
EXPANSION OF LIQUID OXYGEN (LOX) AND DIESEL STORAGE AT THE AIR PRODUCTS FACILITY LOCATED WITHIN THE COEGA SPECIAL ECONOMIC ZONE, PORT ELIZABETH, EASTERN CAPE PROVINCE

ENVIRONMENTAL MANAGEMENT PROGRAMME

February 2020

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PROJECT DETAILS

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DEFINITIONS AND TERMINOLOGY

The following definitions and terminology may be applicable to this project and may occur in the report below:

Alien species: A species that is not indigenous to the area or out of its natural distribution range.

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Ambient sound level: The reading on an integrating impulse sound level meter taken at a measuring point in the absence of any alleged disturbing noise at the end of a total period of at least 10 minutes after such meter was put into operation.

Assessment: The process of collecting, organising, analysing, interpreting and communicating information which is relevant.

Biological diversity: The variables among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes they belong to.

Commence: The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Construction: Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity as per Regulations GNR 327, 325 and 324 of December 2014 (as amended April 2017). Construction begins with any activity which requires Environmental Authorisation.

Cumulative impacts: The impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Decommissioning: To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

Disturbing noise: A noise level that exceeds the ambient sound level measured continuously at the same measuring point by 7 dB or more.

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Ecosystem: A dynamic system of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Environment: the surroundings within which humans exist and that is made up of:

- i. The land, water and atmosphere of the earth;
- ii. Micro-organisms, plant and animal life;
- iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Authorisation (EA): means the authorisation issued by a competent authority (Department of Environmental Affairs) of a listed activity or specified activity in terms of the National Environmental Management Act (No 107 of 1998) and the EIA Regulations promulgated under the Act.

Environmental Assessment Practitioner (EAP): An individual responsible for the planning, management and coordinating of environmental management plan or any other appropriate environmental instruments introduced by legislation.

Environmental Control Officer (ECO): An individual appointed by the Owner prior to the commencement of any authorised activities, responsible for monitoring, reviewing and verifying compliance by the Contractor with the environmental specifications of the EMPr and the conditions of the Environmental Authorisation.

Environmental Officer (EO): The Environmental Officer (EO), employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this EMPr, and for the compilation of regular (usually weekly) Monitoring Reports. The EO must act as liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor.

Environmental impact: An action or series of actions that have an effect on the environment.

Environmental impact assessment: Environmental Impact Assessment, as defined in the NEMA EIA Regulations, is a systematic process of identifying, assessing and reporting environmental impacts associated with an activity.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme: A plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a project or facility and its ongoing maintenance after implementation.

Habitat: The place in which a species or ecological community occurs naturally.

Hazardous waste: Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

Incident: An unplanned occurrence that has caused, or has the potential to cause, environmental damage.

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800.

Indirect impacts: Indirect or induced changes that may occur because of the activity (e.g. increased traffic and emissions in the vicinity of the plant due to increased Air Products trucks to due increase in storage capacity at the site). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place because of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

Method Statement: a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

Pre-construction: The period prior to the commencement of construction, which may include activities which do not require Environmental Authorisation (e.g. geotechnical surveys).

Pollution: A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red Data Species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

Vulnerable species: A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

Waste: Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to the Waste Amendment Act (as amended on June 2014); or any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister.

ABBREVIATIONS

The following abbreviations may be applicable to this project and may occur in the report below:

AIA	Archaeological Impact Assessment
BGIS	Biodiversity Geographic Information System
CDC	Coega Development Corporation
CDSM	Chief Directorate Surveys and Mapping
CEMP	Construction Environmental Management Plan
DEA	Department of Environmental Affairs
DMR	Department of Minerals and Energy
EAP	Environmental Impact Practitioner
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act
NEMAA	National Environmental Management Amendment Act
NEMBA	National Environmental Management: Biodiversity Act
NHRA	National Heritage Resources Act
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PM	Post Meridiem; "Afternoon"
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework

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CHAPTER 1: INTRODUCTION

This Environmental Management Programme (EMPr) has been compiled for the expansion of Liquid Oxygen (LOX) storage; the addition of diesel storage and associated infrastructure at the Air Products Coega facility located within the Coega Special Economic Zone (SEZ), Zone 3. The expansion of liquid oxygen storage consists of either a) the addition of 1x 127,3 m³ double walled, vacuum jacketed vertical tank or b) the replacement of the existing tank 72,7 m³ with a 200 m³ LOX tank; and the installation of a 1 x 23 m³ aboveground composite diesel storage tank on Erf 228, within Zone 3 of the Coega SEZ, on the existing Air Products Coega Plant site. The existing site is approximately 1.3ha in extent and falls under the jurisdiction of the Nelson Mandela Bay Metropolitan Municipality.

This EMPr has been developed on the basis of the findings of the Basic Assessment (BA), and must be implemented through controlling construction, operation and decommissioning activities that could have a detrimental effect on the environment, and through avoiding or minimising potential impacts. This EMPr is applicable to all employees and contractors working on the pre-construction, construction, and operation and maintenance phases of the development. The document must be adhered to and updated as relevant throughout the project life cycle. This document fulfils the requirement of the EIA Regulations, 2014 (as amended) and forms part of the BA Report for the project.

In terms of the Duty of Care provision in S28(1) of NEMA, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, halted or minimised. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts. While no permitting or licensing requirements arise directly by virtue of the expansion of the Liquid Oxygen and diesel storage, this Section of the Act will be applicable throughout the life cycle of the project.

CHAPTER 2: PROJECT DETAILS

APSA first broke ground at the Coega Special Economic Zone (SEZ), Zone 3, in 2013 and was the first of its kind in the region. The purpose of the company's investment in the SEZ was to bring local stability to the sector, counter-acting the practice of gas being trucked into the region practice of gas being trucked into the region.

The APSA site in the Coega SEZ features the latest available air separation technology designed for maximum product output capacity and energy efficiency (see **Figure 2.2.** for Air Separation process). Liquid Oxygen (LOX) and Liquid Nitrogen (LIN) are currently handled and stored at the site for use in the air separation process. APSA is proposing to increase the current LOX storage capacity at this site. The LOX storage capacity will be expanded by an additional 127,3 m³ to a total of 200 m³ either through the addition of a new 127,3 m³ tank, or the replacement of the existing 72,7m³ tank with a 200m³ tank. In addition, APSA intends to add 23 000 litres (23 m³) of above ground diesel storage facility at the site for use for the Air Products trucks that are based in Port Elizabeth.

The design and layout of the LOX tanks are as per APSA standards for the storage of cryogenic liquids. The 127,3 m³ LOX tank will either be located adjacent to the existing LOX and Nitrogen tanks or replace the existing 72,7 m³ LOX tank with a 200 m³ tank as the loading bays and infrastructure are already in place.

The design of the 23 m³ aboveground diesel tank is as per the standard of the fuel supplier (Engen). The standard aboveground composite tank will also consist of standard bund wall designs, spill slab, spill separator, 1 pump, 2 hoses and shut off valve. The layout of the diesel tank and infrastructure within the site is dependent on the location of the intended diesel tank based on the results of the Major Hazard Installation Risk Assessment. One location was determined to be feasible by APSA for the siting of the diesel tank (Location 1) within the site and has been assessed accordingly within the Major Hazard Installation Risk Assessment Report (refer to Appendix D of the Basic Assessment report) for the Qualitative evaluation of the proposed diesel locations. Based on the Major Hazard Installation Risk Assessment report the following alternatives of the LOX and diesel storage locations are proposed:

Addition of 127,3 m³ LOX tank adjacent to existing LOX tank and diesel tank storage located at location 1 as per MHI report (Preferred Alternative- A1): Loading bays and infrastructure for additional LOX tank already in place and the diesel tank placement was deemed relatively distant from neighbouring properties and to be located a minimum of 15,2 metres away from the Main Air Compressor as per Air Products standards.

Replacement of existing 72,7 m³ LOX tank with 200 m³ LOX Diesel Tank; location Number 1 as per MHI report (Alternative 2- A2): Loading bays and infrastructure for already in place for existing LOX tank and the diesel tank placement was deemed relatively distant from neighbouring properties and to be located a minimum of 15,2 metres away from the Main Air Compressor as per Air Products standards.

As the proposed expansion of Liquid Oxygen and Diesel storage will take place within the existing site and within Zone 3 of the Coega SEZ, the changes will take place within a brownfields site.

The existing operations consist of storage of and handling of Liquid Oxygen (LOX) and Liquid Nitrogen (LIN) at the site for use in the air separation process. The initial development and operation of facilities for the storage and handling of cryogenic substances (liquid oxygen) in above ground double walled, vacuum

jacketed storage tanks was below the threshold of 80 m³ for storage of dangerous good. The current storage of liquid gases and petroleum at the site consists of the following capacities:

Cryogenic substance		Existing capacity (m ³)
Liquid (LOX)	Oxygen	72,7
Liquid (LIN)	Nitrogen	356
Diesel		0

As per the above table the storage capacity did not exceed GN R. 327, Activity No. 14 for storage of dangerous good (LOX and diesel) and other activities as per National Environmental Management Act (NEMA), Act 107 of 1998 (as amended) during the Air Products inception in 2013.

Air Products South Africa (Pty) Ltd now intends to increase their storage capacity of Liquid Oxygen at and include aboveground diesel storage at the site to supply their trucks travelling long distances. This proposed increased storage of Liquid Oxygen (LOX) and diesel combined with the existing storage of Liquid Oxygen will result in the total storage capacity that exceeds 80 m³ of dangerous goods thereby triggering Listing Notice 14, Activity No. 14, of GN R.327 and Activity No. 67. The expansion of storage facilities at the Air Products Coega plant is in line with the current operations at the site and forms part of the larger existing operations at the site.

Table 2.1: Location of proposed expansion of liquid oxygen and diesel storage tanks within the existing Air Products Coega plant site.

Province	Eastern Cape Province
Municipality	Nelson Mandela Bay Metropolitan Municipality
Ward number(s)	Ward 60
Nearest town(s)	The project site is located near the Motherwell Township, ~1km, east of the project site. The town of Port Elizabeth is located ~22 km south of the project site.
Farm name(s) and number(s)	Erf 228
SG 21 Digit Code	Surveyor-General Database » C07600230000022800000
Current Zoning	Light general Industrial
Site Coordinates	33° 47'36.65"S 25° 37'37.21"E

The expansion is proposed to include the following infrastructure:

- » 1 x 127,3 m³ LOX double walled vacuum jacketed vertical storage tank or replacement of existing 72,7m³ tank with a 200m³ tank;
- » 1 x 23 m³ composite aboveground diesel storage tank with fibre glass lining;
- » 1 x standard pump, 2 hoses and shut off valves;
- » Spill slab;
- » 9,6 m x 6,4 m (57,15 m³) bund wall with drainage system in compliance with SANS 10131:2004 or SANS 10089 – 1:2008;

- » Separator pit (oil separator) with 6000 litre capacity (57,15 m³) in line with SANS 10400 P (Sewer and Drainage) Edition 3.

Table 2.2 provides the details of the technology proposed for the proposed expansion of liquid oxygen and diesel storage tanks and the associated infrastructure.

Table 2.2: Details of the proposed liquid oxygen and diesel storage tanks and associated infrastructure

Component	Description / Dimensions
LOX storage tank	Capacity: additional 127,3 m ³ LOX tank or 200m ³ replacement tank
Aboveground diesel tank	Capacity: ~23 m ³ Pumps: x1 pump; 2 hoses; shut off valves
Bund Wall	9,6 m x 6,4 m bund wall with drainage system in compliance with SANS 10131:2004 or SANS 10089 – 1:2008
Spill slab	Impermeable concrete surface upon which vehicles will park when refuelling.
Separator pit	Separator pit (oil separator) with 6000 litre capacity in line with SANS 10400 P (Sewer and Drainage) Edition 3.
Internal access	Existing internal access roads are present within the site; no new accesses will be created.
Site access	Existing access to the site will be used on the north western side of the Air Products site, off Intsimbi Road
Services required	<ul style="list-style-type: none"> » Refuse material disposal - all refuse material generated from the proposed project will be collected by EnviroServ Waste Management that is contracted to the Air Products Coega site and will be disposed of at a licensed waste disposal site off site. This service will be arranged with EnviroServ Waste Management when required. » Refuelling of the above ground diesel tank will be conducted as per the internal agreement of supply between Engen and Air Products (Pty) Ltd..

The Coega Special Economic Zone (SEZ) is developed and managed by the Coega Development Corporation (CDC) and aimed at driving local and foreign direct investments in port orientated industries. Industries that are designated within different zones have undergone the relevant environmental assessments based on the activities being undertaken and impacts on the surrounding environment. Considering the sheer number of industries and operations at the SEZ, there have been several basic assessments, environmental impact assessments, specialist studies and management plans that have been conducted and implemented for the SEZ.

Air Products South Africa (Pty) Ltd (APSA) is a world-leading company with over 50 years of operation. The company's core Industrial Gases business provides atmospheric and process gases and related equipment to manufacturing markets, including refining and petrochemical, metals, electronics, and food and beverage. APSA first broke ground at the Coega Special Economic Zone (SEZ), Zone 3, in 2013 and was the first of its kind in the region. The purpose of the company's investment in the SEZ was to bring local stability to the sector, counter-acting the practice of gas being trucked into the region.

