site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials.		
	Once construction is complete, initiate rehabilitation (e.g., re-vegetation) procedures to reduce wind speed across exposed surfaces.		
Emissions	Routine inspections conducted at a maximum of six-month intervals to assess the condition of any tank covers or seals	▪ Site Manager	▪ Operation
	The unloading of liquid products received by road tanker be offloaded using bottom loading techniques		
	Regular servicing of combustion installations to maintain optimum operational efficiency		
	Undertake fenceline passive monitoring of HCl and VOCs, specifically the benzene, ethylbenzene, toluene and xylene range (i.e. BTEX).		

Table 6-9 – Noise: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
NOISE			
Impact Management Outcome: ▪ To ensure that noise impacts to the surrounding environment are minimal or mitigated.			
Indicator and Compliance Mechanism: ▪ Complaints register. ▪ Incident reporting system. ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Equipment, machinery and vehicle maintenance.			
Noise	Fit equipment, machinery and vehicles generating excessive noise with appropriate noise abatement measures and undergo regular maintenance to ensure optimum efficiency during operation.	▪ DEO ▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Provide complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure.		
	Regular maintenance of equipment to reduce the generation of additional unwanted noise.		
	Construction activities must be restricted to weekdays and daylight.		

Table 6-10 – Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
ARCHAEOLOGICAL AND CULTURAL HERITAGE			
Impact Management Outcome: ▪ To ensure that sites/artefacts of heritage value are identified and protected.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Monitoring and audit reports.			
Chance Finds	If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) are found during construction activities, the finds must be reported and the Chance Find Protocol must be implemented.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	The South African Heritage Agency (SAHRA) should be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice.		
	Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from site unless under direction of SAJHRA and a heritage specialist.		
	Should any remains be found on site that is potentially human remains, the South African Police Service (SAPS) should also be contacted. No SAPS official may disturb or exhume such remains, without the necessary permission from the SAHRA		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage legislation.		
	If any graves are uncovered during construction activities, the archaeologist must be called in to inspect the finds and/or if the police find them to be heritage graves, mitigation may be necessary and SAHRA must be contacted for processes to follow as per section 36(6) of the NHRA.	▪ Site Manager ▪ Contractor ▪ DEO	

Table 6-11 – Palaeontology: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
PALAEONTOLOGY			
Impact Management Outcome: ▪ To ensure that palaeontological material is identified and protected.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Monitoring and audit reports.			
Chance Finds	If any palaeontological material is exposed during digging, excavating, drilling or blasting Implement the finds must be reported and the Chance Find Protocol must be implemented.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning

Table 6-12 – Traffic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
TRAFFIC			
Impact Management Outcome: ▪ To ensure that the traffic impacts of the project are mitigated and managed.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Monitoring and audit reports. ▪ Incident classification and reporting management procedure (to be developed). ▪ PPE Register. ▪ Occupational health and safety plan (to be developed). ▪ Health and safety protocol (to be developed). ▪ Traffic and transportation management plan			
Management Plan	A Traffic Management Plan (TMP) is to be compiled once the contractor has been appointed and all the relevant details of the construction process are known. The TMP needs to address, inter alia: ▪ clearly defined route/s to the site for specific vehicles needed to transport equipment and materials. ▪ scheduled deliveries to avoid local congestion.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Richbay will ensure that all transportation is undertaken in terms of the requirements of the National Road Traffic Act, 93 of 1996 (NRTA) and applicable South African National Standards (SANS).		
	Richbay will develop procedures for the transportation of all dangerous goods.	▪ Site Manager	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Records	A photographic record of the road condition should be maintained throughout the various phases of the project development. This provides an objective assessment and mitigates any subjective views from road users.	▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
Signage and Notifications	Post relevant road signage along affected routes.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	The developer shall ensure that the contractor erects temporary signs warning motorists of construction vehicles on the approaches to the access road.	▪ Contractor ▪ DEO	
Dust Emissions	Reduce travel speed for construction vehicles on the internal roads on the site during construction.	▪ Contractor	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Dust-reducing mitigation measures must be put in place and be strictly adhered to, particularly for all dirt roads and any earth dumps. This includes the wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated. Only environmentally friendly suppressants may be used to avoid the pollution of water sources. Speed limits must be put in place to reduce erosion, and speed bumps should also be constructed.		
Vehicle Management	Ensure all vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Ensure that the access roads are left in the same or better condition, post-construction.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All remedial work or modifications to any of the public roads shall be done in consultation with and have the approval of the local road's authority (as is standard practice, this will be finalised during and be a requirement of the municipal planning approval process.	▪ Site Manager ▪ Contractor	▪ Decommissioning
	The developer shall ensure that the contractor provides the necessary driver training to key personnel to minimise the potential of incidents on the public road network.		
Permits	A permit must be obtained from the relevant authority for any abnormal loads transported.	▪ Site Manager ▪ Contractor ▪ EO	▪ Construction ▪ Operation ▪ Decommissioning

Table 6-13 – Soil and Land Use: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
SOIL AND LAND USE			
Impact Management Outcome: ▪ To prevent any disturbance, erosion or contamination of soil resources.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Incident classification and reporting management procedure (to be developed). ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Monitoring and audit reports.			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
▪ SWMP.			
Soil and Land Management	Land clearance must only be undertaken immediately prior to construction activities and only within the approved project footprint. Unnecessary land clearance must be avoided.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Limit earthworks and vehicle movement to demarcated paths and areas.		
	Limit the duration of construction activities where possible, especially those involving earthwork / excavations.		
	Access roads associated with the development should have gradients or surface treatment to limit erosion, and road drainage systems should be accounted for.		
	On-site vehicles should be well-maintained.		
	Drip trays should be placed under stationary vehicles / plant.		
	On-site pollutants/hazardous materials should be contained in a bunded area and on an impermeable surface.		
	Ensure proper control of dangerous substances entering the site.		
	When the site is decommissioned, the surface profile thereof can be altered to more closely resemble its current profile through earthworks		▪ Decommissioning
	Chemicals should be stored in fully enclosed areas and the car park area should be covered. Both should be on impermeable hardstanding.	▪ Site Manager	▪ Operation
	Hardstanding should be monitored for cracks.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	If chemicals are kept outside of the enclosed area temporarily, this area should be on hardstanding and bunded.		
	Ensure proper control of substances entering the site.		
	Adequate disposal facilities should be provided.		
	A non-polluting environment should be enforced.		
Erosion Management	Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces and soil stockpiles should be re-vegetated or stabilised as soon as is practically possible.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	The SWMP must be adhered-to.	▪ Site Manager	▪ Operation
	The site should be monitored for signs of erosion continually.	▪ Site Manager	▪ Operation
	Bare areas should be kept well vegetated.	▪ Site Manager	▪ Operation

Table 6-14 – Terrestrial Biodiversity: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
TERRESTRIAL BIODIVERSITY			
Impact Management Outcome: ▪ Prevent the unnecessary destruction of, and fragmentation of the biodiversity of the area. ▪ Revegetation of cleared areas.			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
▪ Alien vegetation clearing & control. ▪ Reduce erosion.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Incident classification and reporting management procedure (to be developed). ▪ Environmental awareness programme/toolbox talks. ▪ Monitoring and audit reports. ▪ Alien Invasive Management Plan.			
Loss of degraded grassland	Vegetation clearing should be restricted to the proposed Project infrastructure footprints only with no clearing permitted outside of these areas.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	The footprints to be cleared should be clearly demarcated prior to construction to prevent unnecessary clearing outside of this area.		
	As appropriate, barrier/fences should be erected to prevent fauna gaining access to construction and operational areas where they have a high probability of being killed or injured.		
	The handling, poisoning or killing of fauna by construction workers, warehouse staff and contractors must be strictly prohibited.		
	Following completion of construction, all litter, building rubble, etc. must be removed and disposed of at an appropriate site.		
	Any areas that were cleared of topsoil must be revegetated and the site left in a safe, stable and environmentally friendly condition.		
	Soils should be replaced around excavated/disturbed areas in the correct order, i.e. subsoils at the bottom, top soils on the top.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	If any indigenous plant species were removed from the site prior to construction, these should be replanted, with locations for planting to be specified, and planting overseen by a ecologist or botanist.		
	Any remaining areas of bare soils must be overseeded with an appropriate grass seed mix including a binding creeping grass and a nurse species selected for its rapid growth properties to provide stability to the disturbed soils. If necessary, seeded areas should be further stabilised with a biodegradable (jute) mesh that is pegged in place. The seed mixture should be manually sown over the prepared soils.		
	Any imported plants used for revegetation purposes should consist of native grassland/thornveld species.		
	Deep watering immediately after installation of the sods/sowing seeds on bare soil areas will be required to promote the rooting of the sods back into the soils below, and/or the germination of the sown seeds. Manual watering should be done twice weekly for at least four weeks, and every week thereafter for the duration of the dry season.		
Fauna	No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this. These actions are illegal in terms of provincial environmental legislation.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	A qualified ECO must be on site when clearing begins. The area must be walked though prior to construction to ensure that no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction
	Staff should be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The duration of the construction should be minimized to as short term as possible, in order to reduce the period of disturbance on fauna and flora		
	The area where storage tanks and filling are to take place needs to be lined with industry standard linings to prevent spilling of the corrosive and toxic substances into the surrounding areas.		
	Any holes/deep excavations must be dug in a progressive manner in order to allow burrowing animals time to move off and to prevent trapping. Should the holes remain open overnight they must be covered temporarily to ensure no fauna species fall in.		
	Should any SCC fauna be observed nesting within the proposed footprint area before or during construction, all activities must cease immediately. A relevant faunal specialist must be consulted in order to facilitate the capture or removal of any SCC animals	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	Employees and contractors should be made aware of the presence of, and rules regarding fauna through suitable induction training and on-site signage.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	Movement across the Project area should be facilitated by providing suitably sized gaps in fencing and/or culverts/passageways under roads for fauna.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
Rehabilitation	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds and to support the adjacent habitat. This will also reduce the likelihood of encroachment by more alien invasive plant species.	▪ Contractor ▪ DEO	▪ Post Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Alien Vegetation Management	An alien invasive species control programme must be developed, or any existing AIS management programmes expanded, to include the active control of alien invasive species that may establish/spread as a result of proposed Project activities.	▪ Site Manager ▪ Contractor ▪ DEO	▪ Pre-Construction ▪ Construction ▪ Operation ▪ Decommissioning
	The Alien and invasive species management to be prioritised for the following alien and invasive species control areas: ▪ Areas where vegetation cover is disturbed. ▪ Areas where soils imported from external sources are applied. ▪ All rehabilitated areas. ▪ Areas within the development area that are already invaded by alien species. ▪ Road fringes.		
	The presence of alien and invasive flora species should be documented prior to the commencement of the development of the infrastructure and rehabilitation activities, and the baseline case used as a benchmark against which the spread of these species can be monitored. Annual monitoring inspections should identify target areas for clearing and additional rehabilitation.		
	All alien vegetation occurring within construction and operational areas must be removed and monitored for re-growth.		
	No plant species whether indigenous or exotic may be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.		
	Walked Surveys of the project perimeter, access roads and other areas adjacent to hard infrastructure to monitor for alien vegetation and re-growth.		

