BASIC ASSESSMENT REPORT
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED)

October 2017

PROJECT TITLE

PROPOSED EXTRUDED POLYSTYRENE (XPS) PLANT, ERF 245, 3 CHARLES MATTHEWS STREET, ATLANTIS INDUSTRIAL, BY SWARTLAND INSULATIONS (PTY) LTD

February 2018

REPORT TYPE CATEGORY	REPORT REFERENCE NUMBER	DATE OF REPORT
Revised DRAFT Basic Assessment Report	0719/RDB/JH	09 July 2019

Notes:

1. In terms of Regulation 40(3) potential or registered interested and affected parties, including the Competent Authority, may be provided with an opportunity to comment on the Basic Assessment Report prior to submission of the application but must again be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority. The Basic Assessment Report released for comment prior to submission of the application is referred to as the "Pre-Application Basic Assessment Report". The Basic Assessment Report made available for comment after submission of the application is referred to as the "Draft Basic Assessment Report". The Basic Assessment Report together with all the comments received on the report which is submitted to the Competent Authority for decision-making is referred to as the "Final Basic Assessment Report".
2. In terms of Regulation 19(1)(b) if significant changes have been made or significant new information has been added to the Draft Basic Assessment Report , which changes or information was not contained in the Draft Basic Assessment Report consulted on during the initial public participation process, then a Final Basic Assessment Report will not be submitted, but rather a "Revised Basic Assessment Report", which must be subjected to another public participation process of at least 30 days, must be submitted to the Competent Authority together with all the comments received.

3. DEPARTMENTAL REFERENCE NUMBER(S)

Pre-application reference number:	
File reference number (EIA):	
NEAS reference number (EIA):	
File reference number (Waste):	
NEAS reference number (Waste):	
File reference number (Air Quality):	
NEAS reference number (Air Quality):	
File reference number (Other):	
NEAS reference number (Other):	

CONTENT AND GENERAL REQUIREMENTS

Note that:

1. The content of the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended), any subsequent Circulars, and guidelines must be taken into account when completing this Basic Assessment Report Form.
2. This Basic Assessment Report is the standard report format which, in terms of Regulation 16(3) of the EIA Regulations, 2014 (as amended) must be used in all instances when preparing a Basic Assessment Report for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")and the EIA Regulations, 2014 (as amended) and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("NEM:WA"), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA") when the Western Cape Government: Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority/Licensing Authority.
3. This report form is current as of October 2017. It is the responsibility of the Applicant/ Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the report form have been released by the Department. Visit the Department's website at **http://www.westerncape.gov.za/eadp** to check for the latest version of this checklist.
4. The required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The tables may be expanded where necessary.
5. The use of "not applicable" in the report must be done with circumspection. All applicable sections of this report form must be completed. Where "not applicable" is used, this may result in the refusal of the application.
6. While the different sections of the report form only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.
7. Unless protected by law, all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for believing that the information is protected.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This Report must be submitted to the Department and the contact details for doing so are provided below.
10. Where this Department is also identified as the Licencing Authority to decide applications under NEM: WA or NEM: AQA, the submission of the Report must also be made as follows, for-
    - Waste management licence applications, this report must also (*i.e.,* another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office.
    - Atmospheric emissions licence applications, this report must also be (*i.e.*, another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (tel: 021 483 2798 and fax: 021 483 3254) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE		~~**GEORGE REGIONAL OFFICE**~~
REGION 1 **(City of Cape Town & West Coast District)**	~~**REGION 2**~~ ~~**(Cape Winelands District & Overberg District)**~~	~~**REGION 3**~~ ~~**(Central Karoo District & Eden District)**~~
Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel.: (021) 483-5829 Fax: (021) 483-4372	~~Department of Environmental Affairs and Development Planning~~ ~~Attention: Directorate: Development Management (Region 2)~~ ~~Private Bag X 9086~~ ~~Cape Town,~~ ~~8000~~ ~~Registry Office~~ ~~1st Floor Utilitas Building~~ ~~1 Dorp Street,~~ ~~Cape Town~~ ~~Queries should be directed to the Directorate: Development Management (Region 2) at:~~ ~~Tel.: (021) 483-5842~~ ~~Fax: (021) 483-3633~~	~~Department of Environmental Affairs and Development Planning~~ ~~Attention: Directorate: Development Management (Region 3)~~ ~~Private Bag X 6509~~ ~~George,~~ ~~6530~~ ~~Registry Office~~ ~~4th Floor, York Park Building~~ ~~93 York Street~~ ~~George~~ ~~Queries should be directed to the Directorate: Development Management (Region 3) at:~~ ~~Tel.: (044) 805-8600~~ ~~Fax: (044) 805 8650~~

TABLE OF CONTENTS:

ACRONYMS USED IN THIS BASIC ASSESSMENT REPORT AND APPENDICES:

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government: Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM: ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process

DETAILS OF THE APPLICANT

Applicant / Organisation / Organ of State:	Swartland Insulation (Pty) Ltd		
Contact person:	Derrick Nel		
Postal address:	PO BOX 216 MOORREESBURG		
Telephone:	(087) 023 0604	Postal Code:	7310
Cellular:	(082 854 0778	Fax:	(022) 433 2760
E-mail:	Derrick.nel@swartland.co.za		

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

Name of the EAP organisation:	Eco Impact Legal Consulting (Pty) Ltd		
Person who compiled this Report:	Jessica Hansen		
EAP Reg. No.:	SACNASP- Professional Natural Scientist in the field of practice Environmental Science (Registration number 400192/16)		
Contact Person (if not author):	NA		
Postal address:	PO Box 45070, Claremont		
Telephone:	(021) 671 1660	Postal Code:	7735
Cellular:	(083) 666 8046	Fax:	(021) 671 9976
E-mail:	Jessica@ecoimpact.co.za		
EAP Qualifications:	Jessica has a BSc (Honours) in Environmental and Geographical Science in 2011 from the University of Cape Town and subsequently obtained her MSc in Zoology in 2013. Jessica has worked as an Environmental Assessment Practitioner since August 2013 and has been involved in the compilation, coordination and management of Basic Assessment Reports, Environmental Impact Assessments, Environmental Management Programmes, Waste Licence Applications, Water Use Licence Applications and Baseline Biodiversity Surveys for numerous clients.		

Please provide details of the lead EAP, including details on the expertise of the lead EAP responsible for the Basic Assessment process. Also attach his/her Curriculum Vitae to this BAR.

Jessica has a BSc (Honours) in Environmental and Geographical Science in 2011 from the University of Cape Town and subsequently obtained her MSc in Zoology in 2013. Jessica has trained as an Environmental Assessment Practitioner since 2013 and has been involved in the compilation, coordination and management of Basic Assessment Reports, Environmental Impact Assessments, Environmental Management Programmes, Waste Licence Applications, Water Use Licences.

CV attached as Appendix K.

EXECUTIVE SUMMARY OF THE BASIC ASSESSMENT REPORT:

Activity description:

The proposed development entails the proposed storage of dangerous goods for the establishment of an extruded polystyrene plant and associated infrastructure.

The site will be home to an Extruded Polystyrene (XPS) process. Polystyrene (PS) raw material will be stored in a covered storage area and received into the main factory building where an XPS extrusion machine will be installed.

Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product.

Extruded polystyrene foam (XPS) is produced by a continuous extrusion process. Virgin Polystyrene pellets are mixed with pellets containing flame retardant colour and nucleating agents. This mix is fed into the first extruder where the material is melted from the rotating screw. Once the polymer is melted, one or more gases are injected into the melt stream in their liquid state. These liquified gases are dissolved into the polymer mix. The mix passes from the first extruder to the second extruder via a heated pipe. Both extruders are designed to run at elevated pressures to ensure the dissolved gases do not gasify and foam prematurely.

The second extruder is larger in diameter and is designed to cool the melt to increase the melt strength of the polymer for it to be able to hold the dissolved gases as they come out of solution upon exiting the die. The pressurized melt is cooled from approximately 200°C to around 135°C in this second extruder.

The material exits through a slot die and the gases expand as the pressure drops. The nucleating agent creates a nucleus for bubble formation. The gases coalesce around each nucleus to create bubbles.

The heat of vaporization takes energy from the material which cools the foam further. The foam material expands from the die between two horizontal calibration plates which control the final thickness. Variations in the slot die opening and the calibrator plate position allow board thicknesses between 20 and 200mm.

The board continues through the calibrator and is now cold enough to keep its shape. It continues downstream for a further 30 to 60m to allow it to cool further. After cooling, the board edges are removed by milling to achieve the desired width. The continuous board is then cut to length and can be further treated to add surface patterns or grooves. The retained gases inside the foam structure increase the insulation value of the board.

Material Receipt

The following materials are received onsite via bulk truck or road tanker:

(A) Materials making up the resin:

- Polystyrene (94% of the resin), the balance of which contains
- New-cleating
- Flame retardant **– NEMA dangerous good**
- Colour
- Process Aid

(B) Blowing agents:

- CO2
- Dimethyl ether (DME) **– NEMA dangerous good**
- 152a (gas)
- Ethanol **– NEMA dangerous good**

Storage

(A) Materials making up the resin:

- Polystyrene
  Crystal Polystyrene (in the form of small spherical beads). Polystyrene is an organic compound with the chemical formula: (C8H8)n. It is a synthetic aromatic hydrocarbon polymer made from the monomer styrene. Polystyrene can be solid or foamed. Polystyrene, a hard, transparent synthetic resin produced by the polymerization of styrene. 18048,00 kg/day (Volume to be stored on site 400m^3)
- New-cleating - Talc - Hydrous magnesium silicate 192,00 kg/day (Volume to be stored on site 10m^3)
- Flame retardant - <45% Brominated SBS polystyrene-polybutadiene- polystyrene/Benzene, ethenyl-, polymer with 1,3-butadiene, brominated & <10% Polystyrene with 1,3-butadiene polymer & <5%Carbonato(2) hexadecahvdroxvbis(aluminium)hexamaqnesium 768,00 kg/day (Volume to be stored on site 50m^3) **– NEMA dangerous good**
- Colour - Blend of organic and inorganic pigments dispersed in an ethylene methylacrylate copolymer. Polymeric masterbatch consists of ethylene copolymer, PE wax, Zinc stearate,

Titanium Dioxide Pigment White 6, Carbon Black Pigment Black 7, Pigment Yellow 191, and Calcium carbonate. 96,00 kg/day (Volume to be stored on site 10m^3)

- Process Aid - Zinc Oxide 96,00 kg/day (Volume to be stored on site 10m^3)

Materials making up the resin will be in inside in the dedicated raw material storage areas north-west of the site. This includes the Flame Retardant which is a NEMA dangerous good. The Flame retardant will be stored in 25 kg bags as delivered by supplier.

(B) Blowing agents:
Blowing Agent storage will be via dedicated tanks located on the eastern boundary of the site.

- CO2 (18 m3) – one vertical tank above ground - Vapour at room temperature, stored onsite as a liquid
- Dimethyl ether (DME) (45m3) – one horizontal tank above ground - Vapour at room temperature, stored onsite at liquid-vapour equilibrium **– NEMA dangerous good**
- 152a (gas) (9m3) – two above ground tanks - Vapour at room temperature, stored onsite at liquid-vapour equilibrium
- Ethanol (9m3) – one above ground tank **- NEMA dangerous good**

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

(C) Products:

- XPS end product (Volume to be stored on site 24500m^3) - will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.

Material transportation

PS will be transferred to the process building via 25 kg bags. Blowing Agent will be transferred to the process building via pipework.

- DME piping specification: ASME 106A
- CO2 piping specification: EN 13480
- High pressure piping specification: SANS 10260 (all parts)
- R 152a piping specifications: 316 stainless steel

Dispatch of Material

XPS dispatch

XPS will be dispatched from the Finished storage area, via truck.

Infrastructure

- Existing factory building in the north west corner (existing)
- Raw material storage area north-west of the site (existing)
- A second raw material storage area will be in the south west corner of the main factory building (existing)
- Blowing Agent storage will be via dedicated tanks located on the eastern boundary of the site (new)
- Blowing Agent will be transferred to the process building via pipework (new)
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site (new)
- Structural grid and loading platform for 24m articulated trucks (new)
- Flammable liquids store (existing)
- New reclaimer building with reclaiming plant (new)
- Silo (new)
- Relocated store with chipper (existing)
- Filter Unit (new)
- Chiller (new)
- Gas pumps (new)
- Internal road (new)
- Office buildings (existing)
- Parking bays (existing)

- Main factory building with XPS extrusion machine (existing building)

Alternatives

Location alternatives -

No other location or site alternatives were assessed as no feasible or reasonable location or site alternative exists.

The location and site were selected based on its suitability for the project and costs. The land was purchased by Swartland Insulation for the purpose of establishing a polystyrene plant. As such this site is the only reasonable and feasible site as it is on land owned by the company. It is no feasible to purchase other land as the cost of the proposed project would be beyond the feasible cost. The site and location are favourable as it is zoned industrial and is an existing industrial site.

The location factors favour this land use for a number of reasons:

• The site is inside the Specials Economic Zone.

• Atlantis is considered a national, provincial and regional priority area for readdressing the eras of apartheid through encouraging investment in the area and, as a result, creating jobs and contributing towards the local economy.

• The size of the land is appropriate in that they are large enough for the types of industry proposed.

• The facilities on site suit the needs on the proposed development, only a few additions and improvements to infrastructure are required.

• The road network in the area is also much more appropriate for transporting abnormal loads rather than navigating city traffic and passes.

• Easy, quick access onto the N7 allowing easier access to port facilities along the West Coast. The proposed development is in line with all the planning policies for the CoCT and the greater WC province.

Activity alternatives -

No other activity alternatives were assessed as no feasible or reasonable activity alternative exists other than the no-go option.

The proposed activity is aims to diversify the business. This was a strategic decision to supply different products within the building industry. It would not be feasible for the applicant to conduct another activity as the XPS extrusion machine has been purchased at great expense to Swartland Insulation.

Mitigation measures contained in the EMPr are included to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts of the proposed activity.

Layout alternatives –

The design took into consideration the volumes to be processed. The layout has been informed by specialists and engineer inputs.

Layout 1 (Preferred Alternative)

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Structural grid and loading platform for 24m articulated trucks (new)
- Internal road (new)
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space

- Main factory building with XPS extrusion machine

No matter where the gasses are positioned the risk in terms of the MHI studies extend over our boundaries. Layout 1 makes the most of the grassy area to the east of the site so that there is no wasted space. Layout 1 minimizes the risk by storing the gasses away from the other raw materials and finished goods. Layout 1 provides for much more efficient and safer delivery of raw materials and collection of finished product. This is the preffered alternative.

Layout 2

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Turning circle for 24m articulated trucks
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

Layout 2 was deemed not feasible or reasonable due to the turning circle which after investigation was not suitable for the delivery of raw materials and collection of finished product. This Layout is also not feasible or reasonable as no provision is made for the refuelling of the gas installation/tanks.

Layout 3

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located west of the main processing building and south of the raw material storage area. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Turning circle for 24m articulated trucks
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

Layout 3 is not feasible or reasonable as there is an increased risk in terms of fires etc. due to the proximity of the gas storage to the raw material and finished goods storage. The grassy area to the east of the site is wasted space. Layout 3 is also not feasible or reasonable as entrance for trucks becomes a problem.