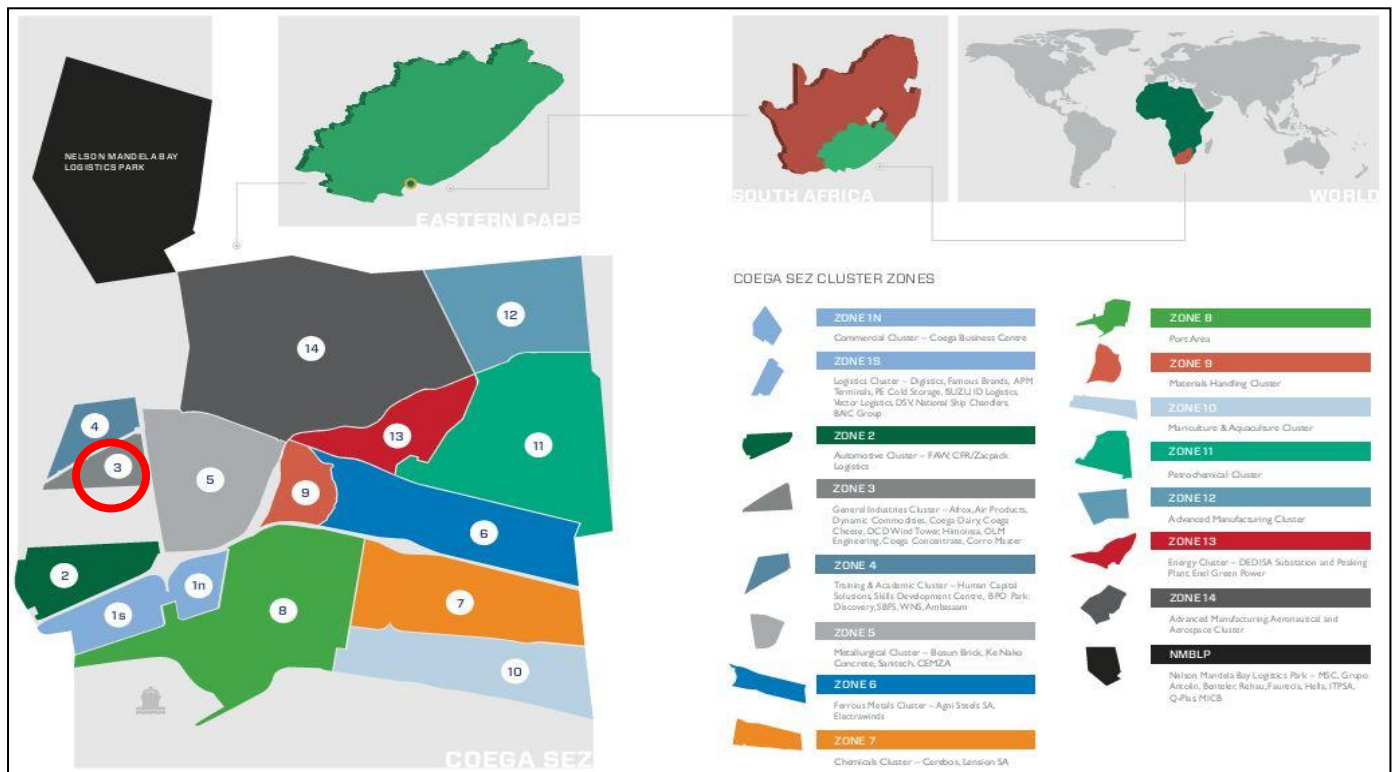


Figure 2.1: Zone Map for the Coega Strategic Economic Zone (SEZ)

The APSA site in the Coega SEZ features the latest available air separation technology designed for maximum product output capacity and energy efficiency. Liquid Oxygen (LOX) and Liquid Nitrogen (LIN) are currently handled and stored at the site for use in the air separation process. Refer to **Figure 2.2** for a brief summary of the air separation process.

The APSA project site is located within the Coega Special Economic Zone (SEZ), Zone 3, amongst other existing industries such as Afrox, Coega Dairy, Famous Brands, Dynamic Commodities, Himoin SA and Ambisaam. Zone 3 is designated for light general industrial development and can therefore be considered a brownfields site.

Air Products is committed to providing a safe environment for its employees other tenants within the SEZ, in this regard APSA will undertake monthly water quality monitoring to ensure that the quality of outflow entering the stormwater system complies with the General Limit Values of the National Water Act (No. 36 of 1998). In order to ensure the safety of the neighbouring tenants APSA will be installing a 1,5m high firewall between the diesel tank and the property boundary of Dynamic Commodities as an alternative mitigating measure to ensure compliance to the SANS 10131 requirements.

Diesel is a class II product and is required to be heated to release its volatiles. Due to the hydrocarbon vapours likely being present only in trace amounts, the inventory of hydrocarbon vapour available for fire or explosion would be limited and therefore the effects would unlikely result in a major release, but rather on equipment damage.

It is anticipated that exhaust emissions from APSA tankers refuelling will remain the same as per the daily emissions as there will be no change to the fleet size and considering that the tankers currently operate from the Air Products site.

The Nelson Mandela Bay Fire Department will only issue the Flammable Liquid Licence to Air Products if they are satisfied with the installation and that it has met the SANS standards and local by-laws.

There is no land sterilisation of the properties adjacent to the Air Products site as a result of the planned installation LOX and diesel storage tanks at the planned locations.

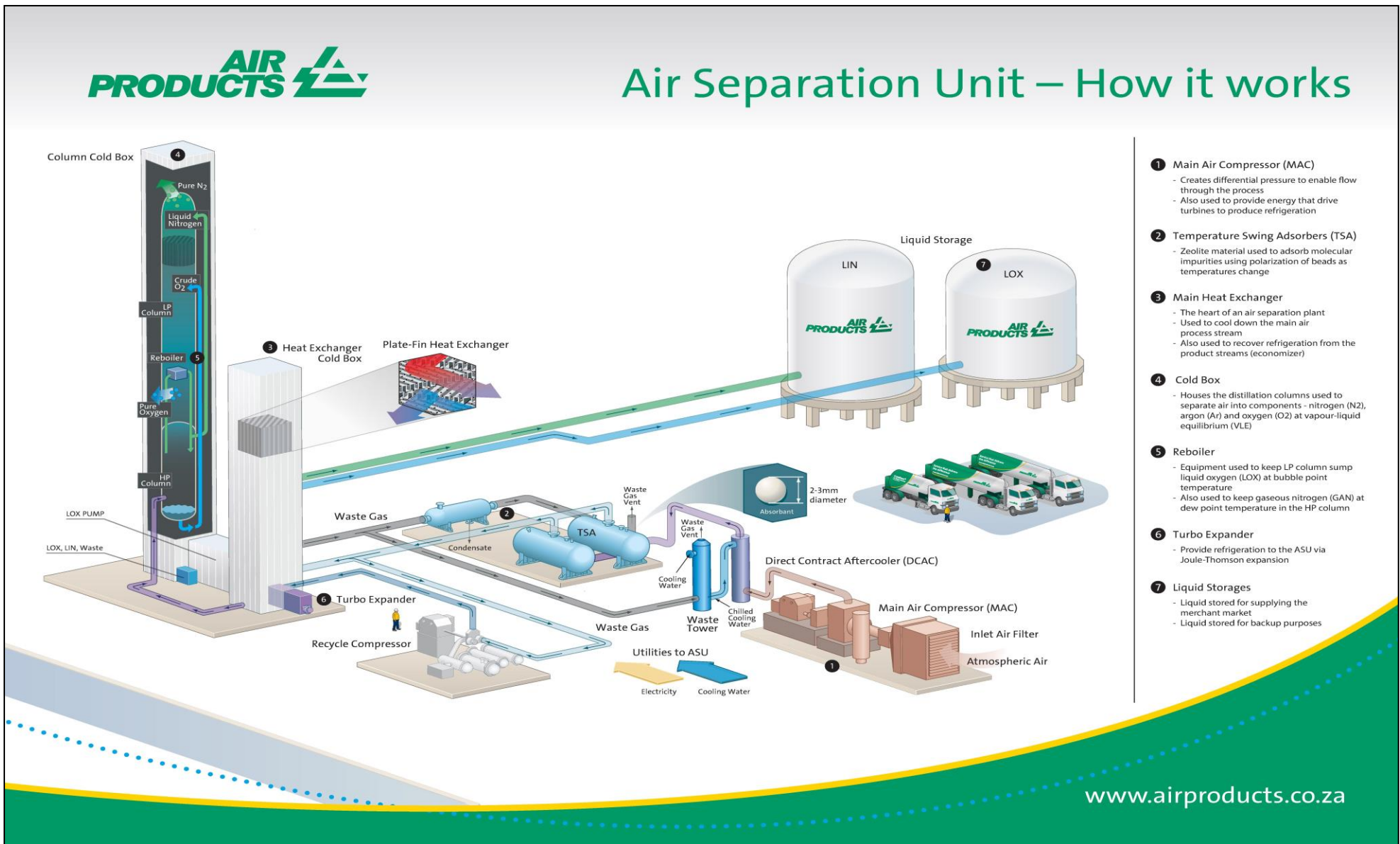


Figure 2.2: Air Separation – How it works (Air Products (Pty) Ltd; 2019)

APSA currently supplies customers in the Eastern Cape region with supply also going as far as from Port Elizabeth to Cape Town in the Western Cape. APSA currently uses approximately 5 trucks that transport and supply cryogenic substances to customers. It is not anticipated that more trucks will be added due to the proposed expansion. The addition of trucks is dependent on the demand for the product and will be determined a part of the strategic plan going forward.

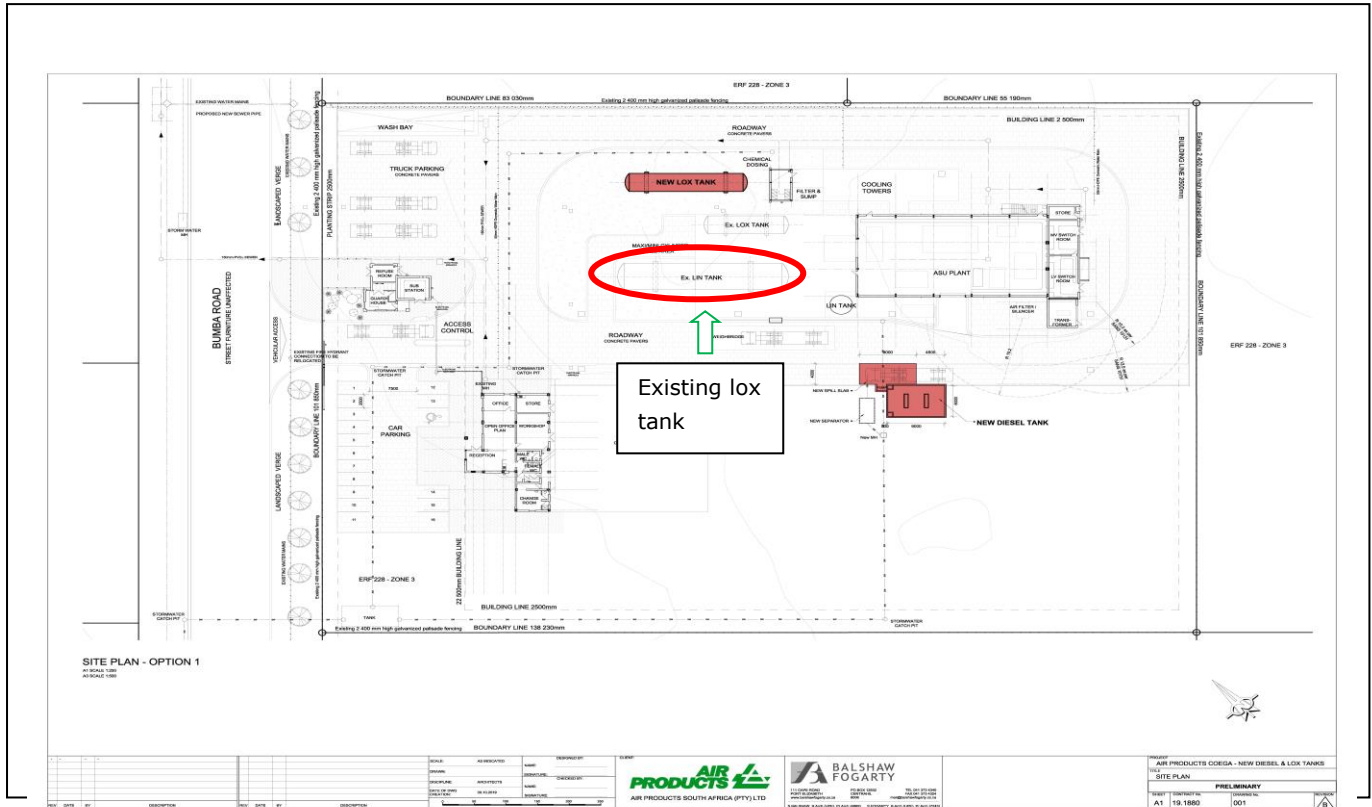


Figure 1.3: Preferred Layout of Air Products Coega Site for proposed addition of LOX tank in red and location of replacement LOX tank at existing LOX tank (Alternative 2) circled in red and Diesel Storage highlighted in red.

2.1 Activities and Components Associated with the development

The following pre-construction, construction, operation and decommissioning activities will be associated with the project:

Pre-Construction Surveys:

Prior to initiating construction, the following studies/surveys s will be required to be undertaken including, but not limited to:

- » A Risk Assessment – The Major Hazard Installation (MHI) Regulations require that a risk assessment be carried out when hazardous materials are used, handled, processed or stored.