7 MANAGEMENT PLANS

A number of generic management plans have been included in the EMPr. The plans included below provide an indication of the requirements that must be followed on the proposed construction and operation of the Proposed Project. It must be noted that many of these plans can be updated at any stage depending on any changes that may occur on the site.

The following specific plans have been compiled:

- Emergency Response Plan (ERP);
- Hazardous Substance Management Plan;
- Fire Management Plan;
- Alien Invasive Plant Management Plan;
- Traffic and Transport Management Plan;
- Heritage and Palaeontological Management Plan;

7.1 EMERGENCY RESPONSE PLAN (ERP)

The existing Emergency Response Plan for Richbay must be amended to include the proposed site or a new ERP must be developed for the site:

It is recommended that an Emergency Plan be compiled, and the following adhered to:

- Must comply with SANS 1514 Codes.
- Must comply with the MHI Regulations.
- Must be accepted and signed by management and the Local Authority.

7.2 HAZARDOUS SUBSTANCES MANAGEMENT PLAN (HSMP)

Hazardous substances are chemicals or materials that can cause acute or chronic harm to health, be it humans or the environment. The key potential sources of impact related to the management of Hazardous Chemical Substances (HCS) and fuel during construction relate to the risk of accidental release of hydrocarbons to the environment, accidental exposure to workers, and fire and explosion risks.

Potential impacts associated with these risks, if poorly managed, include:

- Impact to soil and/or groundwater, which may result in degradation of the resource and requirement for remedial action;
- Impacts on human health & safety due to either direct exposure or through fire/explosion;
- Gas emissions associated with the combustion of fuel, are mainly compounds of nitrogen, carbon including very small traces of sulphur and particulate matter; and
- Fugitive emissions from HCS & fuel storage.

The purpose of a Hazardous Substances Management Plan (HSMP) is to provide a framework for the management of hazardous substances onsite during the construction and operation of the Proposed project:

- Ensure the handling and storage of hazardous substances are in accordance with relevant standards;

- To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons;
- To ensure that the storage and maintenance of machinery onsite does not cause pollution of the environment or harm to persons.

7.2.1 HAZARDOUS SUBSTANCES MANAGEMENT PROCEDURE

A plan for managing the transportation, delivery, storage and handling of hazardous substances onsite is detailed below. A method statement detailing the specific storage and handling practices during construction must be prepared by the Contractor prior to the commencement of construction.

REGISTER OF HAZARDOUS SUBSTANCES

Contractors shall establish inventories or registers of hazardous substances on site. The inventory is to be updated when new hazardous substances are introduced to the workplace or the use of existing hazardous substances is discontinued. Both the chemicals' register and the Material Safety Data Sheets (MSDSs) must be readily available at a central location or near where the chemicals are being stored or used.

MSDS

It is standard practice that an MSDS is provided by the manufacturer or supplier of all hazardous substances. An MSDS is required for all chemicals and substances on site. These MSDSs are to be made available to all parties affected by the use or storage of the chemical. MSDSs are the key to communicating hazards and safe handling practices for chemicals. In addition, MSDS information is to be made available to all employees.

DELIVERIES

Transport of all hazardous substances must be in accordance with the relevant legislation and regulations. Contractors are responsible for identifying and securing any necessary permits for any proposed bulk fuel storage arrangements. The supplier will fill contractors fuel tanks; fuelling is the responsibility of the licensed contractor who will be supervised by the storage/work area supervisor. No 'black-market' or 'grey-import' fuels shall be used. All fuels purchased must be legitimate and subject to required duties and taxes.

Prior to fuel transfer the operator will verify that: all fuel transfer hoses have been connected properly and couplings are tight; transfer hoses are not obviously damaged; fuel transfer personnel are familiar with procedures; for fuelling stations, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to shut off fuel flow manually; a means of communication has been established between the two people transferring fuel; and a high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff will be verified each time it is used; The fuel contractor will clean up and report any accidents or spills immediately to the project ESHS team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

The following requirements are additional to any applicable requirements established in other management plans such as the Occupational Health & Safety Management Plan:

- Storage facilities will have the applicable MSDS available;
- Smoking will be strictly prohibited from any areas where fuel loading operations take place;
- Appropriate signage will be used to identify potential spill risks;
- Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing to WP as well as remedial repairs effected together with the date of repairs and any follow up inspection. Any release of fuels or other substance will be cleaned up;
- All used fuel / oil products will be collected in tanks marked “Waste Oil”; and
- All hydrocarbon associated wastes will be managed in line with the Waste Management Plan.

MATERIALS STORAGE

- All temporary hydrocarbon storage will be situated above ground. There will be no buried storage tanks permitted.
- All chemicals, fuels and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance as per the requirements of SABS 089:1999 Part 1. The bunded area will contain 110% volume of the largest container stored.
- Bunds and service area platforms to be cleaned and maintained regularly.
- SABS approved Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. The relevant construction crew members must be trained in their use.
- Keep a record of all hazardous substances stored on site. Clearly label all the containers storing hazardous waste.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
- Chemical and hydrocarbon storage facilities shall be covered to prevent rainfall ingress into secondary containment units and well-ventilated
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.
- An effective monitoring system must be put in place to detect any leakage or spillage of all hazardous substances during their transportation, handling, installation and storage.

SPILL AND LEAK MANAGEMENT AND PREVENTION

- In the event of a major spill or leak of contaminants, the relevant authorities must be informed. The relevant construction crew members must be trained in their use.
- Spilled cement must be cleaned up immediately and, stored as hazardous waste and disposed of at a suitably licensed hazardous waste disposal facility.
- Routine servicing and maintenance of vehicles must not be undertaken onsite (except for emergencies). If repairs of vehicles must take place, an appropriate drip tray must be used to contain any fuel or oils.
- Any water that collects in bunds must not be allowed to stand. Should the water be contaminated, it is to be removed and treated prior to discharge, or disposed of as hazardous waste. Clean stormwater contained within the bunds may be reused.
- No chemicals must be stored, or vehicle maintenance undertaken within 100m of wetlands or drainage lines.

- Construction machinery must be stored in an appropriately sealed area. If machinery cannot be stored in a sealed area, then a drip tray must be used to prevent spillage from any leaks.
- As far as practicable, all equipment servicing / maintenance shall be undertaken within designated workshop areas.
- All generators on site, including generators that are not in use must be located in a bunded area or on a drip tray.
- Bunded areas and drip trays must be maintained on a regular basis.
- Diesel generators and water pumps shall be located in secondary containment areas or shall be self-contained to prevent loss of fuels and oils;
- Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean stormwater system.
- Upon completion of construction, the area must be cleared of potentially polluting materials.
- Emergency response planning will be managed via the Emergency Preparedness and Response Plan.

7.2.2 INSPECTION, MONITORING AND TRAINING

Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.

The contents of the Hazardous Substances Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the relevant Training Procedure.

Examples of Toolbox Talks include:

- Storage of hazardous substances
- Working with hazardous substances
- Management of hazardous waste
- Spill Prevention

7.3 FIRE MANAGEMENT PLAN

The purpose of this plan is to address firefighting requirements throughout the construction of the project and to preserve and protect human life as well as tangible goods and equipment in the event of a fire.