Technology alternatives –
There are two ways to produce polystyrene, EPS (expanded polystyrene) and XPS (extruded polystyrene).

The energy efficiency of a building often depends on the materials that create its envelope. Selecting the appropriate insulation type is crucial in delivering the required insulation performance for your project. The use of XPS and EPS insulation in building construction offers great flexibility, compatibility and thermal efficiency for all areas of the building envelope system. But what is the difference between EPS and XPS insulation?

MANUFACTURING
Extruded polystyrene insulation (XPS) is manufactured using a process of extrusion. This continuous process results in a closed cell structure with a smooth skin on the top and bottom of the board. The closed cell structure of extruded polystyrene (XPS) prevents water penetration to the structure of the insulation board and provides long term strength and durability.
Expanded Polystyrene insulation (EPS) is manufactured using beads of foam within a mould, heat or steam is then applied directly to the beads which causes them to expand and fuse together. This process produces a closed cell structure, not a closed cell insulation board, due to voids that can occur between the beads.

COMPRESSIVE STRENGTH
Compressive strength is demanded in the most challenging environments such as under slabs on a flat roof, concrete floors, foundations, plaza and podium decks and cold storage. In general, when comparing EPS and XPS board densities, the compressive strength of XPS is greater than that of EPS. For EPS to achieve the same compressive strength as XPS, the density of the foam would need to be increased, often resulting in a greater thickness of board being required.

THERMAL CONDUCTIVITY
Insulation is one of the most practical and cost-effective ways to improve a building's energy efficiency, by improving the insulation in new and existing buildings, significant cost savings and reductions in energy usage can be achieved. Both XPS and EPS provide good thermal conductivity performance. However, the air trapped in the voids in the EPS will conduct heat. A much higher density EPS board will be required to match the thermal performance of XPS insulation.

WATER VAPOUR DIFFUSION
Water vapour diffusion resistance (μ) of EPS ranges from approximately 30 – 70 compared to the water vapour diffusion resistance (μ) of XPS that ranges from approximately 80 – 250. XPS is often selected over EPS for wetter environments that require a higher water vapour diffusion resistance value.

XPS is used for insulation products within the building industry and there are no other technologies for the same product. Swartland have travelled abroad on multiple occasions to see different machine suppliers and XPS plants and decided on this process and equipment for the selected market.

Bunding of above ground storage of liquid dangerous goods will have a bund wall that is in accordance with the requirements of SANS 0089 part 1. No reasobale or feasible alternatives exisit for above ground staorge of liguid substances.

In terms of the storage tanks, two alternatives where investigated – below ground and above ground storage tanks for the CO2, Dimethyl ether (DME), 152a (gas) and Ethanol. It was initially proposed to store the 152a (gas) and Ethanol below / under ground. Howver based on the fact that the site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA, below ground tanks were not deemed feasible or reasonable. Below ground tanks have an increased chance of leaks and of creating pollution because they can't be inspected as often. Due to the sensitive nature of the aquifer these were not deemed feasible or reasonable due to the potential risk to ground water. Above ground tanks are preffered as they are cheaper to install than underground tanks because you don't have to pay for deep excavation, backfilling. Aboveground fuel tanks are also easier to maintain than below ground ones. They can be checked for leaks and accessed easily for repairs, which is why aboveground fuel tanks are the preferred choice for the storage of all substances on site.

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

The technological alternatives are the use of electricity and water wise technologies and green tips considered during the construction and operational phases. These include duel flush toilet systems and energy efficient lighting.

Operational alternatives –
No operational alternatives were considered as the proposed activity is to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets.

The No-Go Option-
The No-Go option will result in the site remaining as is presently; a vacant industrial site. A look at the Need and Desirability as manifested in the local SDF supports the proposed development on the identified site due to provision of jobs. The proposed development will provide temporary jobs to the community during the construction phase and permanent jobs during the operational phase.

Impacts
ALTERNATIVE 1

DEVELOPMENT PHASE- ALTERNATIVE 1 - PREFFERED

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

OPERATIONAL PHASE- ALTERNATIVE 1 - PREFFERED

- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Low impact before mitigation and low impact with mitigation measures);
- Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (Medium impact before mitigation and low impact with-mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 1 - PREFFERED

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

ALTERNATIVE 2

DEVELOPMENT PHASE- ALTERNATIVE 2

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

OPERATIONAL PHASE- ALTERNATIVE 2

- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Low impact before mitigation and low impact with mitigation measures);
- Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (Medium impact before mitigation and low impact with-mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 2

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

ALTERNATIVE 3

DEVELOPMENT PHASE- ALTERNATIVE 3

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);

- Waste (low impact before mitigation and low impact with mitigation measures);

OPERATIONAL PHASE- ALTERNATIVE 3

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Low impact before mitigation and low impact with mitigation measures);
- Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (High impact before mitigation and medium impact with-mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 3

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);
- Storm water pollution (Medium impact before mitigation and low impact with mitigation measures);
- Increase in jobs (positive);
- Increase in traffic (low impact before mitigation and low impact with mitigation measures);
- Noise (low impact before mitigation and low impact with mitigation measures);
- Waste (low impact before mitigation and low impact with mitigation measures);

SECTION A: PROJECT INFORMATION

1. ACTIVITY LOCATION

Location of all proposed sites:	No 3 Charles Matthews Street, Atlantis Industrial
Farm / Erf name(s) and number(s) (including Portions thereof) for each proposed site:	245
Property size(s) in m^2 for each proposed site:	26929.7
Development footprint size(s) in m^2:	+-26929.7
Surveyor General (SG) 21-digit code for each proposed site:	C01600870000024500000

2. PROJECT DESCRIPTION

(a) Is the project a new development? If "NO", explain:

~~YES~~	NO

The proposed activity is planned to be situated on an existing industrial site.

(b) Provide a detailed description of the scope of the proposed development (project).

Activity description:

The proposed development entails the proposed storage of dangerous goods for the establishment of an extruded polystyrene plant and associated infrastructure.

The site will be home to an Extruded Polystyrene (XPS) process. Polystyrene (PS) raw material will be stored in a covered storage area and received into the main factory building where an XPS extrusion machine will be installed.

Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product.

Extruded polystyrene foam (XPS) is produced by a continuous extrusion process. Virgin Polystyrene pellets are mixed with pellets containing flame retardant colour and nucleating agents. This mix is fed into the first extruder where the material is melted from the rotating screw. Once the polymer is melted, one or more gases are injected into the melt stream in their liquid state. These liquified gases are dissolved into the polymer mix. The mix passes from the first extruder to the second extruder via a heated pipe. Both extruders are designed to run at elevated pressures to ensure the dissolved gases do not gasify and foam prematurely.

The second extruder is larger in diameter and is designed to cool the melt to increase the melt strength of the polymer for it to be able to hold the dissolved gases as they come out of solution upon exiting the die. The pressurized melt is cooled from approximately 200°C to around 135°C in this second extruder.

The material exits through a slot die and the gases expand as the pressure drops. The nucleating agent creates a nucleus for bubble formation. The gases coalesce around each nucleus to create bubbles.

The heat of vaporization takes energy from the material which cools the foam further. The foam material expands from the die between two horizontal calibration plates which control the final thickness. Variations in the slot die opening and the calibrator plate position allow board thicknesses between 20 and 200mm.

The board continues through the calibrator and is now cold enough to keep its shape. It continues downstream for a further 30 to 60m to allow it to cool further. After cooling, the board edges are removed by milling to achieve the desired width. The continuous board is then cut to length and can be further treated to add surface patterns or grooves. The retained gases inside the foam structure increase the insulation value of the board.

Material Receipt

The following materials are received onsite via bulk truck or road tanker:

(A) Materials making up the resin:

- Polystyrene (94% of the resin), the balance of which contains
- New-cleating
- Flame retardant **– NEMA dangerous good**
- Colour
- Process Aid

(B) Blowing agents:

- CO2
- Dimethyl ether (DME) **– NEMA dangerous good**
- 152a (gas)
- Ethanol **– NEMA dangerous good**

Storage

(A) Materials making up the resin:

- Polystyrene

  Crystal Polystyrene (in the form of small spherical beads). Polystyrene is an organic compound with the chemical formula: (C8H8)n. It is a synthetic aromatic hydrocarbon polymer made from the monomer styrene. Polystyrene can be solid or foamed. Polystyrene, a hard, transparent synthetic resin produced by the polymerization of styrene. 18048,00 kg/day (Volume to be stored on site 400m^3)
- New-cleating - Talc - Hydrous magnesium silicate 192,00 kg/day (Volume to be stored on site 10m^3)
- Flame retardant - <45% Brominated SBS polystyrene-polybutadiene- polystyrene/Benzene, ethenyl-, polymer with 1,3-butadiene, brominated & <10% Polystyrene with 1,3-butadiene polymer & <5%Carbonato(2) hexadecahvdroxvbis(aluminium)hexamaqnesium 768,00 kg/day (Volume to be stored on site 50m^3) **– NEMA dangerous good**
- Colour - Blend of organic and inorganic pigments dispersed in an ethylene methylacrylate copolymer. Polymeric masterbatch consists of ethylene copolymer, PE wax, Zinc stearate, Titanium Dioxide Pigment White 6, Carbon Black Pigment Black 7, Pigment Yellow 191, and Calcium carbonate. 96,00 kg/day (Volume to be stored on site 10m^3)
- Process Aid - Zinc Oxide 96,00 kg/day (Volume to be stored on site 10m^3)

Materials making up the resin will be in inside in the dedicated raw material storage areas north-west of the site. This includes the Flame Retardant which is a NEMA dangerous good. The Flame retardant will be stored in 25 kg bags as delivered by supplier.

(B) Blowing agents:

Blowing Agent storage will be via dedicated tanks located on the eastern boundary of the site.

- CO2 (18 m3) – one vertical tank above ground - Vapour at room temperature, stored onsite as a liquid
- Dimethyl ether (DME) (45m3) – one horizontal tank above ground - Vapour at room temperature, stored onsite at liquid-vapour equilibrium **– NEMA dangerous good**
- 152a (gas) (9m3) – two above ground tanks - Vapour at room temperature, stored onsite at liquid-vapour equilibrium
- Ethanol (9m3) – one above ground tank **- NEMA dangerous good**

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

(C) Products:

- XPS end product (Volume to be stored on site 24500m^3) - will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.

Material transportation

PS will be transferred to the process building via 25 kg bags. Blowing Agent will be transferred to the process building via pipework.

•DME piping specification: ASME 106A
•CO2 piping specification: EN 13480
•High pressure piping specification: SANS 10260 (all parts)
•R 152a piping specifications: 316 stainless steel

Dispatch of Material

XPS dispatch

XPS will be dispatched from the Finished storage area, via truck.

Infrastructure

- Existing factory building in the north west corner (existing)
- Raw material storage area north-west of the site (existing)
- A second raw material storage area will be in the south west corner of the main factory building (existing)
- Blowing Agent storage will be via dedicated tanks located on the eastern boundary of the site (new)
- Blowing Agent will be transferred to the process building via pipework (new)
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site (new)
- Structural grid and loading platform for 24m articulated trucks (new)
- Flammable liquids store (existing)
- New reclaimer building with reclaiming plant (new)
- Silo (new)
- Relocated store with chipper (existing)
- Filter Unit (new)
- Chiller (new)
- Gas pumps (new)
- Internal road (new)
- Office buildings (existing)
- Parking bays (existing)
- Main factory building with XPS extrusion machine (existing building)

Please note: This description must relate to the listed and specified activities in paragraph (d) below.

(c) Please indicate the following periods that are recommended for inclusion in the environmental authorisation:

(i)	the period within which commencement must occur,	5 years from EA granted
(ii)	the period for which the environmental authorisation should be granted and the date by which the activity must have been concluded, where the environmental authorisation does not include operational aspects;	10 years
(iii)	the period that should be granted for the non-operational aspects of the environmental authorisation; and	10 years
(iv)	the period that should be granted for the operational aspects of the environmental authorisation.	Until Decommission or Closure

Please note: The Department must specify the abovementioned periods, where applicable, in an environmental authorisation. In terms of the period within which commencement must occur, the period must not exceed 10 years and must not be extended beyond such 10-year period, unless the process to amend the environmental authorisation contemplated in regulation 32 is followed.

(d) List all the listed activities triggered and being applied for.

Please note: The onus is on the applicant to ensure that all the applicable listed activities are applied for and assessed as part of the EIA process. Please refer to paragraph (b) above.

EIA Regulations Listing Notices 1 and 3 of 2014 (as amended):

Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 983)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	Zest Polyurethanes intends to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets. Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product. **Dangerous goods according to NEMA:** • Dimethy Ether (DME)-Storage capacity 45 (m3) • Flame retardant Storage capacity 50 (m3) • Ethanol-Storage capacity 9 (m3)	Development and operation
Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 985)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
NA			

Waste management activities in terms of the NEM: WA (GN No. 921):

Category A Listed Activity No(s):	Describe the relevant Category A waste management activity in writing as per GN No. 921	Describe the portion of the development that relates to the applicable listed activity as per the project description
NA		

Note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I.**

Atmospheric emission activities in terms of the NEM: AQA (GN No. 893):

Listed Activity No(s):	Describe the relevant atmospheric emission activity in writing as per GN No. 893	Describe the portion of the development that relates to the applicable listed activity as per the project description.
6	Organic Chemicals Industry All installations producing or using more than 100 tons per annum of any of the listed compounds. The production, or **use in production** of **organic chemicals not specified elsewhere** including acetylene, acetic, maleic or phthalic anhydride or their acids, carbon disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber. The production of organometallic compounds, organic dyes and pigments, Surface active agents. The polymerisation or co-polymerisation of any unsaturated hydrocarbons, substituted hydrocarbon (including vinyl chloride). The manufacture, recovery or purification of acrylic acid or any ester of acrylic acid. The use of toluene di-isocyanate or other di-isocyanate of comparable volatility; or recovery of pyridine.	Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product. As such more than 100 tons per annum of organic chemicals not specified elsewhere will be used in the production process.

(e) Provide details of all components (including associated structures and infrastructure) of the proposed development and attach diagrams (*e.g.,* architectural drawings or perspectives, engineering drawings, process flowcharts, *etc*.).

Buildings Provide brief description below:	YES	~~NO~~
Outside infrastructure: • Blowing agent storage area • XPS Finished Board Storage Area Inside infrastructure: • Main process building - manufacturing facility • Raw material storage • Raw material feed		
Infrastructure (*e.g.,* roads, power and water supply/ storage) Provide brief description below:	YES	~~NO~~
• Existing roads, entrance and parking • Existing power supply • Existing water supply		
Processing activities (*e.g.,* manufacturing, storage, distribution) Provide brief description below:	YES	~~NO~~
The site will be home to an Extruded Polystyrene (XPS) process. Polystyrene (PS) raw material will be stored in a covered storage area and received into the main factory building where an XPS extrusion machine will be installed.		

Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product.

Extruded polystyrene foam (XPS) is produced by a continuous extrusion process. Virgin Polystyrene pellets are mixed with pellets containing flame retardant colour and nucleating agents. This mix is fed into the first extruder where the material is melted from the rotating screw. Once the polymer is melted, one or more gases are injected into the melt stream in their liquid state. These liquified gases are dissolved into the polymer mix. The mix passes from the first extruder to the second extruder via a heated pipe. Both extruders are designed to run at elevated pressures to ensure the dissolved gases do not gasify and foam prematurely.