Construction Phase:

The construction phase will be up to 3 months. The following activities will be undertaken during the construction phase:

- » The construction phase will include the transportation of the required equipment and building material to the project site. Typical civil engineering construction equipment will need to be brought to the site (e.g. trucks, graders, compaction equipment, cement trucks, etc.).
- » As the site is existing and currently operational, no vegetation clearing will take place, site preparation will include the clearance of paved surfaces for the installation of the new aboveground tanks and associated infrastructure.
- » Laydown and storage areas will be required for the typical construction equipment. Once the required equipment has been transported to site, a dedicated equipment construction camp and laydown area will be established within the site.
- » Construction of the spill slab, bunding and installation of the separator pit.
- » Installation of the aboveground vertical double walled vacuum jacketed LOX tank;
- » Installation of the aboveground composite diesel tank;
- » Once construction is completed and all construction equipment is removed, the site must be rehabilitated where practical and reasonable.

A local contractor will be appointed for the construction phase of the expansion activities. Employment opportunities will need to comply with the Labour Agreement as provided by the CDC due to the locality of the expansion within the SEZ. The Compilation Document for the Construction Management Plan: Preparation and Incorporation of Specifications into Tender and Contract Information (Report No: CDC/SHE/4233/SHESD 4.4.6.0.4) must be considered and incorporated within the formulation and procurement procedures associated with the construction phase of the project, all contractors must be made aware and carry out the conditions associated with the document as relevant to the project.

Operation Phase

The proposed additional liquid oxygen (LOX) and diesel tanks and associated infrastructure will be designed for a future life of the operation. The Air Products Coega plant is expected to produce approximately 110 tonnes of liquid nitrogen and oxygen per day in line with market demand. Employment opportunities during the operational phase will consist of up to 4 additional opportunities. The Air Products plant and associated infrastructure will require maintenance. This will be undertaken as part of the quarterly scheduled maintenance conducted or the annual shut down. Aspects concerning the diesel storage tank maintenance will be undertaken by Engen during scheduled inspections.

Decommissioning

Depending on the continued economic viability of the project following an operation period of 30 years, the project will either be decommissioned or the operation phase will be extended. However, if the decision is made to decommission the project, the following activities will form part of the project scope:

- » Site preparation activities will include confirming the integrity of the access to the site to accommodate the required decommissioning infrastructure.

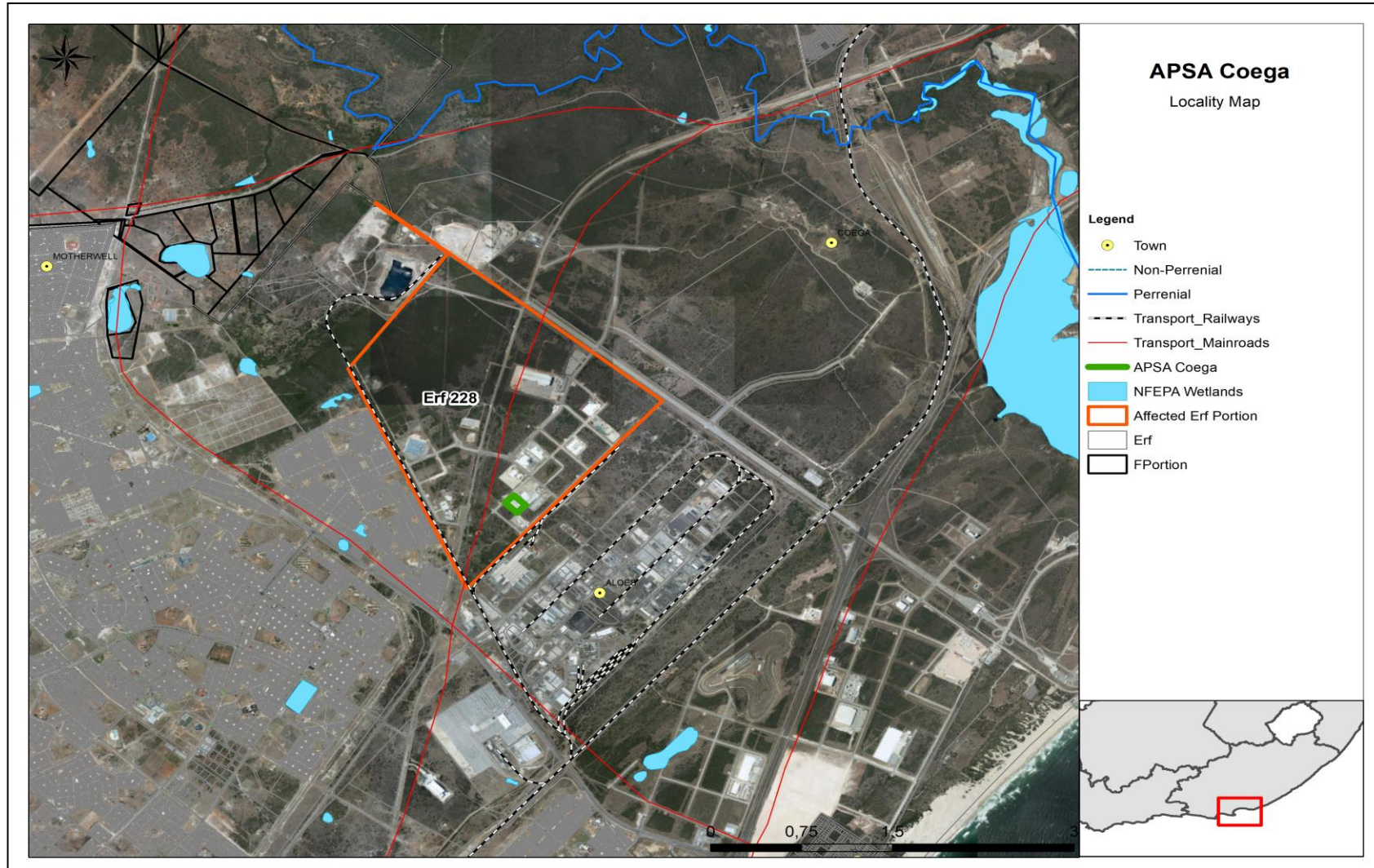


Figure 2.4: Locality map indicating the location of the existing Air Products site within Coega, Eastern Cape

2.2 Findings of the Basic Assessment (BA)

This section provides a summary of the environmental assessment and conclusions drawn for the development of the project at the existing Air Products South Africa Coega site, and which will be expanded in response to the supply demand for liquid oxygen within the Coega, Port Elizabeth and Cape Town regions. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultant during the course of the process, and presents an informed opinion of the environmental impacts associated with the proposed project. The following conclusions can be drawn from the Basic Assessment:

Noise:

Noise generated from construction activities will have little impact on the surrounding businesses due to the nature of area zoned for light and medium general industrial activities. As construction activities will take place during the day when ambient noise conditions are louder the noise generated from construction is anticipated to be minimal. Construction noise is anticipated to be short term and local in extent, as construction is anticipated to be completed within 3 months of commencement.

Noise is created from the machinery that is operational 24 hours a day in the existing facility and will not increase following the addition of the LOX will increase the ambient noise levels in the immediate vicinity. The plant design has already taken into consideration the positioning of noise generating equipment to reduce the noise levels at the boundaries and Air Products have also implemented soundproofing of the structures housing noise generating equipment, with no additional mitigation measures proposed.

The significance of the impact resulting from construction activities is rated as low (negative) for the proposed development as the site is classified as industrial with very low baseline noise levels and it is not near any residential areas. With the implementation of mitigation measures the impact can be minimised further.

Socio-Economic Impacts

The project will result in direct investment into the economy, consisting of capital expenditure, including engineering, procurement and construction; additionally, local contractors will be appointed for the construction phase of the activity. Employment opportunities must comply with the Labour Agreement as provided by the CDC due to the locality of the expansion within the SEZ.

It is anticipated that the expansion will result in approximately 3 new job opportunities during the operational phase. Although the intensity of the impact is low due to the small number of jobs required for the operation of the plant, the period of the impact (up to 50 years) and the one local contractor being appointed for the construction period results in the impact were rated as a low (negative). No mitigation measures are required.

Waste Management Impacts

As minimal general waste is anticipated to be generated during the 3-month construction phase and considering that the operational site currently has an agreement with EnviroServ Waste Management for

the collection and disposal of waste the impact rating for the construction phase was anticipated to low (negative).

No further waste management impact as a result of the additional storage tanks were anticipated for the operational phase of the project.

Traffic Impacts

Traffic impacts during the construction phase of the activity is deemed to be low (-ve) due to the short construction timeframe (3 months). It is not anticipated that the construction phase will lead to traffic congestion in the area as the vehicles will be concentrated near Neptune, Cable and Intsimbi Road close to the site. It is not anticipated that construction traffic will exceed vehicle carrying capacity in the vicinity of the site. No mitigation measures are proposed due to the short construction timeframes.

As the site is located with the SEZ it is anticipated that the design of the road infrastructure as well as the road network was done in accordance with required specifications to handle the anticipated carrying capacity of the developed area on completion of the SEZ. The other developments should not interfere with the operations of Air Products located in Zone 3 of the SEZ, which is designated the Air Products plant as the plant can be reached from two directions, minimising the chance of congestion.

Based on the above the significance of this negative impact on the congestion at the intersections, as well as wear and tear of the infrastructure, is rated as low negative) due to the long-term operation of the plant, as such no mitigation measures are proposed.

Health and Safety Risks (Risk of accidents in relation to the storage of a dangerous goods)

The entire existing plant is currently fenced off; meaning any lawful access to the plant will only be gained by authorisation with adherence to safety protocol. The Air Products, storage tanks and associated machinery are to be manufactured according to the relevant safety standards. The plant is provided with safety-related monitoring and protection equipment. As a result, dangerous conditions such as excessive pressures, too high or too low temperatures, and accumulation of critical materials or leakages can be prevented. Additionally, the products are stored in double shelled storage tanks so that in the case of any external incidents, if the external shell is punctured the internal shell will remain intact.

There are management measures that will be implemented that are inherent in all the companies associated air separation plants, these include (but are not limited to):

1. An emergency response procedure is available for the site and will be updated to include all future planned installations;
2. The plant is currently equipped with lights, escape routes from the systems are to be clearly marked and updated following the new installations;
3. Regular maintenance of the machines are carried out at the plant on a quarterly basis).
4. Re-fuelling of diesel is to be undertaken more than 15,2m away from the main air compressor within the site.

From the measures currently in place for the safety impacts for operational phase of the project were deemed as low (negative) as the expansion activities are a continuation of operations currently taking

place at the site and Air Products have a number of policies and procedures in place that must be followed by all personnel.

Contamination of soil

There is the risk of diesel spills when filling up trucks at the filling point as well as leaks from the storage tanks. However; the area where the filling of trucks is to take place will be constructed out of an impermeable concrete slab and bunded area, and the above ground storage tanks, as well as equipment that could potentially result in spills or leaks, are to be positioned within defined areas so as to contain any leaks or spills that may occur.

The significance of this impact is rated as a low (negative) which can be minimised with the implementation of mitigation measures

Cumulative Impacts:

Overall, the expansion activities for the Air Products Coega plant will not lead to a whole-scale change of the area due to the current zoning and land-use surrounding the site. The expansion of storage facilities will also not add to the current impacts of the existing Air Products plant and other businesses/industries in the area. The cumulative affect of the surrounding developments on the safety is considered low due to the safety procedures that are currently in place at the site. The cumulative effects of noise impacts are rated as low as the anticipated noise levels are not anticipated to exceed the current levels due to the nature of the activity being undertaken (expansion of storage facilities for existing operations). Therefore, the expansion of storage facilities for LOX and diesel is considered appropriate within the existing Air Products site without any significant cumulative impacts expected. The cumulative impacts both within and outside of the boundaries of the existing Air Products plant are considered to be of **low significance**, based on the impact being considered. Therefore, the expansion of storage facilities activity is considered appropriate and acceptable within the proposed location.

Conclusion:

Based on the findings of the impact assessment undertaken, in terms of environmental constraints and opportunities identified through the Basic Assessment process, no environmental fatal flaws were identified to be associated with the expansion of storage facilities within the Air Products Coega plant. The impacts for Alternative A1 (addition of an existing LOX tank) and Alternative A2 (replacement of the existing LOX tank) were found to be similar unless otherwise highlighted within the basic assessment. Therefore the mitigation measures proposed within this EMP are applicable to both Alternative A1 and A2 unless otherwise specified.

The development of the project will result in positive impacts and negative impacts. Impacts are expected to be **low** after the implementation of appropriate mitigation measures. It is recommended that the proposed project be implemented to provide a reliable supply of cryogenic gases to customers requiring a trucked supply from the Eastern Cape to the Western Cape. Considering the information available at this planning stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable. A Google Earth image of the site and proposed locations of the LOX storage tank and Diesel storage tank has been included as **Figure 2.5** below.



Figure 2.5. Google Image of proposed locations of the LOX and diesel storage tanks.

CHAPTER 3: PURPOSE AND OBJECTIVES OF THE EMPr

An Environmental Management Programme (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”. The objective of this EMPr is to provide consistent information and guidance for implementing the management and monitoring measures established in the permitting process and help achieve environmental policy goals. The purpose of an EMPr is to help ensure continuous improvement of environmental performance, reducing negative impacts and enhancing positive effects during the construction and operation of the facility. An effective EMPr is concerned with both the immediate outcome as well as the long-term impacts of the project.

The EMPr provides specific environmental guidance for the construction and operation phases of a project and is intended to manage and mitigate construction and operation activities so that unnecessary or preventable environmental impacts do not result. These impacts range from those incurred during start up (site clearing and site establishment) through to those incurred during the construction activities themselves (erosion, noise, dust) to those incurred during site rehabilitation (soil stabilisation, re-vegetation) and operation. The EMPr also defines monitoring requirements in order to ensure that the specified objectives are met.