Mitigation and management measures include, but are not limited to the following:

- All construction areas shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible.
- The Contractor shall take specific measures to prevent fires, caused by activities at the construction sites. These measures must include appropriate instruction of employees about fire risks and designated smoking areas.
- Fire prevention facilities must be present at all storage facilities. No open fires shall be allowed on site under any circumstance.
- Emergency numbers for local police and fire department etc. must be placed in a prominent area.
- Firefighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.

- All construction staff must be trained in fire hazard control and firefighting techniques. Translators are to be used where necessary.
- All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.
- Firefighting equipment must be regularly maintained by a suitable service provider.

7.4 TRAFFIC AND TRANSPORT MANAGEMENT PLAN

The purpose of a Traffic and Transportation Management Plan is to address regulatory compliance, traffic management practices, and protection measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the project site. The objectives of this plan include the following:

- To ensure compliance with all legislation regulating traffic and transportation within South Africa National, Provincial, Local and associated guidelines.
- To avoid incidents and accidents while vehicles are being driven and while transporting personnel, materials, and equipment to and from the project site.
- To raise greater safety awareness in each driver and to ensure the compliance of all safe driving provisions for all the vehicles.
- To raise awareness to ensure drivers respect and follow traffic regulations.
- To avoid the deterioration of access roads and the pollution that can be created due to noise and emissions produced by equipment, machinery, and vehicles.

Mitigation and management measures include, but are not limited to the following:

- All vehicles used during the transport of materials and in the construction, activities are required to be roadworthy per the National Road Traffic Act (NRTA) and display all pertinent certificates as required.
- All vehicles travelling to and from the site shall adhere to all laws imposed by the law enforcement agencies and shall comply with any requests made by the law enforcement officials.
- For each convoy of abnormal vehicles/loads a designated safety officer shall be nominated. All abnormal vehicles and loads to be transported are required to have a valid permit before any trip is begun.
- The route must be assessed to determine if any structures need to be temporarily or permanently relocated so as to avoid damage to the load as well as public and private property during the trips.
- A designated transport coordination manager must be appointed to oversee and manage the traffic safety officers. Additionally, the designated transport coordination manager must inform and keep up-to-date the interested and affected parties of all the activities taking place that may have a direct impact on them.
- A traffic safety officer shall be nominated to make all the necessary arrangements to maintain the required traffic measures for the duration of the project as outlined in the “Standard Specifications for Road and Bridge Works for State Road Authorities,’ 1998 edition. The safety officer shall liaise daily with the transportation coordination manager to keep them apprised of the state of all the traffic arrangements.
- All construction vehicles that are entering the site shall also be available via radio or telephone communication to the transport coordination manager. So that in the event of an emergency, all vehicles can be accounted for.

- All vehicles shall comply with the posted speed limits on public roads as well as the speed limits within the development. For additional speed limits that are imposed on the construction traffic, refer to the South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 for the restrictions.
- All construction traffic shall comply with the legal load requirements as outlined in the National Road Traffic Act and National Road Traffic Regulations.
- Construction traffic entering the site along public roads must be limited to times when peak hour traffic can be avoided. The peak traffic occurs during 7h00 to 8h30, and 16h00 to 17h30.
- The South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 is to be used for all traffic during the construction activities of the proposed project.
- During periods of high construction traffic entering and exiting the site, it is recommended that flagmen help direct the traffic. This will enable the safe movement of construction and public traffic at the entrance and reduce the number of potential conflicts.

7.5 HERITAGE AND PALAEONTOLOGICAL MANAGEMENT PLAN

The purpose of this document is to provide a response guideline should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the area of the Proposed Project. Heritage resources are protected in terms of the National Heritage Resources Act (No 25 of 1999) (NHRA).

7.5.1 CHANCE FIND PROCEDURE

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Proposed Project. This Chance Find Procedure (CFP) must be read in conjunction with the EMPr.

The Contractor or other person discovering a potentially significant site or artefact will initiate the following actions:

- Once alerted to heritage resource/fossil occurrence(s): alert site foreman, stop work in area immediately, safeguard site with security tape / fence / sand bags if necessary.
- Record key data while fossil remains are still in situ:
  - Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo
  - Context – describe position of fossils within stratigraphy (rock layering), depth below surface
  - Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)
- If feasible to leave fossils in situ:
  - Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
  - Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume
- If not feasible to leave fossils in situ (emergency procedure only):
  - Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)

- Photograph fossils against a plain, level background, with scale
- Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags
- Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist
- Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation

- If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by Vopak.
- Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency;
- The Specialist Palaeontologist must undertake the following:
  - Apply for Fossil Collection Permit Record / submit Work Plan to relevant Heritage Resources Agency.
  - Describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy).
  - Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data.
  - Submit Palaeontological Mitigation report to Heritage Resources Agency.
  - Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.

7.5.2 TRAINING, INSPECTION AND MONITORING

Since it is not practical to have a regular monitoring presence over the construction period by either an archaeologist or palaeontologist, environmental awareness training must be conducted by the EO for all contractors and subcontractors. The training must include, as a minimum, the following:

- Identifying potential features of heritage significance;
- Procedures for dealing with heritage resources discovered on site;
- Applicable Legislation pertaining to the protection of heritage resources; and
- The importance of protecting heritage resources.
- The contents of the Heritage Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks.

8 CONCLUSION

In terms of the NEMA, everyone (i.e. all persons engaging in any component of this project) is required to take reasonable measures to ensure that they do not pollute the environment. 'Reasonable measures' includes informing and educating employees about the environmental risks associated with their work and training them to operate in an environmentally responsible manner.

Richbay also recognises that, in terms of the NEMA, the cost to repair any environmental damage will be borne by the person responsible for the damage. Should the above-mentioned environmental

guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the Proposed Project will be mitigated adequately. Vopak and the selected Contractor shall appoint relevant personnel, as well as an independent ECO, to monitor the site periodically throughout construction to ensure that the required environmental controls are in place and working effectively.

If you have any further enquiries, please feel free to contact:

WSP Group Africa (Pty) Ltd

Attention: Patricia Nathaniel

(T) +27 11 361 1398

(E) patricia.nathaniel@wsp.com

Appendix A

EAP CV

APPENDIX

Patricia Nathaniel

Patricia Nathaniel

Principal Consultant, Earth & Environment

CAREER SUMMARY

Patricia is a dedicated, focused and experienced individual with a post-graduate degree in Environmental Management and twelve years of work experience in the environmental field. Patricia is a Principal Consultant for WSP's Earth & Environment Team.

Patricia has an Honours degree in Environmental Management and is a registered Environmental Assessment Practitioner with EAPASA. She is also SACNASP registered.

Patricia was a Technical Manager at KSEMS Environmental Consulting before taking up a position at GIBB Environmental. Patricia has broad experience with a range of aspects within the environmental management space, including environmental reporting, reviewing, compiling tender documents, submission of tenders, business development, marketing, client liaison, training of the junior staff and overall project management of all active projects.

Patricia's most recent position prior to joining WSP as a Principal Consultant, was Senior Environmental Consultant at GIBB Environmental. She was the Environmental Scientist on the MCWAP-2A Project which is one of the largest projects of its kind in Africa involving the abstraction of water from the Crocodile (River) West and the transfer of this water to the end users i.e., predominantly the power stations in the Limpopo Province. She was also the Lead Consultant on the KZN Automotive Supply Park Project, DTPC is the Applicant. This is also a pioneer project as it would be the first of its kind in KZN. She is the EAP on the Lower Mkomazi Bulk Water Scheme Project, renewable energy projects and hospital conditional assessments as well as Environmental Project Manager for the Transnet Port of Durban Masterplan Project.

<1 years with WSP

12 years of experience

Area of expertise

Environmental auditing and reporting

Environmental Impact Assessments

Basic Assessment Reports

Water Use License Applications

Due Diligence Reports

Project Management

Language

English

EDUCATION

Bachelor of Science (Honours), Environmental Management, University of KwaZulu-Natal, South Africa	2013
Bachelor of Science, Geography, University of KwaZulu-Natal, South Africa	2009

ADDITIONAL TRAINING

WULA Training Course: KSEMS	2016
Public Participation in EIA Course: IAIAsa	2015

Patricia Nathaniel

Principal Consultant, Earth & Environment

2014 EIA Regulations in Context: Shepstone and Wiley	2015

PROFESSIONAL MEMBERSHIPS

Registered Environmental Assessment Practitioner: Number 2020/1120	EAPASA
SACNASP Registered Scientist: 123478	SACNASP

PROFESSIONAL HISTORY

Gibb Environmental, Consultant, Environmental	April 2020 - February 2023
KSEMS Environmental Consultant, Principal Consultant, Technical Manager Senior Environmental Consultant, Environmental Consultant	February 2014 – March 2020
ERM Southern Africa, Consultant/subconsultant, Researcher/Environmental	December 2020 – August 2013
Tiger Brands, Quality Analyst	September – December 2010
BSN Medical, Microbiologist Intern	January – December 2009

PROFESSIONAL EXPERIENCE

Environmental Reporting and Project Management

Umgeni Water, uMkhomazi Bulk Water Scheme, South Africa
2022 – 2023
EAP
Compilation of the BAR for the project.