The second extruder is larger in diameter and is designed to cool the melt to increase the melt strength of the polymer for it to be able to hold the dissolved gases as they come out of solution upon exiting the die. The pressurized melt is cooled from approximately 200°C to around 135°C in this second extruder.

The material exits through a slot die and the gases expand as the pressure drops. The nucleating agent creates a nucleus for bubble formation. The gases coalesce around each nucleus to create bubbles.

The heat of vaporization takes energy from the material which cools the foam further. The foam material expands from the die between two horizontal calibration plates which control the final thickness. Variations in the slot die opening and the calibrator plate position allow board thicknesses between 20 and 200mm.

The board continues through the calibrator and is now cold enough to keep its shape. It continues downstream for a further 30 to 60m to allow it to cool further. After cooling, the board edges are removed by milling to achieve the desired width. The continuous board is then cut to length and can be further treated to add surface patterns or grooves. The retained gases inside the foam structure increase the insulation value of the board.

Material Receipt

The following materials are received onsite via bulk truck or road tanker:
(A) Materials making up the resin:

- Polystyrene (94% of the resin), the balance of which contains
- New-cleating
- Flame retardant– NEMA dangerous good
- Colour
- Process Aid

(B) Blowing agents:

- CO2
- Dimethyl ether (DME) – NEMA dangerous good
- 152a (gas)
- Ethanol– NEMA dangerous good

Processing and Storage onsite

Raw Material Storage

Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site. Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site.

Material transportation

PS will be transferred to the process building via 25 kg bags. Blowing Agent will be transferred to the process building via pipework.

•DME piping specification: ASME 106A
•CO2 piping specification: EN 13480

•High pressure piping specification: SANS 10260 (all parts)
•R 152a piping specifications: 316 stainless steel

XPS Storage
XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.

Dispatch of Material

XPS dispatch
XPS will be dispatched from the Finished storage area, via truck.

Storage facilities for raw materials and products (*e.g.,* volume and substances to be stored) Provide brief description below:	YES	~~NO~~

Resin (made up of Polystyrene (94% of the resin), New-cleating, Flame retardant material, Colour and Process Aid) will be combined with blowing agents (CO2, Dimethyl Ether (DME), R152a and Ethanol (Etoh)) in a specific combination to produce the XPS end product.

(A) Materials making up the resin:
- Polystyrene
  Crystal Polystyrene (in the form of small spherical beads). Polystyrene is an organic compound with the chemical formula: (C8H8)n. It is a synthetic aromatic hydrocarbon polymer made from the monomer styrene. Polystyrene can be solid or foamed. Polystyrene, a hard, transparent synthetic resin produced by the polymerization of styrene. 18048,00 kg/day (Volume to be stored on site 400m^3)
- New-cleating - Talc - Hydrous magnesium silicate 192,00 kg/day (Volume to be stored on site 10m^3)
- Flame retardant - <45% Brominated SBS polystyrene-polybutadiene- polystyrene/Benzene, ethenyl-, polymer with 1,3-butadiene, brominated & <10% Polystyrene with 1,3-butadiene polymer & <5%Carbonato(2) hexadecahvdroxvbis(aluminium)hexamaqnesium 768,00 kg/day (Volume to be stored on site 50m^3) – NEMA dangerous good
- Colour - Blend of organic and inorganic pigments dispersed in an ethylene methylacrylate copolymer. Polymeric masterbatch consists of ethylene copolymer, PE wax, Zinc stearate, Titanium Dioxide Pigment White 6, Carbon Black Pigment Black 7, Pigment Yellow 191, and Calcium carbonate. 96,00 kg/day (Volume to be stored on site 10m^3)
- Process Aid - Zinc Oxide 96,00 kg/day (Volume to be stored on site 10m^3)

(B) Blowing agents:
- CO2 (18 m3)
- Dimethyl ether (DME) (45m3) – NEMA dangerous good
- 152a (gas) (9m3)
- Ethanol (9m3) – NEMA dangerous good

(C) Products:
- XPS end product (Volume to be stored on site 24500m^3)

Method and location of storage:
(A) Materials making up the resin will be in a covered area in the dedicated raw material storage area north-west of the site.
This includes the Flame Retardant – NEMA dangerous good. Stored in 25kg bags (solid at room temperature).

(B) Blowing Agent storage will be via dedicated tanks located on the eastern boundary of the site.
- CO2 (18 m3) – vertical tank above ground - Vapour at room temperature, stored onsite as a liquid

- Dimethyl ether (DME) (45 m3) - horizontal tank above ground - Vapour at room temperature, stored onsite at liquid-vapour equilibrium – NEMA dangerous good
- 152a (gas) (9 m3) – two above ground tanks - Vapour at room temperature, stored onsite at liquid-vapour equilibrium
- Ethanol (9 m3) – above ground tank - Liquid at room temperature – NEMA dangerous good

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

(C) Products - XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.

Storage and treatment facilities for effluent, wastewater or sewage: Provide brief description below:	~~YES~~	~~NO~~
NA		

Storage and treatment of solid waste Provide brief description below:	YES	~~NO~~
Small waste storage area, general waste only. Will be stored in bins and taken away by the accredited service provider. Estimate the following: Plastic's 1100kg/month Paper/Carton 300 kg/month General Waste 1000 kg/month 30m3 Bins are provided for cardboard (K4), plastic and white paper as well as bins for general waste. See APPENDIX K15 - Waste Management for Stand 245 Atlantis		

Facilities associated with the release of emissions or pollution. Provide brief description below:	YES	~~NO~~
Although an AEL is required the potential volatile organic compounds (VOCs) emissions are minimal/negligible, and there will be no stacks or vents required to be installed at the facility. However, it is recommended to conduct once-off ambient air quality monitoring (ambient VOCs concentrations) at 3 selected locations within the building where extrusion takes place. This investigation will serve to verify that the possible emissions from the process are negligible.		

Other activities (*e.g.,* water abstraction activities, crop planting activities) – Provide brief description below:	~~YES~~	NO
NA		

3. PHYSICAL SIZE OF THE PROPOSED DEVELOPMENT

(a) Property size(s): Indicate the size of all the properties (cadastral units) on which the development proposal is to be undertaken	26929.7	m^2
(b) Size of the facility: Indicate the size of the facility where the development proposal is to be undertaken	26929.7	m^2
(c) Development footprint: Indicate the area that will be **physically altered** as a result of undertaking any development proposal (*i.e.,* the physical size of the development together with all its associated structures and infrastructure)	16480.2	m^2
(d) Size of the activity: Indicate the physical size (footprint) of the development proposal	26929.7	m^2
~~(e) For linear development proposals: Indicate the length (L) and width (W) of the development proposal~~	~~(L)~~ ~~(W)~~	~~m~~ ~~m~~
(f) For storage facilities: Indicate the volume of the storage facility	As below	m^3

• CO2 (18 m3) • Dimethyl ether (DME) (45m3) • 152a (gas) (9m3) • Ethanol (9m3) • XPS end product (24500m3) • Polystyrene (400m3) • New-cleating (10m3) • Flame retardant (50m3) • Colour (10m3) • Process Aid (10m3)

(g) For sewage/effluent treatment facilities: Indicate the volume of the facility (Note: the maximum design capacity must be indicated	NA	m^3

4. SITE ACCESS

(a) Is there an existing access road?	YES	~~NO~~
(b) If no, what is the distance in (m) over which a new access road will be built?		**NA** m

(c) Describe the type of access road planned:

NA

Please note: The position of the proposed access road must be indicated on the site plan.

5. DESCRIPTION OF THE PROPERTY(IES) ON WHICH THE LISTED ACTIVITY(IES) ARE TO BE UNDERTAKEN AND THE LOCATION OF THE LISTED ACTIVITY(IES) ON THE PROPERTY

5.1 Provide a description of the property on which the listed activity(ies) is/are to be undertaken and the location of the listed activity(ies) on the property, as well as of all alternative properties and locations (duplicate section below as required).

Erf 245 is a rectangular piece of land (approximately 26929.7 m²) situated in Atlantis Industrial.

Coordinates of all the proposed activities on the property or properties (sites):	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec.)		
	º 33	‘35	“26.1	º18	‘28	“34.6

Note: For land where the property has not been defined, the coordinates of the area within which the development is proposed must be provided in an addendum to this report.

5.2 Provide a description of the area where the aquatic or ocean-based activity(ies) is/are to be undertaken and the location of the activity(ies) and alternative sites (if applicable).

NA

~~Coordinates of the boundary /perimeter of all proposed aquatic or ocean-based activities (sites) (if applicable):~~	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"

5.3 For a linear development proposal, please provide a description and coordinates of the corridor in which the proposed development will be undertaken (if applicable).

NA

~~For linear activities:~~	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
~~• Starting point of the activity~~	°	‘	“	°	‘	“
~~• Middle point of the activity~~	°	‘	“	°	‘	“
~~• End point of the activity~~	°	‘	“	°	‘	“

Note: For linear development proposals longer than 1000m, please provide an addendum with co-ordinates taken every 250m along the route. All-important waypoints must be indicated and the GIS shape file provided digitally.

5.4 Provide a location map (see below) as **Appendix A** to this report that shows the location of the proposed development and associated structures and infrastructure on the property; as well as a detailed site development plan / site map (see below) as **Appendix B** to this report; and if applicable, all alternative properties and locations. The GIS shape files (.shp) for maps / site development plans must be included in the electronic copy of the report submitted to the competent authority.

Locality Map:	The scale of the locality map must be at least 1:50 000. For linear development proposals of more than 25 kilometres, a smaller scale *e.g.*, 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • a linear scale; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (to indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection). For an ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94; WGS84 co-ordinate system.
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan. • The position of each element of the application as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the development must be indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands - including the 32-meter set back line from the edge of the bank of a river/stream/wetland; o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable; o Ridges; o Cultural and historical features; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas. The GIS shape file for the site development plan(s) must be submitted digitally.

6. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF THE RECEIVING ENVIRONMENT

Site/Area Description

For linear development proposals (pipelines, *etc*.) as well as development proposals that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area that is covered by each copy on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	~~Flatter than 1:10~~	~~1:10 – 1:4~~	~~Steeper than 1:4~~

2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es).

~~Ridgeline~~	~~Plateau~~	~~Side slope of hill / mountain~~	~~Closed valley~~	Open valley	~~Plain~~	~~Undulating plain/low hills~~	~~Dune~~	~~Sea-front~~

(b) Provide a description of the location in the landscape.

Erf 245 is a rectangular piece of land (approximately 26929.7 m²) situated in Atlantis Industrial.

The property is situated approximately 1km from the R307 and approximately 6km from the R27. All land use within 500 meters radius of the proposed new factory are industrial or vacant untransformed land.

It must be noted that the surrounding erfs (untransformed land) are currently subject to a Scoping and Environmental Impact Assessment (EIA). The application is for Greentech in Zone 2 (Portion Remainder of ERF 277, ERF 246, ERF 254 and Portion Remainder of ERF 171) of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape. DEA&DP REFERENCE NUMBER: 16/3/3/6/7/2/A1/2/3316/18.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	~~YES~~	NO	~~UNSURE~~
Seasonally wet soils (often close to water bodies)	~~YES~~	NO	~~UNSURE~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	NO	~~UNSURE~~
Dispersive soils (soils that dissolve in water)	~~YES~~	NO	~~UNSURE~~
Soils with high clay content	~~YES~~	NO	~~UNSURE~~
Any other unstable soil or geological feature	~~YES~~	NO	~~UNSURE~~
An area sensitive to erosion	~~YES~~	NO	~~UNSURE~~
An area adjacent to or above an aquifer.	YES	~~NO~~	~~UNSURE~~
An area within 100m of a source of surface water	~~YES~~	NO	~~UNSURE~~
An area within 500m of a wetland	~~YES~~	NO	~~UNSURE~~
An area within the 1:50 year flood zone	~~YES~~	NO	~~UNSURE~~
A water source subject to tidal influence	~~YES~~	NO	~~UNSURE~~

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (Information in respect of the above will often be available at the planning sections of local authorities. The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

The site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA.

(c) Indicate the type of geological formation underlying the site.

~~Granite~~	~~Shale~~	~~Sandstone~~	Quartzite	~~Dolomite~~	~~Dolorite~~	Other (describe)

Provide a description.

Soil Types
Symbol: CA
Class: Soils with a strong texture contrast
Description: Soils with a marked clay accumulation, strongly structured and a non-reddish colour. In addition, one or more of vertic, melanic and plinthic soils may be present
Depth: >= 450 mm and < 750 mm
Soils with a diagnostic ferrihumic horizon, predominantly deep (Lamotte form)

Geology
Mainly Quaternary quartz sand of the Springfontein Formation.

***Source: Soils and Geology ENPAT, CapeFarmMapper, 10 May 2019.**

4. SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	~~YES~~	NO	~~UNSURE~~
Non-Perennial River	~~YES~~	NO	~~UNSURE~~
Permanent Wetland	~~YES~~	NO	~~UNSURE~~
Seasonal Wetland	~~YES~~	NO	~~UNSURE~~
Artificial Wetland	~~YES~~	NO	~~UNSURE~~
Estuarine / Lagoon	~~YES~~	NO	~~UNSURE~~

(b) Provide a description.

NA

1. THE SEAFRONT / SEA

(a) Is the site(s) located within any of the following areas? (highlight the appropriate boxes).
If the site or alternative site is closer than 100m to such an area, please provide the approximate distance in (m).

AREA	**YES**	**NO**	**UNSURE**	**If "YES": Distance to nearest area (m)**
An area within 100m of the high water mark of the sea	~~YES~~	NO	~~UNSURE~~	
An area within 100m of the high-water mark of an estuary/lagoon	~~YES~~	NO	~~UNSURE~~	
An area within the littoral active zone	~~YES~~	NO	~~UNSURE~~	
An area in the coastal public property	~~YES~~	NO	~~UNSURE~~	
Major anthropogenic structures	~~YES~~	NO	~~UNSURE~~	
An area within a Coastal Protection Zone	~~YES~~	NO	~~UNSURE~~	
An area seaward of the coastal management line	~~YES~~	NO	~~UNSURE~~	
An area within the high-risk zone (20 years)	~~YES~~	NO	~~UNSURE~~	
An area within the medium risk zone (50 years)	~~YES~~	NO	~~UNSURE~~	
An area within the low risk zone (100 years)	~~YES~~	NO	~~UNSURE~~	
An area below the 5m contour	~~YES~~	NO	~~UNSURE~~	
An area within 1km from the high-water mark of the sea	~~YES~~	NO	~~UNSURE~~	
A rocky beach	~~YES~~	NO	~~UNSURE~~	
A sandy beach	~~YES~~	NO	~~UNSURE~~	

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

6. BIODIVERSITY

Note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed development. To assist with the identification of the biodiversity occurring on site and the ecosystem status, consult http://bgis.sanbi.org or BGIShelp@sanbi.org . Information is also available on compact disc ("cd") from the Biodiversity-GIS Unit, Tel.: (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) must be provided as an overlay map on the property/site plan as **Appendix D** to this report.

(a) Highlight the applicable biodiversity planning categories of all areas on preferred and alternative sites and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category. Also describe the prevailing level of protection of the Critical Biodiversity Area ("CBA") and Ecological Support Area ("ESA") (how many hectares / what percentages are formally protected).