This EMPr is applicable to all employees and contractors working on the pre-construction, construction, and operation and maintenance phases of the development. The document will be adhered to and updated as relevant throughout the project life cycle.

This EMPr has been compiled in accordance with Appendix 4 of the EIA Regulations, 2014 (as amended) (refer to Table 3.3). This is a dynamic document and will be further developed in terms of specific requirements listed in any authorisations issued for the development and/or as the project develops. The EMPr has been developed as a set of environmental specifications (i.e. principles of environmental management), which are appropriately contextualised to provide clear guidance in terms of the on-site implementation of these specifications (i.e. on-site contextualisation is provided through the inclusion of various monitoring and implementation tools).

The EMPr has the following objectives:

- » Outline mitigation measures and environmental specifications which are required to be implemented for the planning, construction, rehabilitation and operation phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the expansion of Liquid Oxygen and Diesel storage facilities at the Air Products facility located within the Coega Special Economic Zone (SEZ).
- » Ensure that the construction and operation phases do not result in undue or reasonably avoidable adverse environmental impacts and ensure that any potential environmental benefits are enhanced.
- » Identify entities who will be responsible for the implementation of the measures and outline functions and responsibilities.
- » Propose mechanisms and frequency for monitoring compliance and prevent long-term or permanent environmental degradation.
- » Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that were not considered in the BA process.

The mitigation measures identified within the BA process are systematically addressed in the EMPr, ensuring the minimisation of adverse environmental impacts to an acceptable level.

Air Products South Africa (Pty) Ltd must ensure that the implementation of the project complies with the requirements of all environmental authorisations, permits, and obligations emanating from relevant environmental legislation. This obligation is partly met through the development and the implementation of this EMPr, and through its integration into the relevant contract documentation provided to parties responsible for construction and/or operation activities on the site. The adequacy and efficacy of implementation is to be monitored by an independent Environmental Control Officer (ECO). Since this EMPr is part of the BA process for the expansion of LOX and diesel storage facilities at Air Products Coega, Zone 3, it is important that this document be read in conjunction with the BA Report compiled for this project. This will contextualise the EMPr and enable a thorough understanding of its role and purpose in the integrated environmental management process. Should there be a conflict of interpretation between this EMPr and the Environmental Authorisation, the stipulations in the Environmental Authorisation shall prevail over that of the EMPr, unless otherwise agreed by the authorities in writing. Similarly, any provisions in legislation overrule any provisions or interpretations within this EMPr.

This EMPr shall be binding on all the parties involved in the planning, construction and operational phases of the project, and shall be enforceable at all levels of contract and operational management within the project. The document must be adhered to and updated as relevant throughout the project life cycle.

3.1. Contents of this Environmental Management Programme (EMPr)

This Environmental Management Programme (EMPr) has been prepared as part of the BA process being conducted in support of the application for Environmental Authorisation (EA) for the expansion of Liquid Oxygen and Diesel storage facilities at the Air Products facility located within the Coega Special Economic Zone (SEZ). This EMPr has been prepared in accordance with the requirements as contained in Appendix 4 of the 2014 EIA Regulations, as amended (GNR 326). It provides recommended management and mitigation measures with which to minimise impacts and enhance benefits associated with the project.

An overview of the contents of this EMPr, as prescribed by Appendix 4 of the 2014 EIA Regulations (GNR 326), and where the corresponding information can be found within this EMPr is provided in **Table 3.1**.

Table 3.1: Summary of where the requirements of Appendix 4 of the 2014 NEMA EIA Regulations (GNR 326) are provided in this EMPr.

Requirement	Location in this EMPr
(1) An EMPr must comply with section 24N of the Act and include –	
(a) Details of –	Chapter 3 Appendix D
(i) The EAP who prepared the EMPr.	
(ii) The expertise of that EAP to prepare an EMPr, including a curriculum vitae.	
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Chapter 2
(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the existing site	Chapter 2 Figure 2.5 Appendix A
(d) A description of the impact management outcomes, including management	

Requirement	Location in this EMPr
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 –	
(i) Planning and design.	Chapter 5
(ii) Pre-construction activities.	Chapter 5
(iii) Construction activities.	Chapter 6
(iv) Rehabilitation of the environment after construction and where applicable post closure.	Chapter 7
(v) Where relevant, operation activities.	Chapter 8
(f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to – (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. (iii) Comply with any applicable provisions of the Act regarding closure, where applicable. (iv) Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable.	Chapters 5 - 8
(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Chapters 5 - 8
(h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Chapters 5 - 8
(i) An indication of the persons who will be responsible for the implementation of the impact management actions.	Chapters 5 - 8
(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented.	Chapters 5 - 8
(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).	Chapters 5 - 8
(l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	Chapters 6
(m) An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work. (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	Chapter 6
(n) Any specific information that may be required by the competent authority.	None have been received to date
(2) Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	N/A

3.2. Project Team

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326) the applicant appointed Savannah Environmental (Pty) Ltd as the independent environmental consultants responsible for managing the application for EA and the supporting BA process. The application for EA and the BA

process, is being managed in accordance with the requirements of NEMA, the 2014 EIA Regulations (GNR 326), and all other relevant applicable legislation.

3.3.1 Details and Expertise of the Environmental Assessment Practitioner (EAP)

Savannah Environmental is a leading provider of integrated environmental and social consulting, advisory and management services with considerable experience in the fields of environmental assessment and management. The company is wholly woman-owned (51% black woman-owned) and is rated as a Level 2 Broad-based Black Economic Empowerment (B-BBEE) Contributor. Savannah Environmental's team have been actively involved in undertaking environmental studies over the past 12 years, for a wide variety of projects throughout South Africa, including those associated with electricity generation and infrastructure development.

Jo-Anne Thomas and Arlene Singh are the EAPs responsible for preparing this EMPr. An overview of their expertise to prepare the EMPr is provided below, and copies of their curricula vitae (CVs) detailing the Savannah Environmental team's expertise and relevant experience are provided in **Appendix F** to this EMPr.

- » **Jo-Anne Thomas** is a Director at Savannah Environmental (Pty) Ltd and the registered EAP for the EIA for this project. Jo-Anne holds a Master of Science Degree in Botany (M.Sc. Botany) from the University of the Witwatersrand, and is registered as a Professional Natural Scientist (400024/2000) with the South African Council for Natural Scientific Professions (SACNASP) and the Environmental Assessment Practitioners Association of South Africa (EAPASA). She has over 20 years of experience in the field of environmental assessment and management, and the management of large environmental assessment and management projects. During this time she has managed and coordinated a multitude of large-scale infrastructure EIAs, and is also well versed in the management and leadership of teams of specialist consultants, and dynamic stakeholders. Jo-Anne has been responsible for providing technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, EIA studies, environmental permitting, public participation, EMPs and EMPrs, environmental policy, strategy and guideline formulation, and integrated environmental management (IEM). Her responsibilities for environmental studies include project management, review and integration of specialist studies, identification and assessment of potential negative environmental impacts and benefits, and the identification of mitigation measures, and compilation of reports in accordance with applicable environmental legislation.

- » **Arlene Singh** is an Environmental Consultant at Savannah Environmental. Arlene has a Bachelor of Science Honours Degree in Environmental Management (B.Sc. Honours) and more than 6 years of experience in the environmental field. Her key focus is on environmental impact assessments, public participation, environmental management plans and programmes, as well as environmental compliance auditing for a variety of environmental projects.

Savannah Environmental's team have been actively involved in undertaking environmental studies over the past 13 years, for a wide variety of projects throughout South Africa, including those associated with infrastructure development, and therefore have extensive knowledge and experience in EIAs and environmental management, having managed and drafted EMPrs for numerous other infrastructure development projects throughout South Africa.

2.4.2 Details of the Specialist Consultants

Specialist contributions were in the form of Major Hazard Risk Assessments conducted for the site in 2015 by ISHECON and 2019 by MMrisk.

CHAPTER 4: STRUCTURE OF THIS EMPR

The first three chapters provide background to the EMPr and the project, while the chapters which follow consider the following:

- » Planning and design (pre-construction) activities;
- » Construction activities;
- » Operation activities; and
- » Decommissioning activities.

These chapters set out the procedures necessary for the project owner, to minimise environmental impacts and achieve environmental compliance. For each of the phases of implementation, an overarching environmental **goal** is stated. In order to meet this goal, a number of **objectives** are listed. The EMPr has been structured in table format in order to show the links between the goals for each phase and their associated objectives, activities/risk sources, mitigation actions, monitoring requirements and performance indicators. A specific EMPr table has been established for each environmental objective. The information provided within the EMPr table for each objective is illustrated below:

OBJECTIVE: Description of the objective, which is necessary to meet the overall goals; which take into account the findings of the BA specialist studies

Project Component/s	List of project components affecting the objective i.e.: » LOX storage tank; » Diesel storage tank;
Potential Impact	» Brief description of potential environmental impact if objective is not met.
Activity/Risk Source	» Description of activities which could affect achieving the objective.
Mitigation: Target/Objective	» Description of the target and/or desired outcomes of mitigation.

Mitigation: Action/Control	Responsibility	Timeframe
List specific action(s) required to meet the mitigation target/objective described above.	Who is responsible for the measures?	Periods for implementation.

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the EMPr.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods, and reporting.

The objectives and EMPr tables are required to be reviewed and possibly modified whenever changes, such as the following, occur:

- » Planned activities change (i.e. in terms of the components and/or layout of the development);
- » Modification to or addition to environmental objectives and targets;

- » Additional or unforeseen environmental impacts are identified and additional measures are required to be included in the EMPr to prevent deterioration or further deterioration of the environment.
- » Relevant legal or other requirements are changed or introduced; and
- » Significant progress has been made on achieving an objective or target such that it should be re-examined to determine if it is still relevant, should be modified, etc.

CHAPTER 5: PLANNING AND DESIGN MANAGEMENT PROGRAMME

Overall Goal: undertake the pre-construction (planning and design) phase in a way that:

- » Ensures that the design of the development responds to identified environmental constraints and opportunities.
- » Ensures that pre-construction activities are undertaken in accordance with all relevant legislative requirements.
- » Ensures that adequate regard has been taken of any landowner and community concerns and that these are appropriately addressed through design and planning (where appropriate).
- » Ensures that the best environmental options are selected for the tank locations within the site, including consideration of the access roads.
- » Enables the construction activities to be undertaken without significant disruption to other land uses and activities in the area.

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

5.1 Objectives

OBJECTIVE 1: Ensure the facility design responds to environmental constraints and opportunities

The project is located within Erf 228 of the existing Air Products Coega Plant located within Zone 3 of the Coega Special Economic Zone (SEZ) (referred to as the project site) located 1km west of the Motherwell Township. The town of Port Elizabeth is located 22 km south of the project site.

The proposed development site is considered to be a brownfields site as it is located within the existing Air Products site located within Zone 3 of the SEZ. Zone 3 has been designated for light general industrial activities. The existing site is currently surrounded by other industries.

Project component/s	<ul style="list-style-type: none"> » LOX storage tank » Diesel storage tank;
Potential Impact	» Increased risk of fire and damage to property as a result
Activity/risk source	» Location of the proposed diesel and LOX storage tanks
Mitigation: Target/Objective	<ul style="list-style-type: none"> » The design of the development responds to the identified environmental constraints and opportunities. » Minimisation of nuisance impacts (including noise and dust).

Mitigation: Action/control	Responsibility	Timeframe
Plan and conduct pre-construction activities in an environmentally acceptable manner.	Developer Contractor	Pre-construction
Plan the placement of laydown areas, construction equipment camps and temporary construction equipment camps in order to minimise disturbance within the site.	Developer	Pre-construction

Mitigation: Action/control	Responsibility	Timeframe
Fourteen (14) days written notice must be given to the Department that the activity will commence. The notification must include a date on which the activity will commence as well as the reference number.	Developer	Pre-construction
ECO to be appointed prior to the commencement of any authorised activities. Once appointed the name and contact details of the ECO must be submitted to the Director: Compliance Monitoring at the DEDEAT.	Developer	Pre-construction
Reduce the construction period as far as possible through careful planning and productive implementation of resources.	Developer Contractor	Pre-construction
Only the existing access to the site must be used to ensure safe entry and exit.	Developer Contractor	Design
Ensure that designs for the spill separator are to be connected to and discharged into the storm water only and no other municipal infrastructure based on agreement with Nelson Mandela Bay Metropolitan Municipality and the Coega Development Corporation.	Developer Contractor	Design
Planning of diesel tank location to be greater than or at least 15,2m away from the Main Air Compressor, as per the approved layout plan.	Developer Contractor	Design
Laydown areas and turning areas must be located in areas that are located away from the current plant but within the Air Products site to avoid degradation of adjacent properties. The EO must identify such areas.	Developer EO	Project planning
A local procurement policy must be adopted to maximise the benefit to the local economy.	Developer	Pre-construction
A comprehensive employee induction programme must be developed and utilised to cover land access protocols, fire management and road safety.	Contractor	Pre-construction
As a minimum, ongoing training should include: » Explanation of the importance of complying with the EMPr; » Explanation of the importance of complying with the Environmental Authorisation; » Discussion of the potential environmental impacts of construction activities; » Employees' roles and responsibilities, including emergency preparedness (this should be combined with this induction, but presented by the contractors Health and Safety Representative); » Explanation of the mitigation measures that must be implemented when carrying out activities; and » Explanation of the specifics of this EMPr and its specification (no-go areas, etc.).	Contractor EO	Pre-construction Construction Operation
The terms of this EMPr and the Environmental Authorisation to be included in all tender documentation and Contractors contracts.	Developer Contractor	Tender process
Where applicable, any tender documentation which may be prepared for the project is to stipulate the use of local labour as far as possible.	Developer Contractor	Tender process

Performance Indicator	<ul style="list-style-type: none">» No complaints from surrounding tenants» The design meets the objectives and does not degrade the surrounding environment» Design and layouts respond to the mitigation measures and recommendations in the BA Report» The contractor must keep records of all environmental training sessions, including names, dates and the information presented. Details of the environmental induction must be included in the environmental control reports
Monitoring	<ul style="list-style-type: none">» Ensure that the design implemented meets the objectives and mitigation measures in the BA Report through review of the design by the Project Manager, and the ECO prior to the commencement of activity» Records of training are kept on site

CHAPTER 6: CONSTRUCTION MANAGEMENT PROGRAMME

Overall Goal: Undertake the construction phase in a way that:

- » Ensures that construction activities are properly managed in respect of environmental aspects and impacts.
- » Enables construction activities to be undertaken without significant disruption to other land uses and activities in the area, in particular concerning noise impacts, waste management, soil degradation and health and safety risks, and effects on other tenants.