Eskom, Ferrum Upington 400kV Solar Powerline, South Africa
2022 – 2023
EAP
Brief project description

Client, Project title, Country
Year from/to
Role
Compilation of the BAR for the project.

DTPC, KZN Automotive Supply Park, South Africa
2022 - 2023
EAP
BAR and WULA. Compilation of the BAR and WULA for the project.

Transnet Durban, Transnet Durban Logistics Hub Expansion, South Africa
2022 - 2023
EAP / Project Manager
Fatal Flaw Analysis on various components of the POD expansion. Project manager, environmental assessments.

TCTA, MCWAP2 Bulk Water Scheme and Borrow Pits, Limpopo
2020 - 2023
EAP.
BAR and WULA. Compilation of the BAR for the Borrow Pits and WULA for the entire project.

Patricia Nathaniel

Principal Consultant, Earth & Environment

THD and Dube TradePort (eThekwini Metropolitan Municipality), N3 Material Sources (Quarries and Borrow Pits), South Africa
2019 -2020
Technical Manager/Project Manager
Compilation of the BAR and WULA.

HHO Consulting Engineers (Free State), R34 Upgrade and Borrow Pits, South Africa
2019 - 2020
Technical Manager/Project Manager
Compilation of the BAR and WULA.

Manaba Investments, Ugu District Municipality, Uvongo Car Park, South Africa
2019 - 2020
Technical Manager/Project Manager
Compilation of the BAR and WULA.

DDRA/Grindrod, Mkambathini Municipality, Grindrod Autoport, South Africa
2019 - 2020
Technical Manager/Project Manager
EA Amendment and ECO Audit Reports. Compilation of the EA Amendment and Review of the ECO Audit Reports.

WSP, Umgungundlovu District Municipality, N3 Upgrade from Murray Road to New England Interchange, South Africa
2019 - 2020
Technical Manager/Project Manager
Review of the BAR and WULA.

Aurecon Eastern Cape, New and Upgrade of Access Roads along the N2 including Borrow Pits, Eastern Cape, South Africa
2018 - 2020
Technical Manager/Project Manager
Compilation of the BAR and WULA.

Umgeni Water, Umgungundlovu District Municipality, Vulindlela Pipeline Bulk Water Supply Scheme Phase 1 and 2, South Africa
2017 - 2020
Technical Manager/Project Manager
Compilation of the BAR and WULA.

KSIA, eThekwini Metropolitan Municipality, King Shaka Amendment to the EA, South Africa
2017 - 2019
Technical Manager/Project Manager
Review of the EA Amendment.

THD and Dube TradePort, eThekwini Metropolitan Municipality, Ushukela Mixed Used Development, South Africa
2017 - 2019
Technical Manager/Project Manager
Compilation of the BAR and WULA.

Keystone Investments, eThekwini Metropolitan Municipality, Umbogintwini Petrol Filing Station, South Africa
2017 - 2018
Technical Manager/Project Manager
Compilation of the BAR and WULA.

Patricia Nathaniel

Principal Consultant, Earth & Environment

RHDHV, Mangaung Metropolitan Municipality, SANRAL N8 Rehabilitation and Borrow Pits, South Africa
2017 - 2018
Technical Manager/Project Manager
Compilation of the BAR and WULA.

RHDHV, Port Edward, SANRAL Port Edward Borrow Pit, South Africa
2017 - 2018
Technical Manager/Project Manager
Review of BAR and WULA.

RHDHV, Port Edward, SANRAL R61 Borrow Pit, South Africa
2017 - 2018
Technical Manager/Project Manager
Review of BAR and WULA.

Renishaw, Scottburgh, Renishaw Property Development, South Africa
2017 - 2018
Technical Manager/Project Manager
Project Direction and Review of the WULA.

Nyeleti Consulting, Ubumbulu, Mbumbulu MR30 Town Upgrade, South Africa
2017 - 2018
Technical Manager/Project Manager
Compilation of the EIA Enquiry.

Umgeni Water, Umgungundlovu District Municipality, Umbumbulu Pump Station, South Africa
2017 - 2018
Technical Manager/Project Manager
Project Direction and Review of the BAR and WULA.

Transnet, uMhlatuze Municipality, Diesel Locomotive Facility in the Port of Richards Bay, South Africa
2017 - 2018
Technical Manager/Project Manager
Project Direction and Review of the EA amendment and WULA.

Cubical Investments, Ugu District Municipality, Scottsburgh Mall Fuel Station, South Africa
2017 - 2018
Technical Manager/Project Manager
Compilation of the BAR, WULA and Appeal.

TPA Consulting, iLembe District Municipality, Mona Bridge, South Africa
2017
Technical Manager/Project Manager
Review of BAR and WULA.

TPA Consulting, iLembe District Municipality, Mahadeni Bridge, South Africa
2017
Technical Manager/Project Manager
Review of BAR and WULA.

NME Consulting, eThekwini Municipality, N2 Upgrade (Lovu River to Umlaas Canal), South Africa
2017
Technical Manager/Project Manager
Compilation of the BAR and WULA.

Ibhongo Consulting, D1252 Triple Celled Culvert and Borrow Pit, South Africa
2016 - 2019

Patricia Nathaniel

Principal Consultant, Earth & Environment

Technical Manager/Project Manager
Project Guidance and Technical Review of BAR and WULA.

Ecovate, eThekwini Metropolitan Municipality, South Africa
2016
Technical Manager/Project Manager
Project Guidance and Technical Review of BAR and WULA.

TPA Consulting, Ugu District Municipality, Harding Informal Traders Market, South Africa
2016
Technical Manager/Project Manager
Project Guidance and Technical Review of ECO Audit Reports and WULA.

Arcus Gibb, Eden District Municipality, Gwaing Bridge, South Africa
2016
Technical Manager/Project Manager
Project Guidance and Technical Review of BAR and WULA.

FFS Visserhok Plant, Western Cape Scoping and EIR, South Africa
2016
Technical Manager/Project Manager
Project Guidance and Technical Review of EA amendment.

Tongaat Hulett Development, eThekwini Metropolitan Municipality, Shongweni Mixed Use Development Phase 2 & 3, South Africa
2016 - 2019
Technical Manager/Project Manager
Project Guidance and Technical Review of the Scoping and EIR.

Henwood and Nxumalo, Umgungundlovu District Municipality, Water Use License Application for Sinkwazi and Sikhumbuzo Roads, South Africa
2016 - 2017
Technical Manager/Project Manager
Project Guidance and Technical Review of the WULA.

Henwood and Nxumalo, Umgungundlovu District Municipality, Upgrading of Harewood Phase 1-6 Roads within Edenvale, South Africa
2016 - 2020
Technical Manager/Project Manager
Project Guidance and Technical Review of the BAR and WULA.

Naidu Consulting, Umgungundlovu District Municipality WULA, The Upgrade of New Barker's Bridge, South Africa
2016 - 2017
Technical Manager/Project Manager
Project Guidance and Technical Review of the BAR WULA.

Naidu Consulting, Umgungundlovu District Municipality BAR and WULA, The Upgrade of the Meshlyn Bridge, South Africa
2016 - 2017
Technical Manager/Project Manager
Project Guidance and Technical Review of the BAR and WULA.

uBuhlebezwe Municipality, Ogle Farm Mixed Use Development, South Africa
2016 - 2019
Technical Manager/Project Manager
Project Guidance and Technical Review of the BAR and WULA.

Patricia Nathaniel

Principal Consultant, Earth & Environment

Samani Consulting, Ugu District Municipality, Basic Assessment Report and WULA, Upgrade of Provincial Road D985, South Africa
2016 - 2017
Environmental Consultant/Project Manager
Project Guidance and Technical Review of BAR and WULA.

Samani Consulting, Ugu District Municipality, Basic Assessment Report and WULA, Upgrade of Provincial Road P740, South Africa
2016 – 2017
Environmental Consultant/Project Manager
Project Guidance and Technical Review of BAR and WULA.

TPA Consulting, Ugu District Muncipality, Madakana and Kwaluhlaza Pedestrian Bridge, South Africa
2016
Technical Manager/Project Manager
Project Guidance and Technical Review of BAR and compilation of the WULA.

Nyeleti Consulting, Mangaung Metropolitan Municipality, Bloemfontein Ring Road N8, South Africa
2015 - 2020
Environmental Consultant/Project Manager
Compilation of the Scoping and EIR and WULA.

SANRAL, Mangaung Municipality, Upgrading of the Sanral N6 National Route from Rouxville to Smithfield including Borrow Pits, South Africa
2015 - 2020
Environmental Consultant/Project Manager
Basic Assessment Report and WULA. BARs for Borrow Pits, WULA, Technical Review of the ECO Audit Reports.

David Rowles Development, eThekwini Metropolitan Municipality Basic, Chicken Farm Residential Development, South Africa
2015 - 2019
Environmental Consultant/Project Manager
Assessment Report, WULA, EIA Enquiries. Compilation of BAR, WULA and EIA Enquiries and Technical Review of Reports once project was handed over to another consultant.