Systematic Biodiversity Planning Category	~~CBA~~	~~ESA~~	~~Other Natural Area ("ONA")~~	No Natural Area Remaining ("NNR")
If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan and the conservation management objectives	NA			
Describe the site's CBA/ESA quantitative values (hectares/percentage) in relation to the prevailing level of protection of CBA and ESA (how many hectares / what percentages are formally protected locally and, in the province,)	NA			

(b) Highlight and describe the habitat condition on site.

Habitat Condition	**Percentage of habitat condition class (adding up to 100%) and area of each in square metre (m^2)**		**Description and additional comments and observations (including additional insight into condition, *e.g.* poor land management practises, presence of quarries, grazing/harvesting regimes, *etc.*)**
Natural	0%	0m^2	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	0m^2	
Degraded (includes areas heavily invaded by alien plants)	0%	0m^2	
Transformed (includes cultivation, dams, urban, plantation, roads, *etc.*)	100%	Area (SQM):26929.7	The site is completely paved concrete therefore natural vegetation is non – existent and the habitat condition completely transformed. Area (SQM): 26929.7 (TOTAL SITE) Area (SQM): 20229.7 (developed, paved concrete) Area (SQM): 4442 (transformed open space in the west of the site, grass only, used as a football field for a number of years). Area (SQM): 2258 (transformed open space in the eastern corner, grass only).

(c) Complete the table to indicate:
(i) the type of vegetation present on the site, including its ecosystem status; and
(ii) whether an aquatic ecosystem is present on/or adjacent to the site.

Terrestrial Ecosystems		**Description of Ecosystem, Vegetation Type, Original Extent, Threshold (ha, %), Ecosystem Status**
Ecosystem threat status as per the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	~~Critically~~	Historically the sites had Atlantis Sand Fynbos present on the eastern half (CR). And the western half was historically Cape Flats Dune Strandvel (EN). The development site is mostly paved concrete with the remainder completely disturbed. No natural vegetation remaining.
	~~Endangered~~	
	~~Vulnerable~~	
	~~Least Threatened~~	

Aquatic Ecosystems						
Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
~~YES~~	NO	~~UNSURE~~	~~YES~~	NO	~~YES~~	NO

(d) Provide a description of the vegetation type and/or aquatic ecosystem present on the site, including any important biodiversity features/information identified on the site (e.g. threatened species and special habitats). Clearly describe the biodiversity targets and management objectives in this regard.

Vegetation is non-existent because the development site is mostly paved concrete with the remainder being completely transformed.

Five (5) mature trees will be lost as a result of the development. It is recommended that these be replaced / replanted if feasible.

7. LAND USE OF THE SITE

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

~~Untransformed area~~	~~Low density residential~~	~~Medium density residential~~	~~High density residential~~	~~Informal residential~~
~~Retail~~	Commercial & warehousing	~~Light industrial~~	~~Medium industrial~~	Heavy industrial
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	~~Tourism and Hospitality facility~~
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	~~Quarry, sand or borrow pit~~	~~Dam or reservoir~~
~~Hospital/medical centre~~	~~School~~	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes and more)~~	~~Airport~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
~~Landfill or waste treatment site~~	~~Plantation~~	~~Agriculture~~	~~River, stream or wetland~~	~~Nature conservation area~~
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):				

(a) Provide a description.

The site is an industrial facility. Currently the site is standing vacant as it has been purchased by Swartland Insulation.

8. LAND USE CHARACTER OF THE SURROUNDING AREA

(a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	~~Low density residential~~	~~Medium density residential~~	~~High density residential~~	~~Informal residential~~
~~Retail~~	Commercial & warehousing	~~Light industrial~~	~~Medium industrial~~	Heavy industrial
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	~~Tourism and Hospitality facility~~
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	~~Quarry, sand or borrow pit~~	~~Dam or reservoir~~
~~Hospital/medical centre~~	~~School~~	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes and more)~~	~~Airport~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
~~Landfill or waste treatment site~~	~~Plantation~~	~~Agriculture~~	~~River, stream or wetland~~	~~Nature conservation area~~
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):	NA			

(b) Provide a description, including the distance and direction to the nearest residential area, industrial area, agri-industrial area.

- Residential area – Witsand – 2.28 km
- Industrial area – Atlantis Industrial – 0km

The Site under study is located in the Atlantis Industrial Area surrounded by a number of other industrial facilities, the site location is 3 Charles Matthews Street, Atlantis Industrial, Cape Town, 7349. The GPS coordinates are: 33°35'25.99"S, 18°28'33.25"E. The Site forms part of a number of facilities in the Atlantis area belonging to Swartland Insulation (Pty) Ltd. The neighbouring facilities are a combination of food manufacturers, packaging companies, flammable gas distributors and other industrial facilities.

9. SOCIO-ECONOMIC ASPECTS

a) Describe the existing social and economic characteristics of the community in the vicinity of the proposed site, in order to provide baseline information (for example, population characteristics/demographics, level of education, the level of employment and unemployment in the area, available work force, seasonal migration patterns, major economic activities in the local municipality, gender aspects that might be of relevance to this project, *etc.*).

Municipal Area
The site is located 50km north east of Cape Town and falls within the jurisdiction of the City of Cape Town. City of Cape Town covers an approximate area of 2.461km^2. The Municipal Area consists mostly of extensive farming and natural veld.

Population Size:
The population size of City of Cape Town is approximately 4.004.793 and it includes the towns of Athlone, Atlantis, Belhar, Bellville, Blackheath, Blouberg and Kuils River as well as the rural areas adjacent to and between these towns. 67.7% of the persons in the Cape Town area are English speaking and 22.5% Afrikaans speaking.

Household Income
In 2011, households with an annual income of R20, 000 – R40, 000 accounted for the largest concentration of households (16%).

Cape Town Municipality has a large number of people receiving some or other form of grant. Some people receive more than one grant, for example a disability or old age grant and a child support grant.

Socio-Economics:
The Cape Town Municipality is committed to the social and economic development of the people in the area. Housing for the poor continues to be one of the biggest problems faced in the Cape Town area. As reported in the Cape Town Municipality Annual Report 2015/16 the Municipal Council has made provision in its budgets to develop capitalize on housing opportunities.

Cape Town households receive very good municipal services and most of the households use electricity for heating, cooking and lighting. Service delivery to the poor in informal settlements or households living in backyards of the City's rental stock continues to be a major challenge for the municipality. If this is to be addressed meaningfully, location of some settlements must be relative to bulk infrastructure, increasing capacity especially electricity supply where infrastructure does exist.

Employment
In 2016, The average unemployment rate in Cape Town was 26.5% according to the Quarterly Labour Force Survey 2017.

The labour force is classified into four main categories namely, high skilled, skilled, low skilled and unspecified. Low skill occupations are defined as individuals employed in elementary occupations; skilled occupations include clerks, service workers, skilled agricultural and fishery workers, craft and related trades workers as well as plant and machine operators and assemblers. The high skilled category includes legislators, senior officials and managers, professionals, technicians and associate professionals.

Employment Industries
Various types of economic activities can be found within the Cape Town Local Municipality area of which the biggest sector is finance, insurance, business services (36.1%) followed by manufacturing (16.1%). The smallest sectors include agriculture (9.7%) and construction (4.15)

Source: * Five-year integrated development plan July 2017 – June 2022

Special Economic Zone
Erf 245 was declared part of the Special Economic Zone as stated in the Government Gazette no. 41982, 19 October 2018. The notice states

"Zone 2
Situated on the remainder of portion 277, 246, 245, 254 and remainder of portion 171 Atlantis, bounded by Neil Hare Road to the North -West, the existing Atlantis industrial area to the North and East (privately owned) and by Zone 3 to the South"

A Special Economic Zone (SEZ) is an economic development tool to promote national economic growth and export by using targeted support measures to attract foreign and domestic investments and technology. Traditionally SEZs geographically delineated and fenced- in areas that allowed for the duty and tax-free import of raw and intermediate materials for processing and re-export. Modern forms of SEZs are not exclusively export focused and can encompass larger areas and support a wider range of economic activities or have a specific technology or sector focus. The new SEZ Policy headed by the Department of Trade and Industry provides a clear framework for development, operation and management. The policy provides a wide range of incentives to expand the focus of strategic industrialisation to cover diverse regional development needs and context; to provide a clear, predictable and systemic planning framework for the development of a wider array of SEZs to support industrial policy objectives. The Industrial Policy Action Plan (IPAP), NDP and the NGP, clarify and strengthen governance arrangements and expand the range and quality of support measures beyond the provision of infrastructure. They also provide a framework for predictable financing to enable long-term planning. SEZ's in South Africa, such as the Atlantis Industrial area, and have the ability to accelerate the rate of industrial development and agglomeration. They are a platform for guiding the deployment of other tools such as incentives, skills development and infrastructure development. Incentives that are available to investors include VAT and Custom Relief linked to a customed-controlled area, Employment Tax Incentive (ETI), Building Allowance and Reduced Corporate Income Tax Rate.

See Appendix K12 - City of Cape Town – 2011 Census Suburb Atlantis for further details on the Atlantis area.

10. HISTORICAL AND CULTURAL ASPECTS

(a) Please be advised that if section 38 of the NHRA is applicable to your proposed development, you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Heritage Western Cape must be given an opportunity, together with the rest of the I&APs, to comment on any Pre-application BAR, a Draft BAR, and Revised BAR.

Section 38 of the NHRA states the following:
"*38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000m² in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000m² in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

(b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the NHRA, must also be investigated, assessed and evaluated. Section 3(2) states the following:
"*3(2) Without limiting the generality of subsection (1), the national estate may include—*

(a) places, buildings, structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds, including—
(i) ancestral graves;
(ii) royal graves and graves of traditional leaders;
(iii) graves of victims of conflict;
(iv) graves of individuals designated by the Minister by notice in the Gazette;

(v) historical graves and cemeteries; and
(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

(h) sites of significance relating to the history of slavery in South Africa;

(i) movable objects, including—
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
(ii) objects to which oral traditions are attached or which are associated with living heritage;
(iii) ethnographic art and objects;
(iv) military objects;
(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)".

Is Section 38 of the NHRA applicable to the proposed development?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is NOT applicable to the proposed development as no re zoning is required and the development will not change the character of the site.		
Will the development impact on any national estate referred to in Section 3(2) of the NHRA?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	The development will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way.		
Will any building or structure older than 60 years be affected in any way?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA		
Are there any signs of culturally or historically significant elements, as defined in section 2 of the NHRA, including Archaeological or paleontological sites, on or close (within 20m) to the site?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA		

Note: If uncertain, the Department may request that specialist input be provided **and** Heritage Western Cape must provide comment on this aspect of the proposal. (Please note that a copy of the comments obtained from the Heritage Resources Authority must be appended to this report as Appendix E1).

11. APPLICABLE LEGISLATION, POLICIES, CIRCULARS AND/OR GUIDELINES

(a) Identify all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to the development proposal and associated listed activity(ies) being applied for and that have been considered in the preparation of the BAR.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**ADMINISTERING AUTHORITY and how it is relevant to this application**	**TYPE Permit/license/authorisation/comment / relevant consideration** (*e.g.* rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, *etc.*)	**DATE** (if already obtained)**:**
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	Environmental Authorisation Application	NA
Western Cape Land Use Planning Act, 2014 ("LUPA")	City of Cape Town Municipality	NA	NA

National Water Act, 1998 (Act No. 36 of 1998) [NWA] and relevant regulations	Department of Water and Sanitation	NA	NA
National Heritage Resources Act 25 of 1999 [NHRA]	Heritage Western Cape South African Heritage Resource Agency	NA	NA
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	NA	NA
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA]	Western Cape Department of Environmental Affairs and Development Planning	NA	NA
National Environmental Management: Air Quality Act, 39 Of 2004 [NEMAQA] and Relevant Regulations	Western Cape Department of Environmental Affairs and Development Planning	Atmospheric Emission Licence	Draft attached To be submitted after EA granted
Conservation of Agricultural Resources Act, 43 Of 1983 [CARA]	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	Weeds and the tolerance thereof.	NA
National Health Act, 61 of 2003 [NHA]		Littering and causing a nuisance.	NA
Constitution of the Republic of South Africa, 1996		General application to individual rights of all on and adjacent to the sites.	NA
Fencing Act, 31 of 1963		NA	NA
National Building Regulations and Building Standards Act 103 of 1977 [NBRBSA] and relevant regulations		NA	NA
National Veld and Forest Fire Act 101 of 1998 [NVFFA]		NA	NA
Fertilizers, Farm Feeds, Agricultural Remedies And Stock Remedies Act, 36 Of 1947 [FFFARSRA] and Relevant Regulations	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	NA	NA

POLICY/ GUIDELINES	ADMINISTERING AUTHORITY
Guideline on Public Participation	Western Cape Department of Environmental Affairs and Development Planning
Guidelines on Alternatives	Western Cape Department of Environmental Affairs and Development Planning
Guideline on Need and desirability	Western Cape Department of Environmental Affairs and Development Planning
Guideline for Environmental Management Plans (EMP's)	Western Cape Department of Environmental Affairs and Development Planning

(b) Describe how the proposed development **complies with and responds** to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.

LEGISLATION / POLICY / GUIDELINE	DESCRIBE HOW THE LEGISLATION / POLICY / GUIDELINE WERE TAKEN INTO ACCOUNT (e.g. describe the extent to which it was adhered to, or deviated from, etc).
NEMA	Various general activities, including but not limited to, the control of emergency incidents and the care and remediation of environmental damage.
NEMWA	Listed waste management activities and the requirements for a license for usage of general waste.
NEMBA	The management and conservation of biological diversity and the sustainable use of indigenous biological resources.
NEMAQA	Activities that may affect the air quality on site and the environment surrounding it.
NWA	Impacts and pollution to ground and surface water. Assessed if a water use authorisation under section 21 is required.
CARA	Weeds and the tolerance thereof.
National Health Act	Littering and causing a nuisance.

LEGISLATION / POLICY / GUIDELINE	DESCRIBE HOW THE LEGISLATION / POLICY / GUIDELINE WERE TAKEN INTO ACCOUNT (e.g. describe the extent to which it was adhered to, or deviated from, etc).
Constitution of the RSA	General application to individual rights of all on and adjacent to the sites.
Fencing Act	The erection and maintenance of fences.
National Building Regulations and Building Standards Act	The erection of new buildings.
NHRA	Development of the site and dealing with graves and burial sites and any structures older than 60 years.
NVFFA	Any activities that could result in the start of veld fires.
FFFARSRA	• Activities associated with pest control and the use of agricultural remedies. • Activities associated with providing / manufacturing fertiliser.
Guideline on Public Participation	The public participation guideline was used to determine the best way to define and inform all relevant I&APs of the project. The guideline was also used to determine the most effective communication strategies for public participation.
Guidelines on Alternatives	The guidelines for alternatives assessment was used to develop a methodology for alternatives assessment. This methodology was applied to determine and assess the most viable alternatives to the project. The assessment was undertaken against the base environment (i.e. the no-go option).
Guideline on Need and desirability	The guideline was taken into account to determine whether the project complied according to the concept of Best Practicable Environmental Option as well as environmental and social sustainability.
Guideline for EMP's	The guideline for EMP's was taken into account to determine the most effective minimize, mitigation and management measures to minimise or prevent the impacts identified in the report

Note: Copies of any comments, permit(s) or licences received from any other Organ of State must be attached to this report as **Appendix E**.