6.1 Institutional Arrangements: Roles and Responsibilities for the Construction Phase

As the proponent, Air Products (the Developer) must ensure that the project complies with the requirements of all environmental authorisations and permits, and obligations emanating from other relevant environmental legislation. This obligation is partly met through the development of the EMPr, and the implementation of the EMPr through its integration into the contract documentation. The Developer will retain various key roles and responsibilities during the construction phase.

OBJECTIVE 1: Establish clear reporting, communication, and responsibilities in relation to overall implementation of the EMPr

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Technical Director/Manager; Site Manager; Safety, Health and Environment Representative; Environmental Control Officer (ECO) and Contractor for the construction phase of this project are as detailed below. Formal responsibilities are necessary to ensure that key procedures are executed. **Figure 6.1** provides an organogram indicating the organisational structure for the implementation of the EMPr.

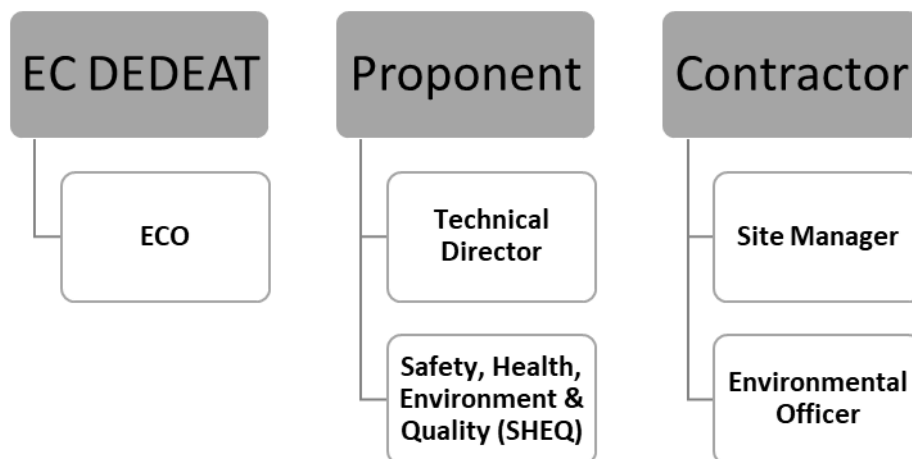


Figure 6.1: Organisational structure for the implementation of the EMPr

Technical Director will:

- » Ensure all specifications and legal constraints specifically with regards to the environment are highlighted to the Contractor(s) so that they are aware of these.
- » Ensure that the Developer and its Contractor(s) are made aware of all stipulations within the EMPr.
- » Ensure that the EMPr is correctly implemented throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes through input from the independent ECO.
- » Be fully conversant with the BA for the project, the EMPr, the conditions of the Environmental Authorisation, and all relevant environmental legislation.
- » Be fully knowledgeable with the contents of all relevant licences and permits.

Site Manager (The Contractors' on-site Representative) will:

- » Be fully knowledgeable with the contents of the BA.
- » Be fully knowledgeable with the contents and conditions of the Environmental Authorisation.
- » Be fully knowledgeable with the contents of the EMPr.
- » Be fully knowledgeable with the contents of all relevant environmental legislation, and ensure compliance with these.
- » Have overall responsibility of the EMPr and its implementation.
- » Conduct audits to ensure compliance to the EMPr.
- » Ensure there is communication with the Technical Director, the ECO, the Internal Environmental Officer and relevant discipline engineers on matters concerning the environment.
- » Be fully knowledgeable with the contents of all relevant licences and permits.
- » Ensure that no actions are taken which will harm or may indirectly cause harm to the environment, and take steps to prevent pollution on the site.
- » Confine activities to the demarcated construction site.

An independent **Environmental Control Officer (ECO)** must be appointed by the project proponent prior to the commencement of any authorised activities. The ECO will be responsible for monitoring, reviewing and verifying compliance by the Contractor with the environmental specifications of the EMPr and the conditions of the Environmental Authorisation. Accordingly, the ECO will:

- » Be fully knowledgeable with the contents of the BA.
- » Be fully knowledgeable with the contents and the conditions of the Environmental Authorisation.
- » Be fully knowledgeable, maintain, update and review the EMPr.
- » Be fully knowledgeable of all the licences and permits issued for the site.
- » Be fully knowledgeable with the contents of all relevant environmental legislation, and ensure compliance with them.
- » Provide environmental induction training to contractors on site prior to commencing of construction activities (this can also be undertaken by the EO).
- » Ensure that the contents of this document are communicated to the Contractor site staff and that the Site Manager and Contractor are constantly made aware of the contents through discussion.
- » Ensure that the compliance of the EMPr, EA and the legislation is monitored through regular and comprehensive inspection of the site and surrounding areas.

- » Compilation of the Environmental Audit Report, six months after completion of construction or at a frequency in compliance with the Environmental Authorisation. Reports should be submitted to the relevant authority, the Project Proponent and the CDC.
- » Monitoring and verification must be implemented to ensure that environmental impacts are kept to a minimum, as far as possible.
- » Ensure that the Site Manager has input into the review and acceptance of construction methods and method statements.
- » Keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO. Reports should be submitted to the relevant authority on a monthly basis.
- » Ensure that the compilation of progress reports for submission to the Technical Director, with input from the Site Manager, takes place on a regular basis, including a final post-construction audit.
- » Ensure that there is communication with the Site Manager regarding the monitoring of the site.
- » Attendance of contractors site meetings.
- » ECO site inspections to be undertaken once a month to ensure compliance with the EMPr. The duration of these visits may be increased or decreased at the discretion of the ECO in consultation with the Engineers Representative.
- » Submit independent reports to the DEDEAT and other regulating authorities regarding compliance with the requirements of the EMPr, EA and other environmental permits.

As a general mitigation strategy, the Environmental Control Officer (ECO) should be present for the site preparation and initial clearing activities to facilitate environmental induction with construction staff and supervise site clearing activities (i.e. during site establishment, and excavation of foundations). Thereafter, monthly site compliance inspections would probably be sufficient, which must be increased if required.

Contractor's Environmental Officer: The Contractor's Environmental Officer (EO), employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this EMPr, and for the compilation of regular (usually weekly) Monitoring Reports. In addition, the EO must act as liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor. Given the low sensitivity of the site, this role could be combined with the Health and Safety Officer (i.e. a Safety, Health and Environment (SHE) Officer could be appointed).

The Contractor's Environmental Officer should:

- » Be well versed in environmental matters.
- » Understand the relevant environmental legislation and processes and the implementation thereof.
- » Understand the hierarchy of Environmental Compliance Reporting, and the implications of Non-Compliance.
- » Know the background of the project and understand the implementation programme.
- » Be able to resolve conflicts and make recommendations on site in terms of the requirements of this Specification.
- » Keep accurate and detailed records of all EMPr-related activities on site. The EO shall keep a daily diary for monitoring the site specific activities as per project schedule.
- » As a general mitigation strategy, the EO should supervise any flora relocation and faunal rescue activities that may need to take place during the site clearing (i.e. during site establishment, and excavation of foundations) and therefore needs the relevant training/ experience. The EO will have overall responsibility for day-to day environmental management and implementation of mitigations.

- » The EO is responsible for reporting to the ECO on the day-to-day on-site implementation of this EMPr and other Project Permits/Authorisations.
- » Ensure or otherwise train and induct all contractor's employees prior to commencement of any works.
- » Ensure that there is daily communication with the Site Manager regarding the monitoring of the site.
- » Compilation of Weekly and Monthly Monitoring Reports to be submitted to the ECO and Site Manager.
- » In addition, the EO/ Environmental Representative must act as project liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager, ECO and Contractor(s).

Contractors and Service Providers: It is important that Contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMPr. The Contractor must appoint an Internal Environmental Officer (EO) who will be responsible for informing contractor employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The Internal Environmental Officer and Contractor's obligations in this regard include the following:

- » Must be fully knowledgeable on all environmental features of the construction site and the surrounding environment.
- » Be fully knowledgeable with the contents and the conditions of the Environmental Authorisation.
- » Be fully knowledgeable with the contents with the EMPr.
- » Be fully knowledgeable of all the licences and permits issued for the site.
- » Ensure a copy of the Environmental Authorisation and EMPr is easily accessible to all on-site staff members.
- » Ensure contractor employees are familiar with the requirements of this EMPr and the environmental specifications as they apply to the construction of the proposed facility.
- » Ensure that prior to commencing any site works, all contractor employees and sub-contractors must have attended environmental awareness training included in the induction training which must provide staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- » Ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor.
- » Manage the day-to-day on-site implementation of this EMPr, and the compilation of regular (usually weekly) Monitoring Reports.
- » Keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken, including those of the Independent ECO.
- » Inform staff of the environmental issues as deemed necessary by the Independent ECO.

All contractors (including sub-contractors and staff) and service providers are ultimately responsible for:

- » Ensuring adherence to the environmental management specifications.
- » Ensuring that all applicable Method Statements are submitted to the Site Manager (and ECO) for approval before any work is undertaken.
- » Ensuring that any instructions issued by the Site Manager on the advice of the ECO are adhered to.
- » Ensuring that a report is tabled at each site meeting, which will document all incidents that have occurred during the period before the site meeting.
- » Ensuring that a register is kept in the site office, which lists all transgressions issued by the ECO.

- » Ensuring that a register of all public complaints is maintained.
- » Ensuring that all employees, including those of sub-contractors, receive training before the commencement of construction in order for the sub-contractors to constructively contribute towards the successful implementation of the EMPr (i.e. ensure their staff are appropriately trained on the environmental obligations).

6.2. Objectives

In order to meet the overall goal for construction, the following objectives, actions, and monitoring requirements have been identified.

OBJECTIVE 1: Minimise impacts related to inappropriate construction activities

On-going communication with surrounding tenants is important to maintain during the construction and operation phases of the development. Any issues and concerns raised should be addressed as far as possible in as short a timeframe as possible.

Project component/s	<ul style="list-style-type: none"> » LOX storage tank; » Diesel storage tank;
Potential Impact	<ul style="list-style-type: none"> » Hazards to landowners and the public » Visual impact of general construction activities,
Activity/risk source	<ul style="list-style-type: none"> » Movement of construction vehicles in the area and on-site.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » To secure the site against unauthorised entry. » To protect members of the public/landowners/residents. » Minimal visual intrusion by construction activities outside of the immediate construction work areas.

Mitigation: Action/control	Responsibility	Timeframe
Establish and maintain appropriately bunded areas for storage of hazardous materials (i.e. fuel to be required during construction).	Contractor	Site establishment
Visual impacts must be reduced during construction through minimising areas of surface disturbance, using dust suppression techniques.	Contractor	Site establishment, and duration of construction
Adequate protective measures must be implemented to prevent unauthorised access to the working area and the internal access routes. The development (including the development footprint and contractor's equipment camp) must also be secured and fenced and clearly demarcated.	Contractor	Site establishment, and duration of construction
Establish the necessary ablution facilities with chemical toilets and provide adequate sanitation facilities and ablutions for construction workers so that the surrounding environment is not polluted (at least one sanitary facility for each sex and for every 30 workers as per the 2014 Construction Regulations; Section 30(1) (b)) at appropriate locations on site). The facilities must be placed within the construction area.	Contractor	Site establishment, and duration of construction
Supply adequate waste collection bins at site where construction is	Contractor	Site establishment,

Mitigation: Action/control	Responsibility	Timeframe
being undertaken. Separate bins should be provided for general and hazardous waste. As far as possible, provision should be made for separation of waste for recycling.		and duration of construction

Performance Indicator	<ul style="list-style-type: none"> » Site is secure and there is no unauthorised entry. » No members of the public injured as a result of construction activities. » Appropriate and adequate waste management and sanitation facilities provided at construction site.
Monitoring	<ul style="list-style-type: none"> » Secure the site against unauthorised entry. » An incident reporting system should be used to record non-conformances to the EMP. » SHE to monitor all construction areas on a continuous basis until all construction is completed. Non-conformances must be immediately reported to the site manager. » Monitoring of vegetation clearing during construction (by contractor as part of construction contract).