True Blue Group, eThekwini Metropolitan Municipality, KFC Tongaat, South Africa
2015 - 2019
Environmental Consultant, Reviewer/Project Manager
Basic Assessment Report, EIA Enquiry and WULA. Compilation of the EIA Enquiry and Reviewer of the WULA

Samani Consulting, Ugu District Municipality, P73 Borrow Pit, South Africa
2015 - 2016
Technical Manager/Project Manager
Basic Assessment Report and WULA. Project Guidance and Technical Review of BAR and WULA.

Transnet, uMhlatuze Municipality, Transnet Locomotive Turntable, South Africa
2015 -2016
Environmental Consultant/Project Manager
Basic Assessment Report and WULA.

Samani Consulting, Ugu District Municipality, N2 Borrow Pit, South AFrica
2015 - 2016
Environmental Consultant/Project Manager
Basic Assessment Report and WULA. Compilation of EMPr and WULA/Project Manager.

Patricia Nathaniel

Principal Consultant, Earth & Environment

Samani Consulting, eThekwini Metropolitan Municipality, P400 WULA, South Africa
2015 - 2016
Environmental Consultant/Project Manager
WULA and ECO Audit Reports. Compilation of WULA and ECO Audit Reports.

Aecom, Umgungundlovu District Municipality, DUT Pietermartizburg Upgrade – ECO, South Africa
2015 - 2016
Environmental Consultant/Project Manager
EMPr and ECO Reports. Compilation of the EMPr and ECO Reports.

Springville Investments, eThekwini Metropolitan Municipality, 117 Wiltshire Road Upgrade, South Africa
2015 - 2016
Environmental Consultant/Project Manager
Compilation of WULA.

Enprocon, Gert Sibande District Municipality, Goedehoop Stene Brickmaking Facility, South Africa
2015 - 2016
Environmental Consultant/Project Manager
Compilation of the WULA.

Samani Consulting, Ugu District Municipality, P73 Borrow Pit, South Africa
2015 - 2016
Environmental Consultant/Project Manager
Compilation of the EMPr.

Henwood and Nxumalo, Umgungundlovu District Municipality, Harewoods Roads, South Africa
2015
Environmental Consultant
Basic Assessment Report and WULA. Project Guidance and Technical Review of BAR and WULA.

Madan Singh and Associates, Ugu Municipality, P77 Road Upgrade, South Africa
2014 - 2015
Environmental Consultant
Compilation of BAR and WULA.

Samani Consulting, Ugu Municipality, Upgrade of Provincial Road R75.3, South Africa
2014 - 2015
Environmental Consultant
Compilation of BAR and WULA.

Madan Singh and Associates, Umgungundlovu District Municipality, Dambuza Road Upgrade, South Africa
2014 - 2015
Environmental Consultant
Compilation of BAR and WULA.

Boston Ink Consulting, Zululand District Municipality, Upgrade of Phenyane to Obhazweni Road, South Africa
2014 - 2015
Environmental Consultant
Compilation of WULA.

Hatch Goba, Ndwedwe Municipality, Umdloti River Bridge and Realignment of P713, South Africa
2014 - 2015
Environmental Consultant
Compilation of BAR and WULA.

Patricia Nathaniel

Principal Consultant, Earth & Environment

TPA Consulting Engineers, Okahlamba Municipality, Ohombe Vehicle Bridge, South Africa
2014 - 2015
Environmental Consulting
Compilation of BAR and WULA.

Mott Macdonald, eThekwini, Umlazi K & L Sanitation Project
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Client Mott Macdonald, eThekwini, Umlazi P & Q Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Mott Macdonald, eThekwini, Umlazi G Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Mott Macdonald, eThekwini, Umlazi A, B, C, E, S, and Malaba Hills Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Mott Macdonald, eThekwini, Unity Avenue Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Mott Macdonald, eThekwini, N4 Informal Settlement Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Mott Macdonald, eThekwini, Happy City Informal Settlement Sanitation Project, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

Samani Consulting, Umdoni Municipality, GJ Crookes Pedestrian Bridge, South Africa
2014
Environmental Consultant
Screening, Basic Assessment Report and WULA. Compilation of BAR and WULA.

NamPower, Namibia, Baynes Hydropower Project, South Africa
2010 - 2013
Junior Environmental Consultant
Environmental, Social and Health Impact Assessment.

UNISA
UNIVERSITY OF SOUTH AFRICA

We certify that

PATRICIA PEARL NATHANIEL

having complied with the requirements of the Higher Education Act and the Institutional Statute, was admitted to the degree of

HONOURS BACHELOR OF SCIENCE

in Environmental Management

at a congregation of the University on 24 May 2013

Vice-Chancellor

University Registrar

Executive Dean

10561446084738G05061

Environmental Assessment Practitioners Association of South Africa

Registration No. 2020/1120

Herewith certifies that

Patricia Nathaniel

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

APPENDIX

ANRI SCHEEPERS

ANRI SCHEEPERS, BA

Principal Consultant (Environmental Services), Environment & Energy

Years with the firm

8

Years of experience

13

Areas of expertise

Stakeholder Engagement

Water Use License Applications

Environmental Authorisation Processes

Environmental Management Plans

Waste Management

Legal Compliance Assessments

Environmental Due Diligence and Liability Assessments

Environmental Management Systems

Languages

English

Afrikaans

CAREER SUMMARY

Anri graduated from the University of Johannesburg with a BA honours in Geography in 2007, and has thirteen years work experience. Anri is a principal environmental consultant and team coordinator for the Planning and Advisory Services unit.

Anri has been involved in numerous mining and industrial projects in South Africa. Anri has experience with diamond, gold, platinum, chrome, coal and manganese mining and processing operations. The projects include Environmental and Social Impact Assessments, Amendment processes and Environmental Management Programme consolidation and alignment processes. She has project managed numerous multi disciplinary projects in various sectors in South Africa and has experience with the International Finance Corporation Performance Standards and African Development Bank Guidelines.

Anri is qualified as a Lead Auditor and has undertaken legal compliance auditing, including environmental authorisations, waste management licences, water use licences and environmental performance assessments. In addition, she has undertaken general site assessments to determine compliance against, local, provincial and national environmental legislation. Anri has also been involved in environmental due diligence and liability assessments.

Anri's roles and responsibilities include the management of Environmental Authorisation and Waste Management Licence Processes (Basic Assessments and Scoping and Environmental Impact Assessment Reporting), Water Use Licence Application Processes and Auditing.

EDUCATION

Bachelor of Arts (Honours), Geography, University of Johannesburg, Gauteng, South Africa	2007
Bachelor of Arts, Geography, University of Johannesburg, Gauteng, South Africa	2006

ADDITIONAL TRAINING

Environmental-Law Mine Closure, Centre for Environmental Management, South Africa	2019
Snake Awareness, Scorpion Awareness and First Aid for Snakebite and Scorpion Sting, African Snakebite Institute	2016
Environmental Management Systems ISO 14001 Audit: Lead Auditor, Centre for Environmental Management, South Africa	2014
IWRM, Water Use Authorisations, and Water Use Licence Applications – Procedures, Guidelines, IWWMPs and Pitfalls, Carin Bosman Sustainable Solutions, South Africa	2012
ISO 14001 Environmental Management Systems (EMS), Implementation and Auditing, Centre for Environmental Management, South Africa	2011
IEMA Approved Foundation Course in Environmental Auditing, Aspects International, South Africa	2009

PROFESSIONAL EXPERIENCE

Environmental Authorisation Processes

- Jet Park Warehouse Development, Gauteng (2020-2021). Project Manager. Basic Assessment Process for the development of a commercial park within a 30m from a wetland and within a critical biodiversity area. Client: Sable Place Properties
- Vosloorus Filling Plant, Vosloorus, Gauteng (2019-2020). Project Manager. Environmental authorisation process for the proposed dangerous goods filling plant. Client: Richbay Chemicals
- Mbabane – Manzini Corridor Dam (Nondvo Dam), Hhohho Region, Eswatini (2018-2019). Project Manager. An Environmental and Social Impact Assessment for the proposed Nondvo Dam in Eswatini (previously Swaziland). Client: Government of the Kingdom of Eswatini, Ministry of Natural Resources and Energy, Department of Water Affairs
- Sappi Ngodwana Reservoir, Mpumalanga (2020): Project Manager. Basic Assessment Process for the construction of a reservoir within a critical biodiversity area. Client: Sappi Southern Africa
- Demolition and Rehabilitation of Infrastructure at West Wits Business Operations, Carletonville, Gauteng (2019): Project Manager. A contaminated land assessment and environmental authorisation process for the decommissioning and rehabilitation of selected infrastructure West Wits Operations. Client: AngloGold Ashanti
- Kranspoort Cattle Feedlot Basic Assessment Process, Kranspoort, Mpumalanga, South Africa (2018): Project Director. A Basic Assessment Process and Waste Management Plan for the proposed development of a cattle feedlot. Client: Department of Rural Development and Land Reform
- Amandelbult Section Dangerous Goods and Railway Extension Final Basic Assessment Report, Thabazimbi, Limpopo (2017-2018): Project Director. The Basic Assessment Process for the proposed installation of diesel tanks and the extension of a railway line at the Amandelbult Section, Tumela Mine. Client: Anglo American Platinum Limited
- Anglo Platinum Water Separation Project, Rustenburg, North West, (2016-2017): Project Manager. The Basic Assessment process for the proposed refurbishment of an existing pipeline and installation of new pipelines as part of the Water Infrastructure Upgrade Project. Client: Anglo American Platinum Limited
- Sasol Energy Technology Blending Facility Upgrade Project, Sasolburg, Free State, South Africa (2017): Project Manager. Basic Assessment Process for the installation of dangerous goods tanks at the Sasol One Site. Client: Sasol Energy Technology, a Division of Sasol Oil (Pty) Ltd
- Sasol Energy Technology Blending Facility Upgrade Project, Sasolburg, Free State, South Africa (2017-2018): Project Manager. Basic Assessment process for the construction of a fuel drum storage warehouse adjacent to the existing underground fuel storage tanks at the Fuel Blending Facility on the Sasol One site. Client: Sasol Energy Technology, a Division of Sasol Oil (Pty) Ltd
- Section 24G Application Process for Rappa Holdings, Germiston, Gauteng (2017-2018): Project Manager. Undertaking the rectification process for six historic rectification applications. Client: Rappa Holdings (Pty) Ltd
- Environmental Authorisation Process for the SO_2 Abatement Plant at Mortimer Smelter, Swartklip, North West, South Africa (2016-2017): Project Manager. Undertaking a Scoping and Environmental Impact Reporting Process to ensure compliance with the National Environmental Management Air Quality Act (No. 39 of 2004). Client: Anglo American Platinum Limited