Section C: PUBLIC PARTICIPATION

The PPP must fulfil the requirements outlined in the NEMA, the EIA Regulations, 2014 (as amended) and if applicable, the NEM: WA and/or the NEM: AQA. This Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must also be taken into account.

1. Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was an exemption applied for.

In terms of Regulation 41 of the EIA Regulations, 2014 (as amended) -			
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -			
(i) the site where the activity to which the application relates, is or is to be undertaken; and	YES	~~EXEMPTION~~	
(ii) any alternative site	YES	~~EXEMPTION~~	~~N/A~~
(b) giving written notice, in any manner provided for in Section 47D of the NEMA, to –			
(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	~~EXEMPTION~~	~~N/A~~
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	~~EXEMPTION~~	
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	YES	~~EXEMPTION~~	
(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;	YES	~~EXEMPTION~~	
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES	~~EXEMPTION~~	
(vi) any other party as required by the Department;	YES	~~EXEMPTION~~	~~N/A~~
(c) placing an advertisement in -			
(i) one local newspaper; or	YES	~~EXEMPTION~~	
(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	YES	~~EXEMPTION~~	N/A
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken	YES	~~EXEMPTION~~	N/A
(e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	YES	~~EXEMPTION~~	N/A
If you have indicated that "EXEMPTION" is applicable to any of the above, proof of the exemption decision must be appended to this report.			
Please note that for the NEM: WA and NEM: AQA, a notice must be placed in at least two newspapers circulating in the area where the activity applied for is proposed.			
If applicable, has/will an advertisement be placed in at least two newspapers?	YES	~~NO~~	
If "NO", then proof of the exemption decision must be appended to this report.			

2. Provide a list of all the State Departments and Organs of State that were consulted:

State Department / Organ of State	Date request was sent:	Date comment received:	Support / not in support
Cape Nature	20 May 2019	DEADP:DM – 18 June 2019 DEADP: WM – 05 July 2019 DEADP: PCM – 20 June 2019 CoCT – 20 June 2019 No further comments received to date	Questions and recommendations
DEA&DP: Waste Management			
DEA&DP: Air Quality Management			
DEA&DP: Pollution & Chemicals Management			
City of Cape Town: Environmental Management Department			
City of Cape Town: Municipal Manager, Mayor, Ward Councillor			
City of Cape Town: Air Quality Management			
Department of Health			

3. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
(The detailed outcomes of this process, including copies of the supporting documents and inputs must be included in a Comments and Response Report to be attached to the BAR (see note below) as **Appendix F**).

Technical specifications and details regarding the storage tanks etc – provided

4. Provide a summary of any conditional aspects identified / highlighted by any Organs of State, which have jurisdiction in respect of any aspect of the relevant activity.

It is noted that the proposed additions and alterations to the site will result in the loss of existing mature trees on the site. It is requested that the number of trees to be lost to the additions and alterations be replaced with new mature trees elsewhere on the site.

The ECO must inform the Head: Environmental & Heritage Management Branch of commencement of site activities and construction.

Monthly ECO Audit Reports must be submitted to the Head: Environmental & Heritage Management Branch.

The payment of penalties into on environmental NPO must be nominated by the ECO and the Head: Environmental & Heritage Management Branch.

Proof of payment of penalties must also be sent to the Head: Environmental & Heritage Management Branch.

No dust nuisance is to be generated by any of the activities on site such as. concrete mixing, construction of storage areas. etc.

Dust mitigation is to be strictly enforced at all times to prevent dust emissions to atmosphere and the surrounding environment and therefore, the conditions stipulated in the Notional Dust Control Regulations (GN. 36974) dated I November 2013 must be adhered to at all times during the development process.

The use of waterless methods or non-potable water is encouraged for dust suppression.

The ventilating systems/pipes from above ground storage tanks must be positioned in such a manner so that any fumes generated/released do not negatively impact on the air quality of the occupants on-site or of neighboring properties and their occupants.

It must be ensured that only accredited waste service providers ore involved in the transportation of waste material. The applicant is also required to register as a waste generator before activities can commence on site.

The SANS 10400 and the Community Fire Safety By-law, Provincial Gazette 5832 (Amendments 6447 - 29 June 2007) must be complied with and Building Plans must be submitted to this Deportment for comments.

Note:
Even if pre-application public participation is undertaken as allowed for by Regulation 40(3), it must be undertaken in accordance with the requirements set out in Regulations 3(3), 3(4), 3(8), 7(2), 7(5), 19, 40, 41, 42, 43 and 44.

If the "exemption" option is selected above and no proof of the exemption decision is attached to this BAR, the application will be refused.

A list of all the potential I&APs, including the Organs of State, notified and a list of all the registered I&APs must be submitted with the BAR. The list of registered I&APs must be opened, maintained and made available to any person requesting access to the register in writing.

The BAR must be submitted to the Department when being made available to I&APs, including the relevant Organs of State and State Departments which have jurisdiction with regard to any aspect of the activity, for a commenting period of at least

30 days. Unless agreement to the contrary has been reached between the Competent Authority and the EAP, the EAP will be responsible for the consultation with the relevant State Departments in terms of Section 24O and Regulation 7(2) – which consultation must happen simultaneously with the consultation with the I&APs and other Organs of State.

All the comments received from I&APs on the BAR must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** of the BAR. If necessary, any amendments made in response to comments received must be effected in the BAR itself. The Comments and Responses Report must also include a description of the PPP followed.

The minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded, must also be submitted as part of the public participation information to be attached to the final BAR as **Appendix F.**

Proof of all the notices given as indicated, as well as notice to I&APs of the availability of the Pre-Application BAR (if applicable), Draft BAR, and Revised BAR (if applicable) must be submitted as part of the public participation information to be attached to the BAR as **Appendix F**. In terms of the required "proof" the following must be submitted to the Department:

- a site map showing where the site notice was displayed, a dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION D: NEED AND DESIRABILITY

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website: **http://www.westerncape.gov.za/eadp**). In this regard, it must be noted that the *Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010* published by the national Department of Environmental Affairs on 20 October 2014 (GN No. 891 on Government Gazette No. 38108 refers) (available at: http://www.gov.za/sites/www.gov.za/files/38108__891.pdf) also applied to EIAs in terms of the EIA Regulations, 2014 (as amended).

1. Is the development permitted in terms of the property's existing land use rights?	YES	~~NO~~	Please explain
The site is zoned "General Industrial" and is located in the Atlantis Industrial Area.			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("**PSDF**").	YES	~~NO~~	Please explain
The proposed activity and infrastructure are in line with the PSDF as it is proposed on an existing industrial site on the area that is zoned industrial.			
(b) Urban edge / edge of **built environment** for the area.	YES	~~NO~~	Please explain
The proposed activity and infrastructure is inside the urban edge.			
(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (*e.g.,* would the approval of this application compromise the integrity of the existing approved and credible municipal **IDP and SDF**?).	YES	~~NO~~	Please explain
Is in line with the CoCT IDP as it is an existing industrial site. The site is zoned "General Industrial" and is located in the Atlantis Industrial Area. The site is therefore within the Urban Edge of Atlantis and is in line with the principles of the Cape Town Spatial Development Framework. The proposal is therefore to utilise the proposed portions of land located in the Atlantis Industrial Area for its intended purposes - Industrial development.			
(d) An Environmental Management Framework ("**EMF**") adopted by this Department. (*e.g.,* Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	~~NO~~	Please explain
No EMF adopted for area.			
(e) Any **other** Plans (*e.g.,* Integrated Waste Management Plan (for waste management activities), *etc.*)).	YES	~~NO~~	Please explain
NA			
3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	~~NO~~	Please explain

The proposed activity and infrastructure are in line with the PSDF as it is proposed on an existing industrial site on the area that is zoned industrial.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	YES	~~NO~~	Please explain
The proposed activity and infrastructure are in line with the PSDF as it is proposed on an existing industrial site on the area that is zoned industrial.			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (*e.g.,* development is a National Priority, but within a specific local context it could be inappropriate.)	~~YES~~	NO	Please explain
Although will create additional jobs during construction and operational phase.			
6. Are the necessary **services** available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project? (Confirmation by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
The site is currently a vacant industrial facility. The City of Cape Town currently already supplies the site with waste removal, electricity, water and sanitation services.			
7. Is this project provided for in the **infrastructure planning** of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
The proposed activity and infrastructure are proposed on an existing industrial site on the area that is zoned industrial.			
8. Is this project part of a **national programme** to address an issue of national concern or importance?	YES	~~NO~~	Please explain
Industrial development.			
9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	YES	~~NO~~	Please explain
The proposed activity and infrastructure are proposed on an existing industrial site on the area that is zoned industrial.			
10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	~~YES~~	NO	Please explain
No sensitive features on site. Paved surface. The proposed activity and infrastructure are proposed on an existing industrial site on the area that is zoned industrial.			
11. Will the development impact on people's health and well-being (*e.g.,* in terms of noise, odours, visual character and 'sense of place', *etc.*)?	~~YES~~	NO	Please explain
• Noise: There may be noise associated with this development during its operation and the impacts, however, this will be in line with the zoning regulations of the site. Noise in line with legal requirements and site is situated on an existing industrial site surrounded by industrial properties. • Odours: These will be minimal during the construction phase and relatively minimal during the operational phase. • Visual character and sense of place will not be impacted on as it is an existing industrial site.			
12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	~~YES~~	NO	Please explain
The proposed development will connect to existing infrastructure and will not impact on any sensitive features.			
13. What will the **cumulative impacts** (positive and negative) of the proposed land use associated with the development proposal and associated listed activity(ies) applied for, be?			
1. Employment opportunities - Positive 2. Disturbance to subsurface geological layers 3. Soil and ground water pollution 4. Storm water pollution 5. Emissions and air quality 6. Noise 7. Increase traffic			
14. Is the development the **best practicable environmental option** for this land/site?	YES	~~NO~~	Please explain
No sensitive features on site. Paved surfaces and completely transformed open areas. The proposed activity and infrastructure are proposed on an existing industrial site on the area that is zoned			

industrial. The proposal is therefore to utilise the proposed portion of land located in the Atlantis Industrial Area for its intended purpose - Industrial development.
15. What will the benefits be to society in general and to the local communities? | Please explain
Provision of jobs.
16. Any **other** need and desirability considerations related to the proposed development? | Please explain
None.
17. Describe how the **general objectives of Integrated Environmental Management** as set out in Section 23 of the NEMA have been taken into account:
The general principles as set out in Section 2 of NEMA are implemented as described below: •The potential impacts for both the construction and the operational phase have been identified in this report – this allows for the appropriate management and mitigation measures to be identified and implemented where and when necessary to prevent environmental degradation and promote sustainability. •All decisions during the planning and assessment by all involved for the activity promote the integration of the principles of environmental management set out in Section 2 to minimize and mitigate any significant effect on the environment. All these mitigations and management measures were included as proposed EA conditions and included in the EMP. •All involved in the planning and design identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in Section 2 were taken in consideration and used in the assessments, mitigations and recommendations throughout this report. •Adequate and appropriate opportunity for public participation was provided and included in Appendix F as per the guidelines and regulations in decisions that may affect the environment. The consideration of environmental attributes in management and decision making which may have a significant effect on the environment was ensured. The modes of environmental management best suited to ensure that a particular activity is pursued in accordance with the principles of environmental management set out in Section 2, was identified and employed. Refer to section below.
18 Describe how the **principles of environmental management** as set out in Section 2 of the NEMA have been taken into account:
A full public participation as described in the legislation and guidelines will be/ is followed. The proposed development will not have a significant impact on biodiversity. The proposed development is situated within an existing urban edge and will not disturb the landscape and sites that constitute the nation's cultural heritage. The proposed development will not exceed or exploit renewable resource to an extent that they reach a level beyond which their integrity is jeopardised. The proposed development will not have a significant environmental impact and it is recommended that the Environmental Management Programme be adhered to accordingly.

SECTION E: DETAILS OF ALL THE ALTERNATIVES CONSIDERED

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website **http://www.westerncape.gov.za/eadp.**

The EIA Regulations, 2014 (as amended) defines "*alternatives*" as "*in relation to a proposed activity, means different means of fulfilling the general purpose and requirements of the activity, which may include alternatives to the—*
(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
(f) and includes the option of not implementing the activity;"

The NEMA (section 24(4)(a) and (b) of the NEMA, refers) prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in the NEMA and the National Environmental Management Principles set out in the NEMA are taken into account; and
- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management (section 23 of NEMA, refers) is, *inter alia*, to "*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management*" set out in the NEMA.

The identification, evaluation, consideration and comparative assessment of alternatives directly relate to the management of impacts. Related to every identified impact, alternatives, modifications or changes to the activity must be identified, evaluated, considered and comparatively considered to:

- in terms of negative impacts, firstly avoid a negative impact altogether, or if avoidance is not possible alternatives to better mitigate, manage and remediate a negative impact and to compensate for/offset any impacts that remain after mitigation and remediation; and
- in terms of positive impacts, maximise impacts.

1. DETAILS OF THE IDENTIFIED AND CONSIDERED ALTERNATIVES AND INDICATE THOSE ALTERNATIVES THAT WERE FOUND TO BE FEASIBLE AND REASONABLE

Note: A full description of the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exists.

(a) Property and **location/site** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No other location or site alternatives were assessed as no feasible or reasonable location or site alternative exists.

The location and site were selected based on its suitability for the project and costs. The land was purchased by Swartland Insulation for the purpose of establishing a polystyrene plant. As such this site is the only reasonable and feasible site as it is on land owned by the company. It is no feasible to purchase other land as the cost of the proposed project would be beyond the feasible cost. The site and location are favourable as it is zoned industrial and is an existing industrial site.

The location factors favour this land use for a number of reasons:
• The site is inside the Specials Economic Zone.
• Atlantis is considered a national, provincial and regional priority area for readdressing the eras of apartheid through encouraging investment in the area and, as a result, creating jobs and contributing towards the local economy.
• The size of the land is appropriate in that they are large enough for the types of industry proposed.
• The facilities on site suit the needs on the proposed development, only a few additions and improvements to infrastructure are required.
• The road network in the area is also much more appropriate for transporting abnormal loads rather than navigating city traffic and passes.
• Easy, quick access onto the N7 allowing easier access to port facilities along the West Coast. The proposed development is in line with all the planning policies for the CoCT and the greater WC province.

(b) **Activity** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No other activity alternatives were assessed as no feasible or reasonable activity alternative exists other than the no-go option.

The proposed activity is aims to diversify the business. This was a strategic decision to supply different products within the building industry. It would not be feasible for the applicant to conduct another activity as the XPS extrusion machine has been purchased at great expense to Swartland Insulation.

Mitigation measures contained in the EMPr are included to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts of the proposed activity.

(c) **Design or layout** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The design took into consideration the volumes to be processed. The layout has been informed by specialists and engineer inputs.

Layout 1 (Preferred Alternative)

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Structural grid and loading platform for 24m articulated trucks (new)
- Internal road (new)
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

No matter where the gasses are positioned the risk in terms of the MHI studies extend over our boundaries. Layout 1 makes the most of the grassy area to the east of the site so that there is no wasted space. Layout 1 minimizes the risk by storing the gasses away from the other raw materials and finished goods. Layout 1 provides for much more efficient and safer delivery of raw materials and collection of finished product. This is the preffered alternative.