OBJECTIVE 2: Appropriate management of the construction site and construction workers

Project component/s	<ul style="list-style-type: none"> » LOX storage tank; » Diesel storage tank
Potential Impact	<ul style="list-style-type: none"> » Impacts on areas immediately outside the site due to inadequate sanitation and waste removal facilities. » Pollution of the areas immediately outside the site due to inadequate or inappropriate facilities or procedures.
Activity/risk source	<p>Access to and from the equipment storage area/s.</p> <ul style="list-style-type: none"> » Contractors not aware of the requirements of the EMP, leading to unnecessary impacts on the surrounding environment.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Educate all workers of the dangers associated with a construction site » Secure the site against unauthorised entry » Ensure adequate sanitation facilities and waste management practices » Ensure appropriate management of actions by on-site personnel in order to minimise impacts to the surrounding environment

Mitigation: Action/control	Responsibility	Timeframe
In order to minimise impacts on the open fields surrounding the site, contractors must be required to adopt a certain Code of Conduct and commit to restricting construction activities to areas within the development footprint. Contractors and their sub-contractors must be familiar with the conditions of the Environmental Authorisation, the BA Report, and this EMP, as well as the requirements of all relevant environmental legislation.	Contractor	Construction phase
Contact details of emergency services should be prominently displayed on site.	Contractor	Construction phase
Conduct training and safety induction amongst workers.	Contractor	Construction phase
A local employment policy should be adopted to maximise opportunities made available to the local labour force.	Contractor	Construction phase

Mitigation: Action/control	Responsibility	Timeframe
All litter must be deposited in a clearly marked, closed, weather and animal-proof disposal bin in the construction area. Particular attention needs to be paid to food waste.	Contractor	Duration of contract
Ensure compliance with all national, regional and local legislation with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials.	Contractor Owner	During and post construction.
Keep a record of all hazardous substances stored on site. Clearly label all the containers storing hazardous waste.	Contractor	During and post construction.
Ensure waste containers are maintained and emptied as and when required.	Contractor	Duration of construction
Ensure ablution facilities are maintained and emptied as and when required.	Contractor	Duration of construction

Performance Indicator	<ul style="list-style-type: none"> » No injuries or incidents on the construction site » Ablution and waste removal facilities are in a good working order and do not pollute the environment due to mismanagement » No complaints regarding contractor behaviour or habits » Appropriate and adequate waste management and sanitation facilities provided at construction site » Appropriate training of all staff is undertaken prior to them commencing work on the construction site » Code of Conduct drafted before commencement of construction phase
Monitoring	<ul style="list-style-type: none"> » An incident reporting system to record non-conformances to the EMP » Observation and supervision of Contractor practices throughout construction phase by the ECO » Complaints must be investigated and, if appropriate, acted upon » An incident reporting system will be used to record non-conformances to the EMP

OBJECTIVE 3: Minimisation of development footprint and soil degradation.

The soil on site may be impacted in terms of:

- » Uncontrolled run-off relating to construction activity (excessive wetting, uncontrolled discharge, etc.) which will also lead to accelerated erosion;
- » Accidental spillages;
- » Erosion from rainwater;

Project component/s	<ul style="list-style-type: none"> » LOX storage tank; » Diesel storage tank
Potential Impact	<ul style="list-style-type: none"> » Soil contamination from accidental spillages. » Increased run-off over the site.
Activity/risk source	<ul style="list-style-type: none"> » Removal of paving, excavation, stockpiling, compaction, and pollution of soil. » All constructional activities that disturb the soil below surface, such as levelling. » The construction and installation of aboveground LOX and diesel tanks and associated

	<ul style="list-style-type: none"> » infrastructure which will cover soil surfaces. » Rainfall - water erosion of disturbed areas. » Chemical contamination of the soil by vehicles and machinery. » Storage of materials required for construction.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Ensure effective soil clean up should there be a spill. » Minimise soil degradation (mixing, wetting, compaction, etc.). » Maintain and monitor the site.

Mitigation: Action/control	Responsibility	Timeframe
Erosion control measures: Run-off attenuation on slopes (sandbags, logs), silt fences, storm water catch-pits, shade nets, gabions or temporary mulching over denuded area as required.	EO and Contractor	Site establishment and duration of contract
Monitor the site for erosion problems and identify areas where additional intervention such as additional revegetation or erosion control such as silt traps may be necessary.	Contractor	Construction
Soil stockpiles must be dampened with dust suppressant or equivalent to prevent erosion by wind.	Contractor	Construction
Any erosion problems within the development area as a result of the construction activities observed must be rectified immediately and monitored thereafter to ensure that they do not re-occur.	EO and Contractor	Construction Operation
The gravel access roads within the site and other disturbed areas (laydown areas) should be regularly monitored for erosion occurrences and must receive follow-up monitoring by the EO to assess the success of the remediation.	EO and Contractor	Construction Rehabilitation
No soil is to be stripped from areas within the site that the contractor does not require for construction works.	EO and Contractor	Construction

Performance Indicator	<ul style="list-style-type: none"> » Limited soil erosion around site. » No activity in restricted areas. » No disturbance outside of designated work areas. » Minimised clearing of existing/natural vegetation.
Monitoring	<ul style="list-style-type: none"> » Supervision of all clearing and earthworks. » Limited level of soil erosion around the site. » An incident register and non-conformance must be used to record incidents and non-conformances to the EMPr. » On-going visual assessment of compliance with erosion prevention by Contractor and ECO. » Monitor visual signs of erosion such as the formation of gullies after rainstorms and the presence of dust emissions during wind storms. » Any signs of soil erosion on site should be documented (including photographic evidence and coordinates of the problem areas) and submitted to the management team of the project. » Monitor compliance of construction workers to restrict construction work to the clearly defined limits of the construction site to keep footprint as small as possible. Monitoring to be undertaken by the ECO.

OBJECTIVE 4: Appropriate stormwater management

Project component/s	» Alteration of areas into hard surfaces impacting on the local hydrological regime of the area.
Potential Impact	» Poor stormwater management and alteration of the hydrological regime.
Activity/risk source	» Placement of hard engineered surfaces.
Mitigation: Target/Objective	» Reduce the potential increase in surface flow velocities and the impact on localised drainage systems.

Mitigation: Action/control	Responsibility	Timeframe
Any storm water within the site must be handled in a suitable manner, i.e. clean and dirty water streams around the plant and install stilling basins to capture large volumes of run-off, shade nets, or gabions trapping sediments and reduce flow velocities.	Contractor and Engineers	Construction
All roads and other hardened surfaces must have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk.	Contractor	Construction
Storm water control systems must be implemented to reduce erosion on the project site.	Contractor	Construction
Contractors must comply with the requirements of the Integrated Stormwater Master Plan (Appendix C)	Contractor	Construction

Performance Indicator	» No impacts due to runoff
	» Minimise erosion as far as possible
Monitoring	» Appropriate storm water management system in place

OBJECTIVE 5: Protection of heritage resources

Project component/s	» LOX storage tank; » Diesel storage tank
Potential Impact	» Heritage objects or artefacts found on site are inappropriately managed or destroyed.
Activity/risk source	» Site preparation and earthworks. » Foundations or installation of infrastructure. » Mobile construction equipment movement on site.
Mitigation: Target/Objective	» To ensure that any heritage objects found on site are treated appropriately and in accordance with the relevant legislation.

Mitigation: Action/control	Responsibility	Timeframe
A chance find procedure must be developed and implemented in the event that archaeological or palaeontological resources are found.	Contractor Heritage specialist	Pre-construction Construction
In the event that fossils resources are discovered during excavations, immediately stop excavation in the vicinity of the potential material. Mark (flag) the position and also spoil material that may contain fossils. Inform the site foreman and the EO. EO to inform the developer, the	Contractor and EO	Construction

Mitigation: Action/control	Responsibility	Timeframe
developer contacts the standby archaeologist and/or palaeontologist. EO to describe the occurrence and provide images by email.		

Performance Indicator	<ul style="list-style-type: none"> » No disturbance outside of designated work areas. » All heritage items located are dealt with as per the legislative guidelines.
Monitoring	<ul style="list-style-type: none"> » Observation of excavation activities by the EO throughout construction phase. » Supervision of all clearing and earthworks. » Due care taken during earthworks and disturbance of land by all staff and any heritage objects found reported. » Appropriate permits obtained from SAHRA prior to the disturbance or destruction of heritage sites (if required). » An incident reporting system will be used to record non-conformances to the EMPr.

OBJECTIVE 6: Appropriate handling and management of waste

Activities resulting from the construction phase could lead to impacts resulting from waste management and materials handling. Good supervision of the waste management programme on site is critical for the minimisation of impacts.

Project component/s	<ul style="list-style-type: none"> » LOX storage tank; » Diesel storage tank
Potential Impact	<ul style="list-style-type: none"> » Risk to environment due to poor waste management practices » Inefficient use of resources resulting in excessive waste generation.
Activity/risk source	<ul style="list-style-type: none"> » Spoil material from excavation, earthworks and site preparation » Hydrocarbon use and storage » Other construction wastes
Mitigation: Target/Objective	<ul style="list-style-type: none"> » To comply with waste management legislation » To minimise production of waste » To ensure appropriate waste handling, storage and disposal » To avoid environmental harm from waste disposal

Mitigation: Action/control	Responsibility	Timeframe
Dispose of all solid waste collected at an appropriately registered waste disposal site. The disposal of waste shall be in accordance with all relevant legislation.	Contractor	Duration of Contract
Construction contractors must provide specific waste management plans to deal with all waste streams should this not already be available as part of the Air Products procedures.	Contractor	Pre-construction
Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse, construction waste (wood and metal scrap) and contaminated waste. Location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage and vermin control.	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Contractor	Duration of contract
Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area.	Contractor	Duration of contract
Implement an integrated waste management approach that is based on waste minimisation and incorporates reduction, recycling, re-use and disposal where appropriate. Where solid waste is disposed of, such disposal shall only occur at a landfill licensed in terms of section 20(b) of the National Environmental Management Waste Act, 2008 (Act 59 of 2008).	Contractor	Duration of construction
Under no circumstances may waste be burnt on site.	Contractor	Duration of construction
Waste and surplus dangerous goods must be kept to a minimum and must be transported by approved waste transporters to sites designated for their disposal.	Contractor	Duration of contract
Documentation (waste manifest) must be maintained detailing the quantity, nature and fate of any regulated waste. Waste disposal records must be available for review at any time.	Contractor	Duration of contract
Waste disposal at the construction site must be avoided by separating and trucking out of waste.	Contractor	Duration of contract
SABS approved spill kits to be available on site and easily accessible.	Contractor	Duration of contract
All rubble, spoil and solid concrete waste must be disposed of at a suitable registered waste site unless CDC or the Competent Authority issues a contrary instruction.	Contractor	Duration of contract

Performance Indicator	<ul style="list-style-type: none"> » No complaints received regarding waste on site or indiscriminate dumping » Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately » Provision of all appropriate waste manifests for all waste streams
Monitoring	<ul style="list-style-type: none"> » Observation and supervision of waste management practices throughout construction phase » Waste collection to be monitored on a regular basis » Waste documentation completed » An incident reporting system will be used to record non-conformances to the EMP

OBJECTIVE 7: Appropriate handling and storage of chemicals, hazardous substances

The construction phase may involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents.

Project component/s	<ul style="list-style-type: none"> » Laydown areas. » Temporary hydrocarbon and chemical storage areas. » Proximity to Air Products existing plant and storage tanks
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Potential Impact	<ul style="list-style-type: none"> » Generation of contaminated wastes from used chemical containers. » Soil pollution.
Activity/risk source	<ul style="list-style-type: none"> » Vehicles associated with site preparation and earthworks. » Hydrocarbon spills by vehicles and machinery during levelling, vegetation clearance and transport of workers, materials and equipment and fuel storage tanks. » Accidental spills of hazardous chemicals. » Pollution from concrete mixing.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » 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 on-site does not cause pollution of the environment or harm to persons. » Prevent and contain hydrocarbon leaks. » Undertake proper waste management. » Ensure access to the plant and existing storage areas are monitored and access controlled at all times. » Store hazardous chemicals safely in a bunded area.

Mitigation: Action/control	Responsibility	Timeframe
Any liquids stored on site, including admixtures, fuels and lubricants, should be stored in accordance with applicable legislation.	Contractor	Pre-construction and implement for duration of Contract
Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. These must be located in appropriate areas on site and must be maintained in an operational condition throughout the construction period.	Contractor	Duration of contract
Losses of fuel and lubricants from the oil sumps and steering racks of parked vehicles and equipment must be contained using a drip tray with plastic sheeting filled with absorbent material when not parked on hard standing.	Contractor	Construction Operation
Ensure compliance with all national, regional and local legislation with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials. The onus is on the Contractor to identify and interpret the applicable legislation. Hazardous waste to be disposed of at a registered landfill site.	Contractor	During and post construction.
Establish an appropriate Hazardous Stores which is in accordance with the Hazardous Substance Amendment Act, No. 53 of 1992. This should include but not be limited to: <ul style="list-style-type: none"> » Designated area; » All applicable safety signage; » Firefighting equipment; » Enclosed by an impermeable bund; » Protected from the elements, » Lockable; » Ventilated; and » Has adequate capacity to contain 110% of the largest container contents. 	Contractor	Pre-construction and implement for duration of Contract
In the event of a major spill or leak of contaminants, the relevant administering authority and Air Products South Africa (Pty) Ltd must be immediately notified as per the notification of emergencies/incidents.	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
Spilled concrete must be cleaned up as soon as possible and disposed of at a suitably licensed waste disposal site.	Contractor	Duration of contract
Accidental spillage of potentially contaminating liquids and solids must be cleaned up immediately in line with procedures by trained staff with the appropriate equipment.	Contractor	Duration of contract
Any contaminated/polluted soil removed from the site must be disposed of at a licensed hazardous waste disposal facility.	Contractor	Duration of contract
Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals must be compiled with.	Contractor	Duration of contract
Transport of all hazardous substances must be in accordance with the relevant legislation and regulations.	Contractor	Duration of contract
High level maintenance must be undertaken on all vehicles and construction machinery at a designated place off site to prevent hydrocarbon spills.	Contractor	Duration of contract
Monitoring of the existing plant and storage tanks must be undertaken regularly during the installation of the LOX tank to ensure the integrity of the other tanks and plant infrastructure is not compromised.	Contractor	Duration of contract
All stored fuels to be maintained within a bund and on a sealed surface as per the requirements of SABS 089:1999 Part 1.	Contractor	Duration of contract
Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.	Contractor	Duration of contract
Construction machinery must be stored in an appropriately sealed area.	Contractor	Duration of contract
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.	Contractor	Construction
Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean storm water system.	Contractor	Construction

Performance Indicator	<ul style="list-style-type: none"> » No chemical spills outside of designated storage areas. » No water or soil contamination by spills. » No complaints received regarding waste on site or indiscriminate dumping. » Safe storage of hazardous chemicals. » Proper waste management.
Monitoring	<ul style="list-style-type: none"> » Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. » A complaints register must be maintained, in which any complaints from the community will be logged. » An incident reporting system will be used to record non-conformances to the EMPr. » On-going visual assessment to detect polluted areas and the application of clean-up and preventative procedures. » Monitor hydrocarbon spills from vehicles and machinery during construction continuously and record volume and nature of spill, location and clean-up actions.