- Environmental Authorisation Process for the SO_2 Abatement Plant at Polokwane Smelter, Polokwane, Limpopo, South Africa (2016-2017): Project Manager. Undertaking a Scoping and Environmental Impact Reporting Process to ensure compliance with the National Environmental Management Air Quality Act (No. 39 of 2004). Client: Anglo American Platinum Limited
- Environmental Authorisation for a Private Vehicle Proving Ground Development, Northern Cape, South Africa (2016): Project Manager. A Scoping and Environmental Impact Reporting Process for a private vehicle proving ground. Client: Ingen | Aix GmbH
- Establishment of the Proposed Rietvlei Opencast Coal Mine, Mpumalanga, South Africa (2016-2018): Project Manager. This project involved repeating the environmental authorisation process with the DMR as the competent authority, for the establishment of an opencast coal mine north of Middelburg. Client: Rietvlei Mining Company
- Environmental Authorisation for Blue Sphere, Nigel, Gauteng, South Africa (2014): Consultant. This project includes an environmental impact assessment, environmental management programme report, water use license application, waste management license application and an atmospheric emissions licence application as well as the public participation process for the existing and proposed processes for Blue Sphere in Nigel. Client: Blue Sphere Investments and Trading 103 (Pty) Ltd
- Environmental Authorisation for the Proposed Construction and Operation of Two Furnaces and Associated Infrastructure at Transalloys, eMalahleni, Mpumalanga, South Africa (2014): Consultant. The project entailed undertaking an environmental authorisation (by way of a scoping and environmental impact reporting process), including an atmospheric emissions licence application and waste management licence application process for the construction of two new 75MVA submerged arc furnaces that will primarily produce silicomanganese. Client: Transalloys (Pty) Ltd
- Section 24G Rectification Process for the Storage of Dangerous Goods for Much Asphalt, Gauteng, South Africa (2014): Project Manager. Much Asphalt was required to undertake a Section 24G Rectification Process for the unlawful storage of dangerous goods on a number of their sites. Zaffar was involved in the compilation of the Section 24G application forms. Client: Much Asphalt (Pty Ltd
- M14 Furnace Environmental Authorisation, Meyerton, Gauteng, South Africa (2012): Consultant. The project entailed undertaking an environmental authorisation, including an atmospheric emissions licence application process, in terms of the National Environmental Management Act (No. 107 of 1998) for the construction of an 81MVA furnace that will produce Ferromanganese and Silicomanganese. Client: Samancor Manganese (Pty) Ltd
- Basic Assessment Process for the Proposed Expansion and Upgrading of the Raw Materials Stockyard at Metalloys, Meyerton, Gauteng, South Africa (2011): Consultant. The project included the undertaking of an environmental authorisation process, by way of a basic assessment process, and the amendment application of an atmospheric emissions licence. The project involved the expansion and The project entailed undertaking an environmental authorisation, including an atmospheric emissions licence application process, in terms of the National Environmental Management Act (No. 107 of 1998) for the construction of an 81MVA furnace that will produce Ferromanganese and Silicomanganeseupgrading of the existing Raw Materials Stockyard at the Samancor Meyerton Works (Metalloys site). Client: Samancor Manganese (Pty) Ltd
- Proposed new Sinter Plant: Mamatwan Mine, Hotazel, Northern Cape, South Africa (2010): Consultant. This project included an environmental impact assessment, environmental management programme report addendum and water

use license application as well as the public participation process for a proposed sinter plant at the Mamatwan Mine in the Northern Cape. Client: Hotazel Manganese

Environmental Management Plans

- Refurbishment (Fit-Out) of the 8th Floor in 140 West Building, South Africa (2020): Project Manager. Compilation of the Environmental Management Plan for the refurbishment of an office space in order to acquire a Green Star SA – Office v1 certification by the Green Building Council of South Africa. Client: Goldman Sachs
- Environmental Management Plan for the South Sudan Feeder Roads, South Sudan (2019): Project Director. Compilation of an Environmental Management Plan for the construction of the Kayango Market to A43 Road in South Sudan. Client: United Nations Office for Project Services (UNOPS)
- Environmental Programme for the Proposed Knightsbridge Development, Bryanston, Gauteng, South Africa (2015): Project Manager. Compilation of a Green Star Rating Environmental Programme for the Proposed Knightsbridge Development. Client: Emira Property Fund
- J.P Morgan Chase & Company, 1 Fricker Road EMP ECO, Illovo, Gauteng, South Africa (2017): Project Manager. An EMP was compiled for the proposed refurbishment of the office building to attain a Green Star rating and is also responsible for conducting the first EMP compliance audit and training of the DEO to carry out subsequent audits. Client: J.P Morgan Chase & Company
- Compilation of Environmental Management Plans - West Plant Metalloys, Meyerton, Gauteng, South Africa (2011): Consultant. The project included the undertaking of an environmental risk assessment for all facilities and activities at West Plant. Environmental management plans were compiled from the results of the risk assessments. Client: Samancor Manganese (Pty) Ltd Metalloys

Environmental Management Programme Reports

- Separation of the Union Section Operational Environmental Management Programme (and Addendums) into 'Carved Out' versus 'Retained' categories, Swartklip, North West Province, South Africa (2017): Project Manager. The Section is in possession of an approved Environmental Management Programme as well as numerous addendums for mining, concentrating and smelting, operations. The Section is in a restructuring process which involves the selling and/or disenfranchising of certain of the operations. WSP/PB restructured the Sections's consolidated Environmental Management Programme to align with the future goals/strategies of the Mine. Client: Anglo Platinum Limited - Rustenburg Platinum Mines Limited
- EMPR Updates – Vaal River and West Wits Operations, Gauteng and North West, South Africa (2014-2016): Project Manager. The alignment of the West Wits (WW) and Vaal River (VR) Operations Environmental Management Programme Reports (EMPR) in accordance with the requirements of the Mineral and Petroleum Resources Development Act (No. 28 0f 2002) (MPRDA). Client: AngloGold Ashanti (Pty) Ltd
- Environmental Management Programme Report Consolidation and Alignment of Union Mine: Rustenburg Platinum Mines, North-West, South Africa (2014): Project Manager. The EMPR consolidation and alignment process combined the original EMPR and authorised EMPR amendments into a complete and comprehensive document, which will become the overarching EMPR for the mine lease area and will be used as a concise management tool for all employees operating within mine lease area. Client: Anglo American Platinum Ltd

Waste Management

- Construction and Operation of a Waste Treatment Facility, Middelburg, Mpumalanga (2016-2018): Project Manager. The Scoping and Environmental Impact Reporting process for the construction and operation of a Health Care Risk Waste treatment facility in Middelburg. Client: Vikela Afrika Waste Care CC
- Applications for Samancor Manganese (Pty) Ltd Metalloys in terms of section 20 of the Environment Conservation Act 73 of 1989, Meyerton, Gauteng, South Africa (2014): Consultant. The project entailed applications, by way of risk assessments, in terms of section 20 of the Environmental Conservation Act, for the North Plant Sludge Dam, West Plant Sludge Dam, Bag Filter Material storage Facilities and Slag Stockpiles at Metalloys. Subsequent to the receipt of the waste management licences in terms of the National Environmental management: Waste Act (No. 59 of 2009) an amendment process was also undertaken. Client: Samancor Manganese (Pty) Ltd
- Applications for Afrisam, Vanderbijlpark, in terms of section 20 of the Environment Conservation Act 73 of 1989. Vanderbijlpark, Gauteng, South Africa (2014): Consultant. The project entailed applications in terms of section 20 of the Environmental Conservation Act, for the slag stockpiles at Afrisam, Vanderbijlpark. Subsequent to the receipt of the waste management licences in terms of the National Environmental management: Waste Act (No. 59 of 2009) an amendment process was also undertaken. Client: AfriSam South Africa (Pty) Ltd
- Waste Management Licence Application for The Existing And New Waste Management Facilities At Columbus Stainless Complex In Middleburg, Mpumalanga Province, South Africa (2014): Project Manager. Columbus Stainless (Pty) Ltd (Columbus) proposes to license existing waste management facilities and a new hazardous waste store within the footprint of the Columbus Complex. The Environmental Authorisation process by way of Scoping and Environmental Impact Reporting is required in order to license the said facilities. The facilities requiring licensing involve, but is not limited to: storage, recovery, bailing and treatment. WSP is responsible for obtaining a Waste Management License for the said activities via the Department of Environmental Affairs in line with relevant legislation. Client: Columbus Stainless (Pty) Ltd
- Establishment of a Waste Monitoring Committee, Meyerton, Gauteng, South Africa (2011): Consultant. The project included the identification of potential members for the monitoring committee and the establishment of the committee. The establishment of the committee included the compilation of the constitution and committee meetings. Client: Samancor Manganese (Pty) Ltd