Layout 2

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Turning circle for 24m articulated trucks
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

Layout 2 was deemed not feasible or reasonable due to the turning circle which after investigation was not suitable for the delivery of raw materials and collection of finished product. This Layout is also not feasible or reasonable as no provision is made for the refuelling of the gas installation/tanks.

Layout 3

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located west of the main processing building and south of the raw material storage area. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.

- Turning circle for 24m articulated trucks
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

Layout 3 is not feasible or reasonable as there is an increased risk in terms of fires etc. due to the proximity of the gas storage to the raw material and finished goods storage. The grassy area to the east of the site is wasted space. Layout 3 is also not feasible or reasonable as entrance for trucks becomes a problem.

(d) **Technology** alternatives (*e.g.,* to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Technology alternatives –
There are two ways to produce polystyrene, EPS (expanded polystyrene) and XPS (extruded polystyrene).

The energy efficiency of a building often depends on the materials that create its envelope. Selecting the appropriate insulation type is crucial in delivering the required insulation performance for your project. The use of XPS and EPS insulation in building construction offers great flexibility, compatibility and thermal efficiency for all areas of the building envelope system. But what is the difference between EPS and XPS insulation?

MANUFACTURING
Extruded polystyrene insulation (XPS) is manufactured using a process of extrusion. This continuous process results in a closed cell structure with a smooth skin on the top and bottom of the board. The closed cell structure of extruded polystyrene (XPS) prevents water penetration to the structure of the insulation board and provides long term strength and durability.
Expanded Polystyrene insulation (EPS) is manufactured using beads of foam within a mould, heat or steam is then applied directly to the beads which causes them to expand and fuse together. This process produces a closed cell structure, not a closed cell insulation board, due to voids that can occur between the beads.

COMPRESSIVE STRENGTH
Compressive strength is demanded in the most challenging environments such as under slabs on a flat roof, concrete floors, foundations, plaza and podium decks and cold storage. In general, when comparing EPS and XPS board densities, the compressive strength of XPS is greater than that of EPS. For EPS to achieve the same compressive strength as XPS, the density of the foam would need to be increased, often resulting in a greater thickness of board being required.

THERMAL CONDUCTIVITY
Insulation is one of the most practical and cost-effective ways to improve a building's energy efficiency, by improving the insulation in new and existing buildings, significant cost savings and reductions in energy usage can be achieved. Both XPS and EPS provide good thermal conductivity performance. However, the air trapped in the voids in the EPS will conduct heat. A much higher density EPS board will be required to match the thermal performance of XPS insulation.

WATER VAPOUR DIFFUSION
Water vapour diffusion resistance (μ) of EPS ranges from approximately 30 – 70 compared to the water vapour diffusion resistance (μ) of XPS that ranges from approximately 80 – 250. XPS is often selected over EPS for wetter environments that require a higher water vapour diffusion resistance value.

XPS is used for insulation products within the building industry and there are no other technologies for the same product. Swartland have travelled abroad on multiple occasions to see different machine suppliers and XPS plants and decided on this process and equipment for the selected market.

Bunding of above ground storage of liquid dangerous goods will have a bund wall that is in accordance with the requirements of SANS 0089 part 1. No reasobale or feasible alternatives exisit for above ground staorge of liguid substances.

In terms of the storage tanks, two alternatives where investigated – below ground and above ground storage tanks for the CO2, Dimethyl ether (DME), 152a (gas) and Ethanol. It was initially proposed to store the 152a (gas) and Ethanol below / under ground. Howver based on the fact that the site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA, below ground tanks were not deemed feasible or reasonable. Below ground tanks have an increased chance of leaks and of creating pollution because they can't be inspected as often. Due to the sensitive nature of the aquifer these were not deemed feasible or reasonable due to the potential risk to ground water. Above ground tanks are preffered as they are cheaper to install than underground tanks because you don't have to pay for deep excavation, backfilling. Aboveground

fuel tanks are also easier to maintain than below ground ones. They can be checked for leaks and accessed easily for repairs, which is why aboveground fuel tanks are the preferred choice for the storage of all substances on site.

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

The technological alternatives are the use of electricity and water wise technologies and green tips considered during the construction and operational phases. These include duel flush toilet systems and energy efficient lighting.

(e) **Operational** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No operational alternatives were considered as the proposed activity is to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets.

(f) The option of **not implementing** the activity (the '*No-Go*' Option):

The No-Go option will result in the site remaining as is presently; a vacant industrial site.

A look at the Need and Desirability as manifested in the local SDF supports the proposed development on the identified site due to provision of jobs. The proposed development will provide temporary jobs to the community during the construction phase and permanent jobs during the operational phase.

(g) **Other** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No additional alternatives to avoid negative impacts were considered.

(h) Provide a **summary** of all alternatives investigated and the outcome of each investigation:

Location alternatives -
No other location or site alternatives were assessed as no feasible or reasonable location or site alternative exists.

The location and site were selected based on its suitability for the project and costs. The land was purchased by Swartland Insulation for the purpose of establishing a polystyrene plant. As such this site is the only reasonable and feasible site as it is on land owned by the company. It is no feasible to purchase other land as the cost of the proposed project would be beyond the feasible cost. The site and location are favourable as it is zoned industrial and is an existing industrial site.

The location factors favour this land use for a number of reasons:
• The site is inside the Specials Economic Zone.
• Atlantis is considered a national, provincial and regional priority area for readdressing the eras of apartheid through encouraging investment in the area and, as a result, creating jobs and contributing towards the local economy.
• The size of the land is appropriate in that they are large enough for the types of industry proposed.
• The facilities on site suit the needs on the proposed development, only a few additions and improvements to infrastructure are required.
• The road network in the area is also much more appropriate for transporting abnormal loads rather than navigating city traffic and passes.
• Easy, quick access onto the N7 allowing easier access to port facilities along the West Coast. The proposed development is in line with all the planning policies for the CoCT and the greater WC province.

Activity alternatives -
No other activity alternatives were assessed as no feasible or reasonable activity alternative exists other than the no-go option.

The proposed activity is aims to diversify the business. This was a strategic decision to supply different products within the building industry. It would not be feasible for the applicant to conduct another activity as the XPS extrusion machine has been purchased at great expense to Swartland Insulation.

Mitigation measures contained in the EMPr are included to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts of the proposed activity.

Layout alternatives –
The design took into consideration the volumes to be processed. The layout has been informed by specialists and engineer inputs.

Layout 1 (Preferred Alternative)
- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
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- Internal road (new)
- Flammable liquids store
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- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

No matter where the gasses are positioned the risk in terms of the MHI studies extend over our boundaries. Layout 1 makes the most of the grassy area to the east of the site so that there is no wasted space. Layout 1 minimizes the risk by storing the gasses away from the other raw materials and finished goods. Layout 1 provides for much more efficient and safer delivery of raw materials and collection of finished product. This is the preffered alternative.

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- Silo
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- Filter Unit
- Office space
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Layout 2 was deemed not feasible or reasonable due to the turning circle which after investigation was not suitable for the delivery of raw materials and collection of finished product. This Layout is also not feasible or reasonable as no provision is made for the refuelling of the gas installation/tanks.

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- Silo
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Layout 3 is not feasible or reasonable as there is an increased risk in terms of fires etc. due to the proximity of the gas storage to the raw material and finished goods storage. The grassy area to the east of the site is wasted space. Layout 3 is also not feasible or reasonable as entrance for trucks becomes a problem.

Technology alternatives –
There are two ways to produce polystyrene, EPS (expanded polystyrene) and XPS (extruded polystyrene).

The energy efficiency of a building often depends on the materials that create its envelope. Selecting the appropriate insulation type is crucial in delivering the required insulation performance

for your project. The use of XPS and EPS insulation in building construction offers great flexibility, compatibility and thermal efficiency for all areas of the building envelope system. But what is the difference between EPS and XPS insulation?

MANUFACTURING
Extruded polystyrene insulation (XPS) is manufactured using a process of extrusion. This continuous process results in a closed cell structure with a smooth skin on the top and bottom of the board. The closed cell structure of extruded polystyrene (XPS) prevents water penetration to the structure of the insulation board and provides long term strength and durability.
Expanded Polystyrene insulation (EPS) is manufactured using beads of foam within a mould, heat or steam is then applied directly to the beads which causes them to expand and fuse together. This process produces a closed cell structure, not a closed cell insulation board, due to voids that can occur between the beads.

COMPRESSIVE STRENGTH
Compressive strength is demanded in the most challenging environments such as under slabs on a flat roof, concrete floors, foundations, plaza and podium decks and cold storage. In general, when comparing EPS and XPS board densities, the compressive strength of XPS is greater than that of EPS. For EPS to achieve the same compressive strength as XPS, the density of the foam would need to be increased, often resulting in a greater thickness of board being required.

THERMAL CONDUCTIVITY
Insulation is one of the most practical and cost-effective ways to improve a building's energy efficiency, by improving the insulation in new and existing buildings, significant cost savings and reductions in energy usage can be achieved. Both XPS and EPS provide good thermal conductivity performance. However, the air trapped in the voids in the EPS will conduct heat. A much higher density EPS board will be required to match the thermal performance of XPS insulation.

WATER VAPOUR DIFFUSION
Water vapour diffusion resistance (μ) of EPS ranges from approximately 30 – 70 compared to the water vapour diffusion resistance (μ) of XPS that ranges from approximately 80 – 250. XPS is often selected over EPS for wetter environments that require a higher water vapour diffusion resistance value.

XPS is used for insulation products within the building industry and there are no other technologies for the same product. Swartland have travelled abroad on multiple occasions to see different machine suppliers and XPS plants and decided on this process and equipment for the selected market.

Bunding of above ground storage of liquid dangerous goods will have a bund wall that is in accordance with the requirements of SANS 0089 part 1. No reasobale or feasible alternatives exisit for above ground staorge of liguid substances.

In terms of the storage tanks, two alternatives where investigated – below ground and above ground storage tanks for the CO2, Dimethyl ether (DME), 152a (gas) and Ethanol. It was initially proposed to store the 152a (gas) and Ethanol below / under ground. Howver based on the fact that the site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA, below ground tanks were not deemed feasible or reasonable. Below ground tanks have an increased chance of leaks and of creating pollution because they can't be inspected as often. Due to the sensitive nature of the aquifer these were not deemed feasible or reasonable due to the potential risk to ground water. Above ground tanks are preffered as they are cheaper to install than underground tanks because you don't have to pay for deep excavation, backfilling. Aboveground fuel tanks are also easier to maintain than below ground ones. They can be checked for leaks and accessed easily for repairs, which is why aboveground fuel tanks are the preferred choice for the storage of all substances on site.

Tank placement was based on gas specialists' recommendations (A Gas, Pure Gas, Air liquid and GPS).

The technological alternatives are the use of electricity and water wise technologies and green tips considered during the construction and operational phases. These include duel flush toilet systems and energy efficient lighting.

Operational alternatives –
No operational alternatives were considered as the proposed activity is to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets.

The No-Go Option-
The No-Go option will result in the site remaining as is presently; a vacant industrial site. A look at the Need and Desirability as manifested in the local SDF supports the proposed development on the identified site due to provision of jobs. The proposed development will provide temporary jobs to the community during the construction phase and permanent jobs during the operational phase.

(i) Provide a detailed **motivation for not further considering** the alternatives that were found not feasible and reasonable, including a description and proof of the investigation of those alternatives:

Location alternatives -
The location and site were selected based on its suitability for the project and costs. The land was purchased by Swartland Insulation for the purpose of establishing a polystyrene plant. As such this site is the only reasonable and feasible site as it is on land owned by the company. It is no feasible to purchase other land as the cost of the proposed project would be beyond the feasible cost. The site and location are favourable as it is zoned industrial and is an existing industrial site.

Activity alternatives -
The proposed activity is aims to diversify the business. This was a strategic decision to supply different products within the building industry. It would not be feasible for the applicant to conduct another activity as the XPS extrusion machine has been purchased at great expense to Swartland Insulation.

Layout alternatives –
The design took into consideration the volumes to be processed. The layout has been informed by specialists and engineer inputs. No matter where the gasses are positioned the risk in terms of the MHI studies extend over our boundaries. Layout 2 was deemed not feasible or reasonable due to the turning circle which after investigation was not suitable for the delivery of raw materials and collection of finished product. This Layout is also not feasible or reasonable as no provision is made for the refuelling of the gas installation/tanks. Layout 3 is not feasible or reasonable as there is an increased risk in terms of fires etc. due to the proximity of the gas storage to the raw material and finished goods storage. The grassy area to the east of the site is wasted space. Layout 3 is also not feasible or reasonable as entrance for trucks becomes a problem.

Technology alternatives –
There are two ways to produce polystyrene, EPS (expanded polystyrene) and XPS (extruded polystyrene). XPS is used for insulation products within the building industry and there are no other technologies for the same product. Swartland have travelled abroad on multiple occasions to see different machine suppliers and XPS plants and decided on this process and equipment for the market.

The expanded polystyrene process does not prevent water penetration to the structure of the insulation board. The compressive strength of EPS is lower that XPS. A much higher density EPS board will be required to match the thermal performance of XPS insulation. As such ESP is not a feasible or reasonable process or technological alternative as it will not meet the deamds of the market.

However based on the fact that the site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA, below ground tanks were not deemed feasible or reasonable. Below ground tanks have an increased chance of leaks and of creating pollution because they can't be inspected as often. Due to the sensitive nature of the aquifer these were not deemed feasible or reasonable due to the potential risk to ground water. Above ground tanks are preffered as they are cheaper to install than underground tanks because you don't have to pay for deep excavation,

backfilling. Aboveground fuel tanks are also easier to maintain than below ground ones. They can be checked for leaks and accessed easily for repairs, which is why aboveground fuel tanks are the preferred choice for the storage of all substances on site.

Operational alternatives –
No operational alternatives were considered as the proposed activity is to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets.

The No-Go Option-
The No-Go option will result in the site remaining as is presently; a vacant industrial site. A look at the Need and Desirability as manifested in the local SDF supports the proposed development on the identified site due to provision of jobs. The proposed development will provide temporary jobs to the community during the construction phase and permanent jobs during the operational phase.

2. PREFERRED ALTERNATIVE

(a) Provide a **concluding statement** indicating the preferred alternative(s), including preferred location, site, activity and technology for the development.

Location alternatives -
The location and site were selected based on its suitability for the project and costs. The land was purchased by Swartland Insulation for the purpose of establishing a polystyrene plant. As such this site is the only reasonable and feasible site as it is on land owned by the company. It is no feasible to purchase other land as the cost of the proposed project would be beyond the feasible cost. The site and location are favourable as it is zoned industrial and is an existing industrial site.

Activity alternatives -
The proposed activity is aims to diversify the business. This was a strategic decision to supply different products within the building industry. It would not be feasible for the applicant to conduct another activity as the XPS extrusion machine has been purchased at great expense to Swartland Insulation.