- » Monitor maintenance of drains and intercept drains weekly.
- » Analyse soil samples for pollution in areas of known spills or where a breach of containment is evident when it occurs.
- » Records of accidental spills and clean-up procedures and the results thereof must be audited on an annual basis by the ECO.
- » Records of all incidents that caused chemical pollution must be kept and a summary of the results must be reported to management annually.

OBJECTIVE 8: Minimise impacts related to transportation of equipment and materials to site

Heavy and light-duty vehicles will be transporting goods, personnel and building materials for the duration of the construction phase. Vehicles would make use of the R102, Cable, Neptune Roads as well as the Intsimbi road closer to the site.

Project Component/s	» SEZ road network (Cable, Neptune and Intsimbi roads) & R102
Potential Impact	» Increase in disruption to traffic
Activities/Risk Sources	» Increase in traffic and movement of vehicles.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise impact of traffic associated with the construction of the development on local traffic volume, local communities, existing infrastructure, property owners and road users. » To ensure all vehicles are roadworthy and all materials/equipment are transported appropriately and within any imposed permit/licence conditions

Mitigation: Action/Control	Responsibility	Timeframe
All vehicles must be roadworthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential noise, dust and road safety issues.	Contractor	Construction
All relevant permits for abnormal loads must be applied for from the relevant authority.	Contractor (or appointed transportation contractor)	Pre-construction
Only designated access routes must be used	Contractor	Construction
The contractor must take all reasonable measures to ensure the safety of the public in the surrounding area. Where the public could be exposed to danger by any of the works or site activities, the contractor must, as appropriate, provide suitable flagmen, barriers and/or warning signs in English, Afrikaans and any other relevant local languages, all to the approval of the Site Manager.	Contractor	Duration of contract
Appropriate signage must be erected warning road users of construction traffic entering and exiting the construction site.	Contractor	Duration of contract

Performance Indicator	<ul style="list-style-type: none"> » Vehicles are roadworthy, inspected regularly and speed limits are adhered to. » Provision of traffic warning signs
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Monitoring

- » An incident reporting system will be used to record non-conformances to the EMPr.

6.3. Detailing Method Statements

OBJECTIVE 9: Ensure all construction activities are undertaken with the appropriate level of environmental awareness to minimise environmental risk

The environmental specifications are required to be underpinned by a series of Method Statements, within which the Contractors and Service Providers are required to outline how any identified environmental risks will practically be mitigated and managed for the duration of the contract, and how specifications within this EMPr will be met. That is, the Contractor will be required to describe how specified requirements will be achieved through the submission of written Method Statements to the Site Manager and ECO.

A Method Statement is defined as "a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications". The Method Statement must cover applicable details with regard to:

- » Details of the responsible person/s;
- » Construction procedures;
- » Materials and equipment to be used;
- » Getting the equipment to and from site;
- » How the equipment/material will be moved while on-site;
- » How and where material will be stored
- » The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- » Timing and location of activities;
- » Compliance/non-compliance with the Specifications; and
- » Any other information deemed necessary by the Site Manager.

Method Statements must be compiled for all activities which affect any aspect of the environment and should be applied consistently to all activities. Specific areas to be addressed through method statements (pre, during and post construction) may include:

- » Site establishment (which explains all activities from induction training to offloading, construction sequence for site establishment and the different amenities to be established etc., including a site camp plan indicating all of these).
- » Preparation of the site (i.e. removal of paving, concrete, compacting soils and removing of waste).
- » Erosion control.
- » Ablution facilities (placement, maintenance, management and servicing).
- » Solid Waste Management:
 - * Description of the waste storage facilities (on site and accumulative).

- * Placement of waste stored (on site and accumulative).
- * Management and collection of waste process.
- * Recycle, re-use and removal process and procedure.
- » Dust and noise pollution:
 - * Describe the necessary measures to ensure that noise from construction activities is maintained within lawfully acceptable levels.
- » Procedure to control dust at all times on the site, access roads and spoil sites (dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments).
- » Hazardous substance storage (ensure compliance with all national, regional and local legislation with regard to the storage of oils, fuels, lubricants, solvents, wood treatments, bitumen, cement, pesticides and any other harmful and hazardous substances and materials. South African National Standards apply).
 - * Prevention protocol of accidental contamination of soil at storage and handling areas.
- » Fire prevention and management measures on site.
- » Incident and accident reporting protocol.

The Contractor may not commence the activity covered by the Method Statement until it has been approved by the Site Manager (with input from the ECO), except in the case of emergency activities and then only with the consent of the Site Manager. Approval of the Method Statement will not absolve the Contractor from their obligations or responsibilities in terms of their contract. Failure to submit a method statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved.

6.4. Awareness and Competence: Construction Phase of the storage facilities and associated infrastructure

OBJECTIVE 10: To ensure all construction personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm

To achieve effective environmental management, it is important that Contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. The ECO is responsible for monitoring compliance pre, during and post construction. The Contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The Contractors obligations in this regard include the following:

- » All Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment. This includes the discussion/explanation of site environmental matters during toolbox talks.
- » The content and requirements of Method Statements are to be clearly explained to all plant operators and general workers. All staff acting in a supervisory capacity is to have copies of the relevant Method Statements and be aware of the content thereof.
- » Ensuring that a copy of the EMP is readily available on-site, and that all senior site staff is aware of the location and have access to the document. Senior site staff will be familiar with the requirements of

the EMPr and the environmental specifications as they apply to the expansion of LOX storage facilities and addition aboveground diesel storage at the Air Products Coega facility.

- » Ensuring that, prior to commencing any site works, all employees and sub-contractors have attended an Environmental Awareness Training session. The training session must provide the site staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
 - * Records must be kept of those that have completed the relevant training.
 - * Training should be done either in a written or verbal format but must be appropriate for the receiving audience.
- » All sub-contractors must have a copy of the EMPr and sign a declaration/ acknowledgement that they are aware and familiar with the contents and requirements of the EMPr and that they will conduct work in such a manner as to ensure compliance with the requirements of the EMPr.
- » Contractors and main sub-contractors should have a basic training in the identification of archaeological sites/objects, and protected flora and fauna that may be encountered on the site.
- » Awareness of any other environmental matters, which are deemed to be necessary by the ECO.
- » Ensuring that employee information posters, outlining the environmental "do's" and "don'ts" (as per the environmental awareness training course) are erected at prominent locations throughout the site.

Therefore, prior to the commencement of construction activities on site and before any person commences with work on site thereafter, adequate environmental awareness and responsibility are to be appropriately presented to all staff present onsite, clearly describing their obligations towards environmental controls and methodologies in terms of this EMPr. This training and awareness will be achieved in the following ways:

6.4.1 Environmental Awareness and Induction Training

The EO, in consultation with the contractor, shall ensure that all construction workers receive an induction presentation, as well as on-going environmental education and awareness, on the importance and implications of the EMPr and the environmental requirements it prescribes. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The contractor should provide a translator from their staff for the purpose of translating should this be necessary.

As a minimum, induction training should include:

- » Explanation of the importance of complying with the EMPr;
- » Explanation of the importance of complying with the Environmental Authorisation;
- » Discussion of the potential environmental impacts of construction activities;
- » Employees' roles and responsibilities, including emergency preparedness (this should be combined with this induction, but presented by the contractor's Health and Safety Representative);
- » Explanation of the mitigation measures that must be implemented when carrying out their activities; and
- » Explanation of the specifics of this EMPr and its specification.

Environmental Awareness Training must take the form of an on-site talk and demonstration by the EO/ECO before the commencement of site establishment and construction on site. The education/awareness programme should be aimed at all levels of management and construction workers within the contractor team. A record of attendance of this training must be maintained by the EO/ECO on site. Proof of awareness training should be kept on record. Environmental induction training must be presented to all

persons who are to work on the site – be it for short or long durations; Contractor's or Engineer's staff; administrative or site staff; sub-contractors or visitors to site.

This induction training should be undertaken by the Contractor's Environmental Officer and should include discussing the developer's environmental policy and values, the function of the EMPr and Contract Specifications and the importance and reasons for compliance to these. The induction training must highlight overall do's and don'ts on site and clarify the repercussions of not complying with these. The non-conformance reporting system must be explained during the induction as well. Opportunity for questions and clarifications must form part of this training. A record of attendance of this training must be maintained by the EO/ECO on site.

6.4.2 Toolbox Talks

Toolbox talks should be held on a scheduled and regular basis (at least twice a month) where foremen, environmental and safety representatives of different components of the works and sub-consultants hold talks relating to environmental practices and safety awareness on site. These talks should also include discussions on possible common incidents occurring on site and ones recommended by the onsite EO and the prevention of reoccurrence thereof. Records of attendance and the awareness talk subject must be kept on file.

6.5. Monitoring Programme: Construction Phase

OBJECTIVE 11: To monitor the performance of the control strategies employed against environmental objectives and standards

A monitoring programme must be in place not only to ensure conformance with the EMPr, but also to monitor any environmental issues and impacts which have not been accounted for in the EMPr that are or could result in significant environmental impacts for which corrective action is required. The period and frequency of monitoring will be stipulated by the Environmental Authorisation (once issued). Where this is not clearly dictated, the Developer will determine and stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. The Technical Director/ Project Manager will ensure that the monitoring is conducted and reported.

The aim of the monitoring and auditing process would be to monitor the implementation of the specified environmental specifications, in order to:

- » Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications
- » Ensure adequate and appropriate interventions to address non-compliance
- » Ensure adequate and appropriate interventions to address environmental degradation
- » Ensure appropriate and adequate record keeping related to environmental compliance
- » Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, in order to enhance the efficacy of environmental management on site
- » Aid communication and feedback to authorities and stakeholders

All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the EC DEDEAT in terms of the Environmental Authorisation, must be submitted to the Director: Compliance Monitoring of the Department.

Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

6.5.1. Non-Conformance Reports

All supervisory staff including Foremen, Engineers, and the ECO must be provided the means to be able to submit non-conformance reports to the Site Manager. Non-conformance reports will describe, in detail, the cause, nature and effects of any environmental non-conformance by the Contractor.

The non-conformance report will be updated on completion of the corrective measures indicated on the finding sheet. The report must indicate that the remediation measures have been implemented timeously and that the non-conformance can be closed-out to the satisfaction of the Site Manager and ECO.

6.5.2. Monitoring Reports

A monitoring report must be compiled by the ECO on a monthly basis and must be submitted to the Director: Compliance Monitoring at DEDEAT for their records. This report should include details of the activities undertaken in the reporting period, any non-conformances or incidents recorded, corrective action required, and details of those non-conformances or incidents which have been closed out. The contractor must ensure that all waste manifests are provided to the ECO on a monthly basis in order to inform and update the DEDEAT regarding waste related activities.

6.5.3. Audit Reports

The holder of the Environmental Authorisation must, for the period during which the Environmental Authorisation and EMPr remain valid, ensure that project compliance with the conditions of the Environmental Authorisation and the EMPr are audited, and that the audit reports are submitted to the Director: Compliance Monitoring of the DEDEAT.

An environmental internal audit must be conducted and submitted every 3 months and an external audit must be conducted once a year. An annual audit report must be compiled and submitted to DEDEAT until the completion of the construction and rehabilitation. This report must be compiled in accordance with Appendix 7 of the EIA Regulations, 2014, as amended, and indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions and the requirements of the EMPr.

6.5.4. Final Audit Report

A final environmental audit report must be compiled by an independent auditor and be submitted to DEDEAT upon completion of the construction and rehabilitation activities. The report must be submitted within 30 days of completion of rehabilitation activities. This report must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions and the requirements of the EMPr.

CHAPTER 7: MANAGEMENT PROGRAMME: REHABILITATION

Overall Goal: Undertake the rehabilitation measures in a way that:

- » Ensures rehabilitation of disturbed areas following the execution of the works, such that residual environmental impacts are remediated or curtailed.

7.1. Objectives

In order to meet this goal, the following objective, actions and monitoring requirements are relevant:

OBJECTIVE 1: Ensure appropriate rehabilitation of disturbed areas such that residual environmental impacts are remediated or curtailed

Areas requiring rehabilitation will include all areas disturbed during the construction phase and that are not required for regular operation and maintenance operations. Rehabilitation should be undertaken in an area as soon as possible after the completion of construction activities within that area.