Water Use Licence Applications

- Water Use Licence Application Process for the SO_2 Abatement Plant at Anglo American Platinum Limited: Polokwane Smelter, Polokwane, Limpopo, South Africa (2017-2018): Project Manager. The project involved the management of specialist along with the compilation and submission of the technical documentation. Client: Anglo American Platinum Ltd: Polokwane Metallurgical Complex
- Rietvlei Coal Mine Water Use Licence Application and Integrated Water and Waste Management Plan, Middelburg, Mpumalanga, South Africa (2016 – 2017): Project Manager. The project involved the compilation of the Integrated Water and Waste Management plan for all water uses proposed at the Greenfileds Rietvlei Opencast Coal Mining Operation. Client: Rietvlei Mining Company (Pty) Ltd
- Metalloys Water Use Licence Application, Meyerton, Gauteng, South Africa (2009): Assistant. This project involved compiling and submitting water use licence applications for all water use licence activities being undertaken at Metalloys. Subsequently a water use licence amendment process was also undertaken. Client: Samancor Manganese (Pty) Ltd

Environmental Authorisation Amendments/Renewals

- Amendment of the Vodacom Dangerous Good Environmental Authorisations, Midrand, Gauteng (2021): Project Manager. The amendment process of the environmental authorisations to amend auditing and monitoring conditions. Client: Vodacom South Africa
- Transfer of the West Wits Operations EMPR to Harmony Gold (2020): Project Manager. The amendment of the EMPR to transfer the West Wits Operations EMPR to Harmony Gold. Client: AngloGold Ashanti Limited
- Amandelbult Section Bus and Taxi Terminal Part 2 Amendment Process, Thabazimbi, Limpopo (2020-2021): Project Manager. The amendment process of the existing Environmental Management Programme Report to formalise the bus and taxi terminal. Client: Rustenburg Platinum Mines
- Sibanye Rustenburg Platinum Mine Part 2 Amendment Process, Rustenburg, North West (2018): Project Manager. The proposed amendment of the Environmental Management Programme Report to excluded activities which will not take place and to ensure alignment of the management measures. Client: Sibanye-Stillwater
- Zibulo Colliery Part 2 Amendment Process, Mpumalanga (2018-2019): Project Manager. The amendment of the Zibulo Colliery Environmental Management programmes for the inclusion of a new coal stockpile. Client: Anglo American Inyosi Coal
- Scaw Metal Waste Treatment and Disposal Facility Part 2 Amendment (2018-2019): Project Manager. The amendment of the Scaw Waste Management Licence to include different waste types. Client: Scaw South Africa
- The transfer of Authorisations for Union Mine (2018): Project Manager. The transfer a Waste Management Licence and ECA Permit in terms of the Part 1 Amendment Process. Client: Anglo American Platinum Limited
- The transfer of Authorisations for Anglo American Platinum Rustenburg Section (2018): Project Manager. The transfer a two Waste Management Licences in terms of the Part 1 Amendment Process. Client: Anglo American Platinum Limited
- Amendment of the Sibanye Rustenburg Platinum Mines Environmental Management Programme, Rustenburg, North West (2018): Project Manager. A Part 2 Amendment Process was undertaken to limit the EMPR to activities have commenced or will be undertaken. Client: Sibanye-Stillwater
- Amendment Process for the Copper Smelting and Casting Plant at Rappa Resources, Germiston, Gauteng (2017-2018): Project Manager. A Part 2 Amendment Process for the installed Copper Smelting and Casting Plant at Rappa Resources. Client: Rappa Resources (Pty) Ltd
- Renewal of the Technopack Eastern Cape Waste Management Licence, Springs, Gauteng (2017): Project Manager. The Waste Management Licence was renewed to ensure the continuation of the plant operations at Enstra. Client: Technopack Eastern Cape (Pty) Ltd
- The Impala Platinum Springs Waste Management Licence Amendment, Springs, Gauteng (2018): Project Manager. A Part 1 Amendment Process was undertaken in order to amend some of the conditions of the Waste Management Licence. Client: Impala Platinum Refineries
- Environmental Authorisation Amendment Process for the Ventilation Shaft at Siphumelele 1 Mine, Rustenburg, North-West, South Africa (2016): Project Manager. Part 2 Amendment Process for the proposed establishment of the Ventilation Shaft at Siphumelele 1 Mine. Client: Rustenburg Platinum Mines Limited

Stakeholder Engagement

- Minimum Emissions Standard Postponement Application for Nulandis Lilianton and Modderfontein (2018-2019): Project Manager. Undertaking the stakeholder engagement process in support of the Nulandis Lilianton and Modderfontein Minimum Emissions Standard Postponement Application. Client: Nulandis
- Minimum Emissions Standard Postponement Application for Sappi Ngodwana (2019): Project Manager. Undertaking the stakeholder engagement process in support of the Sappi Ngodwana Minimum Emissions Standard Postponement Application. Client: Sappi Southern Africa
- Minimum Emissions Standard Postponement Application for AEL Interlligent Blasting Modderfontein (2018-2019): Project Manager. Undertaking the stakeholder engagement process in support of the Modderfontein Site Minimum Emissions Standard Postponement Application. Client: AEL Intelligent Blasting
- Identification of Interested and Affected Parties for Omnia Sasolburg, Sasolburg, Free State, South Africa (2018): Project Manager. The identification of interested and affected parties in terms of Clause 4.1 and 4.2 of ISO 14001:2015. Client: Omnia Fertilizer a Division of Omnia Group (Pty) Ltd
- Re-establishment of a Monitoring Committee for Metalloys, Meyerton, Gauteng, South Africa (2015 – 2016): Project Manager. The re-establishment of a Monitoring Committee for four of the Waste Management Facilities at Samancor Manganese, Metalloys. Client: BHP Billiton Metalloys (Pty) Ltd
- Stakeholder Engagement for Mooi-Mgeni Transfer Scheme Phase 2, Rosetta Village, Kwazulu- Natal, South Africa (2009): Assistant. This project involved undertaking the public participation process for the Mooi-Mgeni Transfer Scheme Phase 2, which will primarily encompass the construction of the proposed Spring Grove Dam and an associated transfer pipeline from the proposed dam to the Mpofana River. Client: Department of Water Affairs and Forestry (DWAF)

Legal Compliance

- AfriSam Regulation 34 Audits (2020-2021): Lead Auditor. Undertaken the Regulation 34 Compliance Audits for various AfriSam Operations (Eikenhof, Roodekrans, Ladysmith, Umlaas, Pietermaritzburg, Rooikraal). Client: AfriSam
- EMPR Regulation 34 Audits at Mogalakwena Section, Limpopo, South Africa (2020): Lead Auditor. Undertaking nine compliance audits in accordance with Regulation 34 of the EIA Regulations and compilation of seven statements of confirmation that the activities have not yet commenced. Client: Rustenburg Platinum Mines.
- Desktop Review of the Impala EMPR 2019 Audit (2020): Lead Auditor. A desktop review was undertaken to determine whether any changes has been made to the operations at Impala that could influence compliance. Client: Impala Platinum
- External Waste Management Licence Audit at Impala Platinum, Gauteng, South Africa (2016, 2018 and 2020): Lead Auditor. External compliance audit of the WML for the Salvage Yard at Impala Springs. Client: Impala Platinum Refiners
- External Water Use Licence Audit of the Rustenburg Operations, North West, South Africa (2020): Lead Auditor. Undertaking the Water Use Licence for the Waterval Smelter and Anglo Convertor Plant, Rustenburg Base Metal Refinery and Precious Metals Refinery. Client: Rustenburg Platinum Mines.
- Impala Platinum Regulation 34 and Waste Management Licence Audits, Rustenburg (2019): Lead Auditor. Undertaking seven compliance audits in accordance with Regulation 34 of the EIA Regulations. Client: Impala Platinum