Layout alternatives –
Layout 1 (Preferred Alternative)

- Polystyrene (PS) storage will be in a covered area in the dedicated raw material storage area north-west of the site.
- A second raw material storage area will be in the south west corner of the main factory building.
- Blowing Agent storage (dangerous goods) will be via dedicated tanks located on the eastern boundary of the site. Blowing Agent will be transferred to the process building via pipework.
- XPS will be stored in the XPS Finished Board Storage Area to the west and south-west of the site.
- Structural grid and loading platform for 24m articulated trucks (new)
- Internal road (new)
- Flammable liquids store
- New reclaimer building with reclaiming plant
- Silo
- Relocated store with chipper
- Filter Unit
- Office space
- Main factory building with XPS extrusion machine

No matter where the gasses are positioned the risk in terms of the MHI studies extend over our boundaries. Layout 1 makes the most of the grassy area to the east of the site so that there is no wasted space. Layout 1 minimizes the risk by storing the gasses away from the other raw materials and finished goods. Layout 1 provides for much more efficient and safer delivery of raw materials and collection of finished product. This is the preffered alternative.

Technology alternatives –
There are two ways to produce polystyrene, EPS (expanded polystyrene) and XPS (extruded polystyrene). The expanded polystyrene process does not prevent water penetration to the structure of the insulation board. The compressive strength of EPS is lower that XPS. A much higher density EPS board will be required to match the thermal performance of XPS insulation. As such ESP is not a feasible or reasonable process or technological alternative as it will not meet the deamds of the market. XPS is used for insulation products within the building industry and there are no other technologies for the same product. Swartland have travelled abroad on multiple occasions to see different machine suppliers and XPS plants and decided on this process and equipment.

However based on the fact that the site is located in the Atlantis Aquifer Secondary Protection Zone. The Atlantis Aquifer is classified as a Strategic Water Source Area (SWSA), more specifically the West Coast Groundwater SWSA, below ground tanks were not deemed feasible or reasonable. Below ground tanks have an increased chance of leaks and of creating pollution because they can't be inspected as often. Due to the sensitive nature of the aquifer these were not deemed feasible or reasonable due to the potential risk to ground water. Above ground tanks are preffered as they are cheaper to install than underground tanks because you don't have to pay for deep excavation, backfilling. Aboveground fuel tanks are also easier to maintain than below ground ones. They can be checked for leaks and accessed easily for repairs, which is why aboveground fuel tanks are the preferred choice for the storage of all substances on site.

Operational alternatives –
No operational alternatives were considered as the proposed activity is to manufacture XPS (extruded polystyrene) for the local and international retail and industrial markets.

The No-Go Option-
The No-Go option will result in the site remaining as is presently; a vacant industrial site. A look at the Need and Desirability as manifested in the local SDF supports the proposed development on the identified site due to provision of jobs. The proposed development will provide temporary jobs to the community during the construction phase and permanent jobs during the operational phase.

SECTION F: ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE ALTERNATIVES

Note: The information in this section must be DUPLICATED for all the feasible and reasonable ALTERNATIVES.

1. DESCRIBE THE ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ITS ALTERNATIVES, FOCUSING ON THE FOLLOWING:

(a) Geographical, geological and physical aspects:

The proposed action will not have an adverse effect on topography and slopes.

However, the proposed development will be a potential source of contamination to the underlying soil, stormwater and groundwater but only in the event of a pollution incident emanating from the storage of dangerous goods above ground.

However, if operational mitigation measures are implemented, the proposed development should not lead to the contamination of soil and ground water.

(b) Ecological aspects:

Will the proposed development and its alternatives have an impact on CBAs or ESAs? If yes, please explain: Also include a description of how the proposed development will influence the quantitative values (hectares/percentage) of the categories on the CBA/ESA map.	~~YES~~	NO
NA		
Will the proposed development and its alternatives have an impact on terrestrial vegetation, or aquatic ecosystems (wetlands, estuaries or the coastline)? If yes, please explain:	~~YES~~	NO
NA		
Will the proposed development and its alternatives have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species? If yes, please explain:	~~YES~~	NO
NA		
Describe the manner in which any other biological aspects will be impacted:		
NA		
Will the proposed development also trigger section 63 of the NEM: ICMA?	~~YES~~	NO
If yes, describe the following: (i) the extent to which the applicant has in the past complied with similar authorisations; (ii) whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development proposal or listed activity is consistent with the purpose for establishing and protecting those areas; (iii) the estuarine management plans, coastal management programmes, coastal management lines and coastal management objectives applicable in the area; (iv) the likely socio-economic impact if the listed activity is authorised or is not authorised; (v) the likely impact of coastal environmental processes on the proposed development; (vi) whether the development proposal or listed activity— (a) is situated within coastal public property and is inconsistent with the objective of conserving and enhancing coastal public property for the benefit of current and future generations; (b) is situated within the coastal protection zone and is inconsistent with the purpose for which a coastal protection zone is established as set out in section 17 of NEM: ICMA; (c) is situated within coastal access land and is inconsistent with the purpose for which coastal access land is designated as set out in section 18 of NEM: ICMA; (d) is likely to cause irreversible or long-lasting adverse effects to any aspect of the coastal environment that cannot satisfactorily be mitigated; (e) is likely to be significantly damaged or prejudiced by dynamic coastal processes; (f) would substantially prejudice the achievement of any coastal management objective; or (g) would be contrary to the interests of the whole community; (vii) whether the very nature of the proposed activity or development requires it to be located within coastal public property, the coastal protection zone or coastal access land; (viii) whether the proposed development will provide important services to the public when using coastal public property, the coastal protection zone, coastal access land or a coastal protected area; and (ix) the objects of NEM: ICMA, where applicable.		
NA		

(c) Social and Economic aspects:

What is the expected capital value of the project on completion?	R 200 000 000	
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the project?	Turnover R 480 000 000	
Will the project contribute to service infrastructure?	~~YES~~	NO
Is the project a public amenity?	~~YES~~	NO
How many new employment opportunities will be created during the development phase?	25	
What is the expected value of the employment opportunities during the development phase?	Storage area R 14 000 000, Gas installations R 2 000 000 and other civils R1 500 000	
What percentage of this will accrue to previously disadvantaged individuals?	50 %	
How will this be ensured and monitored (please explain):		
Unknown at this stage		
How many permanent new employment opportunities will be created during the operational phase of the project?	50	
What is the expected current value of the employment opportunities during the first 10 years?	R62 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	75% as the majority of employees will come from Atlantis	
How will this be ensured and monitored (please explain):		
This forms part of Swartland's Employment equity plan and recruitment process.		
Any other information related to the manner in which the socio-economic aspects will be impacted:		
NA		

(d) Heritage and Cultural aspects:

NA

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the development proposal produce waste (including rubble) during the development phase?	YES	~~NO~~
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?	Approx. 15m^3	
Some construction waste will be generated during the construction of the storage area, Gas installations and other civils. However, this will be very limited as limited construction work is to take place as existing facilities and buildings will be utilised. Construction waste will be disposed at a licensed waste disposal facility.		

Will the development proposal produce waste during its operational phase?	~~YES~~	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?	Plastic's 1100kg/month Paper/Carton 300 kg/month General Waste 1000 kg/month	
An accredited company will be appointed to provide a waste and recycling service to include the following:		

A full-time employee on site who separates waste material from recyclable/re-usable material. The employee is also responsible to keep the areas neat and clean. 30m3 Bins are provided for cardboard (K4), plastic and white paper as well as bins for general waste.

When the recycling bins are full, these will be collected with a roll on roll off truck.

General waste is collected on request (minimum once per week), weighed and transported to Vissershok Landfill for disposal. No hazardous waste is stored or transported.

See APPENDIX K15 - Waste Management for Stand 245 Atlantis

Will the development proposal require waste to be treated / disposed of on site?	~~YES~~	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	NAm^3	
NA		
If no, where and how will the waste be treated / disposed of? Please explain. Indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	Plastic's 1100kg/month Paper/Carton 300 kg/month General Waste 1000 kg/month	
General waste (1000 kg/month) will be collected on request (minimum once per week), weighed and transported to Vissershok Landfill for disposal. Remained to be recycled by accrediated service provider.		
Has the municipality or relevant authority confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? If yes, provide written confirmation from the municipality or relevant authority.	~~YES~~	NO
Will the development proposal produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	~~YES~~	NO
If yes, has this facility confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? Provide written confirmation from the facility.	~~YES~~	~~NO~~
Does the facility have an operating license? (If yes, please attach a copy of the licence.)	~~YES~~	~~NO~~

Facility name:	
Contact person:	
Cell:	Postal address:
Telephone:	Postal code:
Fax:	E-mail:

Describe the measures that will be taken to reduce, reuse or recycle waste:
NA

(b) Emissions into the atmosphere

Will the development proposal produce emissions that will be released into the atmosphere?	YES	~~NO~~
If yes, does this require approval in terms of relevant legislation?	YES	~~NO~~
If yes, what is the approximate volume(s) of emissions released into the atmosphere?	Unknown	m^3
Describe the emissions in terms of type and concentration and how these will be avoided/managed/treated/mitigated:		
According to DDA Environmental Engineers (appointed Air Quality Specialists who compiled the AEL application) - *"The potential volatile organic compounds (VOCs) emissions are minimal/negligible, and there will be no stacks or vents required to be installed at the facility. However, it is recommended to conduct once-off ambient air quality monitoring (ambient VOCs concentrations) at 3 selected locations within the building where extrusion takes place. This investigation will serve to verify that the possible emissions from the process are negligible."*		

3. WATER USE

(a) Indicate the source(s) of water for the development proposal by highlighting the appropriate box(es).

Municipal	~~Water board~~	~~Groundwater~~	~~River, Stream, Dam or Lake~~	~~Other~~	~~The project will not use water~~

Note: Provide proof of assurance of water supply (e.g. Letter of confirmation from the municipality / water user associations, yield of borehole)

~~(b) If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:~~	NA	m^3

(c) Does the development proposal require a water use permit / license from DWS?	~~YES~~	NO
If yes, please submit the necessary application to the DWS and attach proof thereof to this application as an Appendix.		

(d) Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:
No water will be used in the process. Water for domestic purposes, sanitation etc will be used.

4. POWER SUPPLY

(a) Describe the source of power *e.g.* municipality / Eskom / renewable energy source.

Municipality

(b) If power supply is not available, where will power be sourced?

NA

5. ENERGY EFFICIENCY

(a) Describe the design measures, if any, that have been taken to ensure that the development proposal will be energy efficient:

Energy efficient lighting

(b) Describe how alternative energy sources have been taken into account or been built into the design of the project, if any:

NA

6. TRANSPORT, TRAFFIC AND ACCESS

Describe the impacts in terms of transport, traffic and access.

It is not anticipated that that the proposed development will have a significant impact on traffic as the number of additional trips generated will not be significant. 48 people worked at the previous business which occupied the building bought by Swartland. Deliveries and collections would have also taken place. The site is an existing industrial site but the operational process is changing. During Construction 25 people will be on site and delivery vehicles. During Operations 50 people will be on site and trucks leaving the premises per day will be 7 (Based on maximum capacity). As such the increase in traffic during construction is considered zero and the increase in traffic during operations in negligible.

7. NUISANCE FACTOR (NOISE, ODOUR, etc.)

Describe the potential nuisance factor or impacts in terms of noise and odours.

- Noise due to construction machinery during the construction/development phase. Construction machinery may cause noise disturbance to the directly adjacent land users/ owners. It is not anticipated that the noise will be considerable and will only be temporary and the existing neighbours are industrial sites. Noise due to construction activities is unlikely to cause a nuisance to adjacent residential areas (approximately 2.28 km away).

- Noise due to industrial activities on site during operational phase (process equipment, trucks etc.). However, this will be in line with the zoning regulations of the site. Noise in line with legal requirements and site is situated on an existing industrial site surrounded by industrial properties. Noise due to operational activities is unlikely to cause a nuisance to adjacent residential areas (approximately 2.28 km away).

- Odours: These will be minimal during the construction phase and relatively minimal during the operational phase.

Note: Include impacts that the surrounding environment will have on the proposed development.

8. OTHER

According to DDA Environmental Engineers (appointed Air Quality Specialists who compiled the AEL application) -

"The potential volatile organic compounds (VOCs) emissions are minimal/negligible, and there will be no stacks or vents required to be installed at the facility. However, it is recommended to conduct once-off ambient air quality monitoring (ambient VOCs concentrations) at 3 selected locations within the building where extrusion takes place. This investigation will serve to verify that the possible emissions from the process are negligible."

SECTION G: IMPACT ASSESSMENT, IMPACT AVOIDANCE, MANAGEMENT, MITIGATION AND MONITORING MEASURES

1. METHODOLOGY USED IN DETERMINING AND RANKING ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

(a) Describe the **methodology** used in determining and ranking the nature, significance consequences, extent, duration and probability of potential environmental impacts and risks associated with the proposed development and alternatives.

Criteria	**Description**		
Nature	a description of what causes the effect, what will be affected, and how it will be affected.		
	Type	**Score**	**Description**
Extent (E)	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
Duration (D)	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent(P)	5	Will not cease
Magnitude (M)	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way
	High (H)	8	processes are altered to the extent that they temporarily cease

	Very high (VH)	10	results in complete destruction of patterns and permanent cessation of processes.
Probability (P) the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures
Significance (S)	Determined through a synthesis of the characteristics described above: **S = (E+D+M) x P** Significance can be assessed as low, medium or high		
Low: < 30 points:	The impact would not have a direct influence on the decision to develop in the area		
Medium: 30 – 60 points:	The impact could influence the decision to develop in the area unless it is effectively mitigated		
High: < 60 points:	The impact must have an influence on the decision process to develop in the area		
No significance	When no impact will occur or the impact will not affect the environment		
Status	Positive (+)		Negative (-)
The degree to which the impact can be reversed	Completely reversible (R)	90-100%	The impact can be mostly to completely reversed with the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
The degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
The degree to which the impact can be mitigated	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide a measure of mitigatibility
	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.

(b) Please describe any gaps in knowledge.

EAP is only knowledgeable with regards to the environmental and ecosystems aspects.

(c) Please describe the underlying assumptions.

In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

(d) Please describe the uncertainties.

Emisisons to atmosphere. See AEL application.

(e) Describe adequacy of the assessment methods used.

Based on the EAP's assessment information was provided to address the concerns and assess the impacts of the proposed development on the environment. Information as provided by the applicant and as collected by the EAP during site surveys etc. has been used to inform the current development proposals.

2. IDENTIFICATION, ASSESSMENT AND RANKING OF IMPACTS TO REACH THE PROPOSED ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE WITHIN THE SITE

Note: In this section the focus is on the identified issues, impacts and risks that influenced the identification of the alternatives. This includes how aspects of the receiving environment have influenced the selection.

(a) List the identified impacts and risks for each alternative.

Alternative 1:	**ALTERNATIVE 1** **DEVELOPMENT PHASE- ALTERNATIVE 1 - PREFFERED** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **OPERATIONAL PHASE- ALTERNATIVE 1 - PREFFERED** • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Low impact before mitigation and low impact with mitigation measures); • Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (Medium impact before mitigation and low impact with-mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 1 - PREFFERED** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures);

	• Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures);
Alternative 2:	**ALTERNATIVE 2** **DEVELOPMENT PHASE- ALTERNATIVE 2** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **OPERATIONAL PHASE- ALTERNATIVE 2** • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Low impact before mitigation and low impact with mitigation measures); • Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (Medium impact before mitigation and low impact with-mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 2** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive);

	• Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures);
Alternative 2:	**ALTERNATIVE 3** **DEVELOPMENT PHASE- ALTERNATIVE 3** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **OPERATIONAL PHASE- ALTERNATIVE 3** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Low impact before mitigation and low impact with mitigation measures); • Emissions and air quality (Medium impact before mitigation and low impact with-mitigation measures); • Increase in jobs (positive); • Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Major Hazard Installation - Emergency incidents (flash fires, jet fires, vapour cloud explosions, etc.) (High impact before mitigation and medium impact with-mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures); **DECOMMISSIONING AND CLOSURE PHASE- ALTERNATIVE 3** • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil and ground water pollution (low impact before mitigation and low impact with mitigation measures); • Storm water pollution (Medium impact before mitigation and low impact with mitigation measures); • Increase in jobs (positive);

	• Increase in traffic (low impact before mitigation and low impact with mitigation measures); • Noise (low impact before mitigation and low impact with mitigation measures); • Waste (low impact before mitigation and low impact with mitigation measures);
No-go Alternative:	No impacts, site to remain as is currently (vacant industrial site).