Project Component/s	<ul style="list-style-type: none"> » Construction camps. » Laydown areas. » All areas disturbed by construction activities.
Potential Impact	<ul style="list-style-type: none"> » Environmental integrity of the site undermined resulting in reduced visual aesthetics, erosion and increased runoff, and the requirement for on-going management intervention.
Activity/Risk Source	<ul style="list-style-type: none"> » Temporary construction areas » Other disturbed areas/footprints
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Ensure and encourage site rehabilitation of disturbed areas. » Ensure that the site is appropriately rehabilitated following the execution of the works, such that residual environmental impacts (including erosion) are remediated or curtailed.

Mitigation: Action/Control	Responsibility	Timeframe
All temporary facilities, equipment, and waste materials must be removed from site as soon as construction is completed.	Contractor	Following execution of the works
All temporary fencing and danger tape must be removed once the construction phase has been completed.	Contractor	Following completion of construction activities in an area
The area that previously housed the construction equipment camp is to be checked for spills of substances such as oil, paint, etc. and these must be cleaned up.	Contractor	Following completion of construction activities in an area
No planting or importing any listed invasive alien plant species (all Category 1a, 1b and 2 invasive species) to the site for landscaping, rehabilitation or any other purpose must be undertaken.	Contractor	Following completion of construction activities in an area
All hardened surfaces within the construction equipment camp area should be ripped, all imported materials removed, and	Contractor	Following completion of construction activities in

Mitigation: Action/Control	Responsibility	Timeframe
the area shall be top soiled and re-vegetated.		an area
Performance Indicator	<ul style="list-style-type: none"> » All portions of the site, including construction equipment camp and working areas, cleared of equipment. » Topsoil replaced on all areas and stabilised where practicable or required after construction and temporally utilised areas. » Completed site free of erosion and alien invasive plants. 	
Monitoring	<ul style="list-style-type: none"> » On-going inspection of rehabilitated areas in order to determine effectiveness of rehabilitation measures implemented during the operational lifespan of the development. 	

CHAPTER 8: OPERATION MANAGEMENT PROGRAMME

Overall Goal: To ensure that the operation of the LOX and diesel storage tanks does not have unforeseen impacts on the environment and to ensure that all impacts are monitored, and the necessary corrective action taken in all cases. In order to address this goal, it is necessary to operate the entire Air Products Coega plant in a way that:

- » Ensures that operation activities are properly managed in respect of environmental aspects and impacts

An environmental manager must ensure the implementation of the operational EMPr.

8.1. Objectives

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE 1: Establish clear reporting, communication, and responsibilities in relation to the overall implementation of the EMPr during operation

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Operations Manager, and Environmental Manager for the operation phase of this project are detailed below.

The **Operations Manager** will:

- » Ensure that adequate resources (human, financial, technology) are made available and appropriately managed for the successful implementation of the operational EMPr.
- » Conduct annual basis reviews of the EMPr to evaluate its effectiveness.
- » Take appropriate action as a result of findings and recommendations in management reviews and audits.
- » Provide forums to communicate matters regarding environmental management.

The **SHEQ Manager** will:

- » Manage and report on the development's environmental performance.
- » Maintain a register of all known environmental impacts and manage the monitoring thereof.
- » Conduct internal environmental audits and co-ordinate external environmental audits.
- » Liaise with statutory bodies such as the DEDEAT on environmental performance and other issues.
- » Conduct environmental training and awareness for the employees who operate and maintain the development.
- » Compile environmental policies and procedures.
- » Liaise with interested and affected parties on environmental issues of common concern.

The Technical/SHEQ Manager must provide fourteen (14) days written notification to the GDARD that the operation phase will commence.

OBJECTIVE 2: Minimise soil degradation and erosion

The soil on site may be impacted in terms of:

- » *Soil degradation including erosion* - by wind and water and subsequent deposition elsewhere is of a concern across the entire site.
- » *Uncontrolled run-off* - relating to construction activity (excessive wetting, uncontrolled discharge, etc.) will also lead to accelerated erosion and possible sedimentation of drainage systems outside of the project site during operation.
- » *Degradation* - of the natural soil profile due to pollution.

Project component/s	» Existing project infrastructure
Potential Impact	<ul style="list-style-type: none"> » Soil degradation. » Soil erosion. » Increased water run-off, soil degradation due to water erosion and sediment generation » Impact on the surrounding landscape due to alien plant invasion, erosion or poor management of the development.
Activity/risk source	<ul style="list-style-type: none"> » Poor rehabilitation of cleared areas. » Complete denudation of the soil. » Rainfall - water erosion of disturbed areas. » Wind erosion of disturbed areas.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise soil degradation (removal, mixing, wetting, compaction, pollution, etc.). » Minimise erosion. » Minimise dust pollution.

Mitigation: Action/control	Responsibility	Timeframe
Existing roads must be maintained to ensure limited erosion and impact on areas adjacent to roadways.	O&M Contractor	Operation
Regular monitoring for erosion post-construction to ensure that no erosion problems have developed as a result of the past disturbance.	O&M Contractor	Operation
Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc., on a regular basis during operation. Removal must occur prior to plants developing seeds.	O&M Contractor	Operation

Performance Indicator	<ul style="list-style-type: none"> » No erosion problems within the site or from access roads. » No alien species within the site. » Maintenance of a ground cover of that resist erosion.
Monitoring	» Records of erosion problems and mitigation actions taken with photographs.

OBJECTIVE 3: Ensure the implementation of an appropriate fire management plan and general management measures during the operation phase

The following below can be used as a guide for appropriate fire management (also refer to **Appendix C**):

Project component/s	» Operation and maintenance of the development
Potential Impact	» Fires can pose a personal safety risk to surrounding businesses and industries, and their infrastructure.
Activity/risk source	» The presence of operation and maintenance personnel and their activities on the site can increase the risk of fires.
Mitigation: Target/Objective	» To avoid and or minimise the potential risk of fires on surrounding industries and their infrastructure. » The fire risk on site is a point of discussion that must take place as part of the environmental induction training prior to commencement of construction.

Mitigation: Action/control	Responsibility	Timeframe
Provide adequate firefighting equipment on site and establish a fire-fighting management plan during operation (refer to Appendix C).	O&M Contractor	Operation
Cigarette butts may not be thrown in the open fields adjacent to the site but must be disposed of correctly. Designated smoking areas must be established with suitable receptacles for disposal.	SHEQ Manager	Operation
Contact details of emergency services should be prominently displayed on site.	O&M Contractor	Operation
Contractors must ensure that basic firefighting equipment is available on site as per the specifications defined by the health and safety representative / consultant.	SHEQ Manager	Operation
The contractor must also comply with the requirements of the Occupational Health and Safety Act with regards to fire protection.	SHEQ Manager	Operation
Ensure that all personnel are aware of the emergency policies and procedures in place from Air Products.	O&M Contractor	Operation
Air Products to provide training to all personnel on the safety and emergency procedures implemented at the site.	O&M Contractor	Operation

Performance Indicator	» Firefighting equipment provided before the operation phase commences. » Appropriate fire breaks in place.
Monitoring	» The O&M operator must monitor indicators listed above to ensure that they have been met.

OBJECTIVE 4: Appropriate handling and management of general waste and hazardous waste

The main wastes expected to be generated by the operation and maintenance activities includes general solid waste and hazardous waste such as oily rags and grease.

Project component/s	» Operation and maintenance of the development
Potential Impact	» Litter or contamination of the site through poor waste management practices.

Activity/risk source	<ul style="list-style-type: none"> » Daily office activities » Maintenance by external contractors on site
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Comply with waste management legislation. » Ensure appropriate waste disposal. » Avoid environmental harm from waste disposal.

Mitigation: Action/control	Responsibility	Timeframe
All structures and/or components replaced during maintenance activities must be appropriately disposed of at an appropriately licensed waste disposal site or sold to a recycling merchant for recycling.	O&M Contractor	Operation
All waste must be suitably contained. Loose waste and organic waste must be kept in enclosed weather proof containers with lids that are not accessible to scavengers. Containers must be stable so as not to be blown or knocked over.	O&M Contractor	Operation
All operational areas shall be provided with suitable waste containers. No litter or uncontained refuse must be allowed anywhere at any-time.	O&M Contractor	Operation
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	O&M Contractor	Operation
Hazardous waste must be stored in suitable separate, labelled, enclosed, stable (to wind and collision impacts), weatherproof and scavenger proof containers and shall be disposed of at an appropriate licensed hazardous waste site. Disposal records shall be kept for a minimum of 1 year.	O&M Contractor	Operation
Liquid waste and hazardous waste containers must be placed in a bundled area capable of containing spills and leaks	O&M Contractor	Operation
Used oil and grease must be taken to an approved oil recycling company for recycling.	O&M Contractor	Operation

Performance Indicator	<ul style="list-style-type: none"> » No complaints received regarding waste on site, littering or indiscriminate dumping.
Monitoring	<ul style="list-style-type: none"> » Waste collection must be monitored on a regular basis. » An incidents/complaints register must be maintained, in which any complaints from the community must be logged. » Complaints must be investigated and, if appropriate, acted upon.

OBJECTIVE 5: Appropriate handling and management of hazardous substances, hazardous waste and dangerous goods

As per the activities of the site i.e. handling and storage of diesel and LOX, are classified as dangerous goods.

Project component/s	» Operation and maintenance of the development
Potential Impact	» Contamination of soil because of poor materials management.
Activity/risk source	» Generators » Diesel refuelling » Maintenance vehicles
Mitigation: Target/Objective	» Comply with waste management legislation. » Ensure appropriate waste disposal. » Avoid environmental harm from waste disposal. » Ensure appropriate storage of chemicals, dangerous goods and hazardous substances.

Mitigation: Action/control	Responsibility	Timeframe
Suitable procedures and preventative measures must be in place if it is necessary for portable equipment (e.g. generators, lawnmowers) to be re-fuelled on site. As a minimum, drip trays must be used, a suitable leak-proof method of re-fuelling employed and a fire extinguisher and spill kit must be available	Owner O&M Contractor	Operation and maintenance
All structures and/or components replaced during maintenance activities must be appropriately disposed of at an appropriately licensed waste disposal site or sold to a recycling merchant for recycling.	O&M Contractor	Operation
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	O&M Contractor	Operation
Hazardous waste (including hydrocarbons) and general waste must be stored and disposed of separately.	O&M Contractor	Operation
A vehicle leaking hydrocarbons within the site must be immediately repaired or removed from the site or to a designated servicing area.	O&M Contractor	Operation
Re-fuelling must only take place in designated locations designed for the purpose to ensure no contamination of the environment. Suitable procedures and equipment shall be in place to prevent and deal with spills and emergencies (e.g. fire).	O&M Contractor	Operation
Re-fuelling must only be undertaken by trained personnel	O&M Contractor	Operation

Performance Indicator	» No complaints received regarding waste on site, littering or indiscriminate dumping. » No contamination of soil.
Monitoring	» Waste collection must be monitored on a regular basis. » An incidents/complaints register must be maintained, in which any complaints from the community must be logged. » Complaints must be investigated and, if appropriate, acted upon.

OBJECTIVE 6: Stormwater management

Project component/s	<ul style="list-style-type: none"> » Above ground diesel storage tank » Separator pit.
Potential Impact	» Potential of hydrocarbons discharging into the stormwater system.
Activity/risk source	» Separator Pit.
Mitigation: Target/Objective	» Implement water quality monitoring and regular maintenance of the separator tank.

Mitigation: Action/control	Responsibility	Timeframe
Test the water quality of stormwater leaving the separator pit monthly to ensure that outflow complies with the General Limits Values of the National Water Act (No. 36 of 1998).	O&M Contractor	Operation
Maintain the separator pit on a monthly basis to ensure blockages are prevented.	O&M Contractor	Operation
Collect the contents of the separator pit drain box for disposal at an appropriate waste disposal site, and safe disposal receipts must be kept onsite for auditing purposes.	O&M Contractor	Operation

Performance Indicator	» No impacts to stormwater leaving the site
Monitoring	» Appropriate stormwater monitoring and maintenance in place.

CHAPTER 9: DECOMMISSIONING MANAGEMENT PROGRAMME

The operational phase of the expansion of storage facilities and associated infrastructure at the Air Products are designed for a 50 year period. It is most likely that decommissioning activities of the infrastructure of the development would comprise the disassembly or replacement of infrastructure with more appropriate technology/infrastructure available at that time.

» **Site Preparation**

Site preparation activities will include confirming the integrity of the access to the site to accommodate the required equipment, preparation of the site (e.g. laydown areas, construction platform) and the mobilisation of construction equipment.

» **Disassemble and Remove Infrastructure**

Disassembled components will be reused, recycled, or disposed of in accordance with regulatory requirements.

9.1. Objectives

In decommissioning the development, Air Products South Africa (Pty) Ltd must ensure that:

- » Prior to decommissioning, objectives and mitigation measures will need to be updated to ensure legal compliance with the relevant legislation.
- » All structures, foundations and sealed areas are demolished, removed and waste material disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.

The general specifications of Chapter 6 (Construction) are also relevant to the project and must be adhered to.

**APPENDIX A:
LAYOUT MAP**

**APPENDIX B:
FIRE MANAGEMENT AND EMERGENCY PREPAREDNESS AND
RESPONSE PLAN**

APPENDIX C:
CDC INTEGRATED STORMWATER MASTER PLAN (2008)

**APPENDIX D:
PROJECT TEAM CV'S**