- Surface Operations Regulation 34 Audits (2019): Lead Auditor. Undertaking the Regulation 34 audits for the Vaal River, Mine Waste Solution and West Wits Operations. Client: AngloGold Ashanti Limited
- Used Oil Industry Audits, Countrywide, South Africa (2014-2019): Lead Auditor. Country-wide environmental compliance auditing of the South African recycled oil industry, comprising sixteen oil refinery operations, and twenty nine drum re-conditioning plants. The audits are primarily focussed on compliance to legislation and ensuring that each site follows international best practice. The audits include a review of the refineries ISO14000 auditor's findings, and tracking of compliance in regards to corrective actions. Client: OSE Foundation
- Sasol Third Party Audits, Johannesburg, Gauteng, South Africa (2017): Project Manager. Undertaken compliance assessments of three environmental authorisations and two water use licence for Sasol Gas. Client: Sasol Gas
- External Environmental Compliance Audit - Tarlton Intermixture Fractionator Plant, Gauteng, South Africa (2014 and 2016): Lead Auditor. An external environmental compliance audit of the record of decision for the Transnet Pipelines Tarlton Intermixture Fractionator Plant was undertaken in order to establish whether Transnet Pipelines are compliant with the conditions specified therein. The audit was undertaken by means of site observations, interviews and verification of available information. Client: Transnet Pipelines (GOC) Ltd
- Waste Management Licence for the Remediation and Decommissioning of Tar Residue Pits, Rustenburg, North-West, South Africa (2015): Lead Auditor. A c lose-out audit was undertaken to compile compliance with the Waste Management Licence conditions during remediation and decommissioning. Client: Anglo Platinum Limited - Rustenburg Platinum Mines Limited
- Water Use Licence Audit for the Landau Colliery, Mpumalanga, South Africa (2014): Auditor. The audit of the Water Use Licence was conducted in accordance with the relevant requirements of the National Water Act and conditions stipulated therein. The audit report included a summary of findings and compliance criteria, as well as recommendations for future corrective and preventative actions if required. Client: Anglo American Thermal Coal
- Waste Management License Audit for the Slagment Operation, Vanderbijlpark, Gauteng, South Africa (2014): Lead Auditor. This project involved the annual environmental compliance auditing for AfriSam's Slagment Operation in Vanderbijlpark in Gauteng Province. The audit included AfriSam's compliance to the conditions of their waste management license. Client: AfriSam South Africa (Pty) Ltd
- Legal Compliance Audit, Olifantsfontein, Province, South Africa (2012): Lead Auditor. The project included undertaking a legal compliance audit of the atmospheric emissions licence and waste management licence at A-Thermal Retort Technologies (Pty) Ltd. A-Thermal, in Olifantsfontein. Client: A-Thermal retort Technologies (Pty) Ltd
- Metalloys Water Use Licence Audit, Meyerton, Gauteng, South Africa (2012): Auditor. The project entailed undertaking a compliance verification audit of the water use licence conditions of Metalloys. Recommendations were also provided in the audit report for non-compliance or potential concerns. Client: Samancor Manganese (Pty) Ltd
- M14 Furnace Legal Compliance Audit, Meyerton, Gauteng, South Africa (2010 & 2012): Auditor. The project included undertaking a legal compliance audit at Samancor Manganese (Pty) ltd (Metalloys) to verify their compliance to the conditions of the record of decision issued for the M14 Furnace and the associated atmospheric emissions licence. Client: Samancor Manganese (Pty) Ltd
- Annual Audit of the Record of Decision and Environmental Management Plan for the Fouriespruit Stream diversion and Old Slag Area, Meyerton, Gauteng, South

Africa (2009 & 2010): Lead Auditor. A legal compliance audit on the record of decision and the associated environmental management plan was undertaken to establish whether the upgrading of the existing stream diversion and the closure and rehabilitation of the old slag disposal area comply with the conditions contained therein. Client: Samancor Manganese (Pty) Ltd

- Goedgevonden Mine Water Use Licence Audit, Ogies, Mpumalanga, South Africa (2009): Auditor. The project entailed undertaking a compliance verification audit of the water use licence conditions of Goedgevonden Mine. Recommendations were also provided in the audit report for non-compliance or potential concerns. Client: Xtrata Coal South Africa

Environmental Due Diligence and Liability Assessments

- Environmental Due Diligence for Rolfes Chemicals, Germiston, Gauteng, South Africa (2014): Auditor. Environmental Due Diligence for the acquisition of a Processing Plant and associated facilities. Client: Rolfes Chemicals Alberton
- Environmental and Social Due Diligence of 22 FMCG facilities, Country-wide, South Africa (2014): Lead Auditor. Transactional Environmental and Social Due Diligence for the acquisition of 22 FMCG facilities mainly in the food manufacturing and consumer formulated chemical sectors situated across South Africa for an international private equity and real estate investor. Client: Confidential
- Environmental and Social Due Diligence of Medrock, Johannesburg, South Africa (2014): Lead Auditor. Transactional Environmental and Social Due Diligence for the acquisition of three medical supplies facilities situated in Johannesburg. Client: Confidential

Site Assessments

- The development and expansion at Two Rives Platinum Mine (2021): Project Manager. Environmental Screening for the proposed expansions at the existing Two Rivers Platinum Mine. Client: Two Rivers Platinum Mine
- The Development of a Filling Plant, Vosloorus, Gauteng (2019): Project Manager. Environmental screening for the proposed chemical filling plant. Client: Richbay Chemicals
- Springfield Coal Mine, Meyerton, Gauteng (2019): Project Manager. Site and Legal Review for the Proposed Springfield Coal Mine. Client: Glubay Coal
- The Development of Thermal Power Plant and Solar PV Plant, Nacala, Mozambique (2018): Project Manager. Environmental and social screening for the alternative sites in terms of the International Finance Corporation Performance Standards on Environmental and Social Sustainability. Client: Confidential
- Gap Analysis for the Northern Pit Development at Zibulo Colliery, Mpumalanga (2018): Project Manager. Undertaking a gap analysis of the proposed development of an opencast pit in the northern section of the approved mining right area for Zibulo Colliery, Mpumalanga. Client: Anglo American Inyosi Coal (Pty) Ltd
- Screening Assessment of Proposed Waste Management Facility at Vodacom Campus, Midrand, Gauteng, South Africa (2017). Project Manager. Screening assessment to prepare a business case based on the facts so that the options for Vodacom's development vs. the potential requirement to identify an alternative site can be objectively evaluated by Vodacom. Client: Vodacom Group Limited
- Site Assessment of a culvert on Sappi Forest Property, plantation Nooitgedacht – Camelot South, Ngodwana, Mpumalanga, South Africa (2015): Project Manager. A site assessment of a recently completed culvert development on Sappi Forest property, plantation Nooitgedacht – Camelot South, Mpumalanga. The purpose of the site assessment is to evaluate the works undertaken on site in respect of the National Environmental Management Act (107 of 1998) as amended and National

Water Act (36 of 1998) and relevant regulations promulgated under these acts. Client: Sappi Southern Africa Limited

- Legal Assessment for the a Proposed Development of a barley Malting Process in Alrode, Germiston, Gauteng, South Africa (2013): Senior Consultant. Undertaking of legal assessment to identify and assess potential scenarios based on environmental assessment triggers for the proposed development at erven 283, 289 and 1607 in Alrode Extension 2. Client: South African Breweries (Pty) Ltd

Environmental Management Systems

- Voorspoed Internal ISO 14001 Audit, Klerksdorp, Free State, South Africa (2010): Auditor. An internal audit was undertaken of the Voorspoed Mine, ISO 14001 System. During the audit conformance to ISO 14001 and the effective implementation of such was assessed. Client: De Beers Group Services (Pty) Ltd
- Venetia Internal ISO 14001 Audit, Musina, Limpopo, South Africa (2009): Auditor. An internal audit was undertaken of the Venetia Mine, ISO 14001 System. During the audit conformance to ISO 14001 and the effective implementation of such was assessed. Client: De Beers Group Services (Pty) Ltd

Appendix B

EAP DECLARATION OF INTEREST AND OATH UNDERTAKING

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Richbay Vosloorus Chemical Filling Plant, Gauteng Province

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	WSP Group Africa (Pty) ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	
EAP name:	Patricia Nathaniel			
EAP Qualifications:	BSc (Hons) Environmental Management BSc (Geography)			
Professional affiliation/registration:	EAPASA (2020/1120)			
Physical address:	1ST Floor, Pharos House 70 Buckingham Terrace, Westville			
Postal address:	As above			
Postal code:	3629	Cell:	+27 82 303 2346	
Telephone:	011 361 1398	Fax:		
E-mail:	Patricia.nathaniel@wsp.com			

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

2. DECLARATION BY THE EAP

I, _____Patricia Nathaniel_____, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

- I have a vested interest in the proposed activity proceeding, such vested interest being:

N/A

Signature of the Environmental Assessment Practitioner

WSP

Name of Company:

12 September 2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Patricia Nathaniel, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Environmental Assessment Practitioner

WSP

Name of Company

12 September 2023

Date

Signature of the Commissioner of Oaths

14.09.2023

Date

DATE: 14.09.2023

COMMISSIONER OF OATHS (RSA)
CANDICE LIVINGSTONE
OFFICE MANAGER
REF - 9/1/8/2 (R/O) KZN
SUITE 11B BUSINESS PARTNERS
23 JAN HOFMEYR ROAD, WESTVILLE, 3629

1st Floor, Pharos House
70 Buckingham Terrace
Westville, Durban, 3629
South Africa

wsp.com