(b) Describe the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. (The EAP has to select the relevant impacts identified in blue in the table below for each alternative and repeat the table for each impact and risk).

Note: The EAP may decide to include this section as Appendix J to the BAR.

PLEASE SEE – APPENDIX J.

(c) Provide a summary of the site selection matrix.

Only one site was identified as a feasible site.

(d) Outcome of the site selection matrix.

Only one site was identified as a feasible site.

3. SPECIALIST INPUTS/STUDIES, FINDINGS AND RECOMMENDATIONS

Note: Specialist inputs/studies must be attached to this report as **Appendix G** and must comply with the content requirements set out in Appendix 6 of the EIA Regulations, 2014 (as amended). Also take into account the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "*One Environmental Management System*" and the EIA Regulations, 2014, any subsequent Circulars, and guidelines available on the Department's website (**http://www.westerncape.gov.za/eadp**).

Provide a summary of the findings and impact management measures identified in any specialist report and an indication of how these findings and recommendations have been included in the BAR.

AEL Application

According to DDA Environmental Engineers (appointed Air Quality Specialists who compiled the AEL application) -

"The potential volatile organic compounds (VOCs) emissions are minimal/negligible, and there will be no stacks or vents required to be installed at the facility. However, it is recommended to conduct once-off ambient air quality monitoring (ambient VOCs concentrations) at 3 selected locations within the building where extrusion takes place. This investigation will serve to verify that the possible emissions from the process are negligible."

MHI

"RISK RESULTS

In this study, risk has been calculated and presented in three forms:

 Individual Risk – the risk of death or serious injury based on the location of an individual, illustrated by risk contours around an installation. This calculation does not take into account the actual population in an area but quantifies risk of death and injury were a person to be located at various points around the site.

 Societal Risk – the risk of death or serious injury of a population, illustrated by an 'FN-Curve'. Societal risk takes into account populations around a facility and determines the maximum possible number of fatalities, the scenarios and associated frequencies of each scenario, expressed cumulatively on an FN-Curve. This will be illustrated in Section 9.3.

 Land-use Planning – Individual risk can also be used to determine the appropriateness of land uses around MHI facilities. To this end, the risk levels of: 1 x 10-5, 1 x 10-6 and 3 x 10-7 have been used as a basis for judging the appropriateness of land use around site.
Day and Night – the risk calculations take into account the operations that occur mainly during the day and those that occur mainly during the night, as well as population distribution during the day and during the night.

9.1 Interpreting the risk results
The reader is referred to Section 4.5 for a full description of the methodology used and the criteria for assessing risk as broadly acceptable, intolerable, or Tolerable if it can be proven to be As Low As Reasonably Practicable (ALARP).

9.2 Individual Risk Results
The individual risk contours illustrated in the figures below are of the type 'Location Specific Individual Risk (LSIR)' contours. These show the chance of death of a theoretical person if they are positioned at a particular location 24 hours per day, 365 days per year. LSIR is an overstatement of risk which is widely accepted as sufficiently conservative. In reality, workers will spend the length of a shift per day and not the entire day.

However, when a worker is off, another worker may replace her in doing her task, therefore, overall it can be considered that there is an individual at that particular point or area, all of the time. The risk acceptability criteria are described in Section 4.5.1 and the individual risk profiles for the site are illustrated in Figure 9.1 for people located outdoors.

Individual risk results for those located outdoors
Figure 9.1 illustrates individual risk of death for those located outdoors. Being located outdoors implies a lack of shielding for thermal radiation, as would be the case for those located indoors.

The contours extend as follows:
 The 1 x 10-5 / year contour: At this risk level and above, individual risk is intolerable for members of the public. This contour extends beyond the site to the east, over currently vacant land.
 The 1 x 10-6 / year contour: This is the level below which risk is broadly acceptable and the indicator for MHI status as described in 1.5. This contour extends offsite east over currently vacant land. This indicates a risk over the servitude that is elevated but still is within 'ALARP' bounds as described in Section 4.5. This means risk over this area can be tolerated if proven that it is As Low As Reasonably Practicable.

Risk below the 1 x 10-6 / year level (indicated by the areas located outside this contour) is considered broadly acceptable.

Risk Judgement:
Because the 1 x 10-6 /year risk contour extends beyond the site boundary, the site is considered a Major Hazard Installation.

9.3 Societal risk results
Societal risk takes into account populations around the site to determine risk tolerability. In this study, this is presented in the form of an FN-Curve, which illustrates scenarios with the potential to cause death, as well as considers the frequency of each scenario. The frequencies of the scenarios are then summed to show a cumulative risk of death, i.e. the frequency (F) of causing N or more fatalities against the number of fatalities, N.

As illustrated in Figure 9.2 there are tolerability limits as suggested by SANS 1461:2018 (see Section 4.5.2), as illustrated by the red and blue sloped lines. Above the red line is the region where societal risk is intolerable; below the blue line is the region where societal risk is broadly acceptable. Between these lines is the region where risk can be tolerated if it is proven to be ALARP (see Section 4.5.2).
Description of the site's FN Curve (societal risk results) Day time societal risk is based upon activities onsite which take place only during the day and upon day-time population levels, and similarly

night time risk is based upon activities taking place at night and also on populations of people during the night. The FN Curve given below is a combination of day time and night time risk.

As seen in Figure 9.2, the maximum number of fatalities which can occur from a single event occurring onsite is just over 120 people. The associated frequency of this event is low, at approximately 1.2 x 10-8 / year. This high number of fatalities was driven by the jet fire, flash fire and vapour cloud explosion events observed in the Consequence Analysis Section 7. In that section the hazard ranges for jet fires and flash fires covered large areas around the site. However, the infrequent nature of those events (such as catastrophic failure of equipment) drove the societal risk down and societal risk is assessed as Broadly Acceptable.

Risk Judgement:
Societal Risk for the site is assessed as 'Broadly Acceptable'.

10 IMPACT ON SURROUNDING FACILITIES
From the consequence and risk results in the report, impacts were seen over surrounding facilities. These are summarised in this section.

10.1 Impact on surrounding major hazard installations
As can be seen in the preceding sections there is consequence impact over New Era (to the north), the vacant plot to the east of the site, the site under construction to the south of the site over Charles Matthews Street, as well as Bokomo Foods (to the south-east).

Consequence Effects on surrounding MHIs Section 7 Consequence Analysis showed jet fire, flash fire and vapour cloud explosion impact over New Era and Bokomo Foods. The result of these events might be initiation of loss of containment events at those sites, due to elevated thermal radiation and overpressure levels.

Emergency procedures for dealing with events taking place at the site should involve notification of neighbours to ensure that they are able to evacuate as necessary to minimise injuries and fatalities.

10.2 Impact on the public and other installations
There is impact over other non-MHI neighbours to the south (the construction site) as well as immediately the vacant plot east of the site. Should the site receive notification of proposed developments in those areas, consequence and risk analysis information compiled in this report should be used to inform developers of the risk due to the site's operations.

Recommendations:
- Carry out advertisement and notification as required by provision 2(1) of the MHI Regulations.
- Involve notification of neighbours in the site's emergency procedures.
- Compile an Emergency Response Plan for the site, in line with SANS standard 1514 for Emergency Response Plans for MHIs, and considering local by-laws.
- Road tankers are designed to SANS 1518 and adequately maintained (confirm with suppliers);
- Operator presence at all times during offloading;
- Drained area for tanker offloading linked to a separator system;
- Installation of Emergency Stop Buttons at various locations around the site;
- Ensure inspections are performed on equipment carrying hazardous materials as per relevant SANS standards;
- Consider physical barriers between tanks and pathways and other equipment to avoid collisions leading to losses of containment;
- Ensure that clear routes for personnel and equipment movement are demarcated;
- Ensure adequate training of personnel on the handling of hazardous materials;
- Implement ignition source control within the raw materials, blowing agent and XPS storage areas;
- Ensure adequate separation of XPS storage area from other flammable materials.
- Ensure bunding and containment systems are designed per SANS standards, as appropriate;

- Consider installation of gas detection, heat detection and other detection systems, as appropriate, within the blowing agent storage area;
- Where appropriate, consider possible compartmentalisation of tanks to prevent complete loss of hazardous material in case of leaks.
- Consider installation of measures to decrease consequence distances in case of fire, e.g. fire walls in the vicinity of blowing agent storage, however, taking into account the potential for further confinement as a result.
- Ensure that the site's existing fire system is checked by a qualified Fire Engineer and if need be, upgraded.
- Re-do the MHI Risk Assessment after 5 years, or re-do the assessment if details of the installations change significantly, or if a loss of containment event occurs."

4. ENVIRONMENTAL IMPACT STATEMENT

Provide an environmental impact statement of the following:

(i) A summary of the key findings of the EIA.

Impacts

1. Employment opportunities - Positive
2. Disturbance to subsurface geological layers
3. Soil and ground water pollution
4. Storm water pollution
5. Emissions and air quality
6. Increase in traffic
7. Noise
8. MHI – Emergency Incidents
9. Waste

Most impacts are rated low after mitigation. The preferred alternative with underground storage tanks that are designed and installed according to SANS standards as well as bunding for above ground tanks to SANS standards ensures soil, ground water and storm water are protected from pollution.

The No-Go option will result in the site remaining as is presently a vacant industrial facility.

(ii) Has a map of appropriate scale been provided, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers?	YES	~~NO~~

(iii) A summary of the positive and negative impacts that the proposed development and alternatives will cause in the environment and community.

1. Employment opportunities - Positive
2. Disturbance to subsurface geological layers
3. Soil and ground water pollution
4. Storm water pollution
5. Emissions and air quality
6. Increase in traffic
7. Noise
8. MHI – Emergency Incidents

Most impacts are rated low after mitigation. The preferred alternative with underground storage tanks that are designed and installed according to SANS standards as well as bunding for above ground tanks to SANS standards ensures soil, ground water and storm water are protected from pollution.

The No-Go option will result in the site remaining as is presently a vacant industrial facility for an industrial site.

5. IMPACT MANAGEMENT, MITIGATION AND MONITORING MEASURES

(a) Based on the assessment, describe the impact management, mitigation and monitoring measures as well as the impact management objectives and impact management outcomes included in the EMPr. The EMPr must be attached to this report as Appendix H.

The key mitigation measure is impact avoidance. Where adverse impacts cannot reasonably be prevented, construction should be managed through the effective implementation of the Construction EMP. Please refer to the EMPr for more details on the mitigation and management measures.

- Emissions – monitoring of OELs
- Noise – monitoring

*See specifics in EMPr

(b) Describe any provisions for the adherence to requirements that are prescribed in a Specific Environmental Management Act relevant to the listed activity or specified activity in question.

Not applicable.

(c) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

The applicant is ultimately responsible for the implementation of the EMP and the financial cost of all environmental control measures. In accordance with the requirements of the EMP, the applicant must ensure that any person acting on their behalf complies with the conditions / specifications contained in this EMP. In addition, an Environmental Control Officer would be appointed as the onsite implementing agent and would have the responsibility to ensure that their responsibilities are executed in compliance with the EMP. Thus, the applicant has the ability to implement the recommended management, mitigation, and monitoring measures, as appropriate.

(d) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

Not applicable.

(e) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

Not applicable.

(f) Describe any assumptions, uncertainties, and gaps in knowledge which relate to the impact management, mitigation and monitoring measures proposed.

EAP is only knowledgeable with regards to the environmental impacts, biodiversity and ecosystems aspects. GAPs include scientific consensus on emissions and odours emitted. In undertaking the investigation and compiling this report, the following has been assumed:

•The information provided by the client is accurate and unbiased;
•The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
•Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

SECTION H: RECOMMENDATIONS OF THE EAP AND SPECIALISTS

(a) In my view as the appointed EAP, the information contained in this BAR and the documentation attached hereto is sufficient to make a decision in respect of the listed activity(ies) applied for.	YES	~~NO~~

(b) If the documentation attached hereto is sufficient to make a decision, please indicate below whether, in your opinion, the listed activity(ies) should or should not be authorised:		
Listed activity(ies) should be authorised:	YES	~~NO~~
Provide reasons for your opinion		
All possible impacts on the environment have been assessed and can be mitigated and managed. The assessment did not lead to any fatal flaws if the development is approved, provided that the facility is operated in terms of all relevant applicable legislation and the EMPr management activities implemented.		
(c) Provide a description of any aspects that were conditional to the findings of the assessment by the EAP and Specialists which are to be included as conditions of authorisation.		
Compliance with EMPr. MM Risk have been appointed to develop a comprehensive emergency plan. This emergency plan will also include procedures for use in the event of a nuclear emergency for all phases of construction and operation of the proposed plant. This plan must be submitted to the City of Cape Town for approval prior to the commencement of construction.		
(d) If you are of the opinion that the activity should be authorised, please provide any conditions, including mitigation measures that should in your view be considered for inclusion in an environmental authorisation.		
Compliance with EMPr. MM Risk have been appointed to develop a comprehensive emergency plan. This emergency plan will also include procedures for use in the event of a nuclear emergency for all phases of construction and operation of the proposed plant. This plan must be submitted to the City of Cape Town for approval prior to the commencement of construction.		

(e) Please indicate the recommended periods in terms of the following periods that should be specified in the environmental authorisation:		
i.	the period within which commencement must occur;	5 years from EA granted
ii.	the period for which the environmental authorisation is granted and the date on which the development proposal will have been concluded, where the environmental authorisation does not include operational aspects;	10 years
iii.	the period for which the portion of the environmental authorisation that deals with non-operational aspects is granted; and	10 years
iv.	the period for which the portion of the environmental authorisation that deals with operational aspects is granted.	Until Decommission or Closure

SECTION I: APPENDICES

The following appendices must be attached to this report:

APPENDIX			Confirm that Appendix is attached
Appendix A:	**Locality map**		X
Appendix B:	**Site development plan(s)**		X
	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;		X
Appendix C:	**Photographs**		X
Appendix D:	**Biodiversity overlay map**		X
Appendix E:	**Permit(s) / license(s) from any other Organ of State, including service letters from the municipality.**		NA
	Appendix E1:	**Copy of comment from HWC.**	NA
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses report, proof of notices, advertisements and any other public participation information as is required in Section C above.**		X
Appendix G:	**Specialist Report(s)**		X
Appendix H:	**EMPr**		X
Appendix I:	**Additional information related to listed waste management activities (if applicable)**		NA
Appendix J:	**If applicable, description of the impact assessment process followed to reach the proposed preferred alternative within the site.**		X
Appendix K:	**Any Other (if applicable).**		X

SECTION J: DECLARATIONS

Signed declarations to be included in Final BAR.