yellowtree ADVISORY

ALVI'S CREATIONS CC

ATMOSPHERIC IMPACT REPORT

2025-07-18

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1. Executive Summary

Alvi's Creations CC proposes to establish an aluminium recycling facility in Elsies River, Cape Town, which will be classified as an air quality Listed Activity as per Subcategory 4.4 (*Secondary Aluminium Production*) of G.N. 893 of 2013, as amended. This means that Alvi's Creations will need an Atmospheric Emissions Licence (AEL) to lawfully operate the proposed facility.

As Alvi's Creations requires an AEL to operate, the facility triggers Activity 6 in the Environmental Impact Assessment (EIA) Regulations' Listing Notice 2.[1] Therefore, Alvi's Creations must also obtain environmental authorisation through a full scoping and environmental impact report (S&EIR) process before establishing and commencing the secondary aluminium production activities at the site.

This Atmospheric Impact Report (AIR) acts as a specialist air quality assessment to support the EIA process and AEL application. The checklists that are included in Appendix B detail the requirements for AIRs and specialist reports and indicate the page numbers on which the required information is located in this report.

This AIR has been compiled per the requirements that are listed in the *Regulations Prescribing the Format of an Atmospheric Impact Report*[2] and the requirements in Section 7.2.2 of the Code of Practice in the *Regulations Regarding Air Dispersion Modelling*.[3] The forms that are contained in the *Regulations Prescribing the Format of the Atmospheric Impact Report* were completed and are contained in Sections 3 to 5 of this report. Section 7 of this report contains the information that is required by the *Regulations Regarding Air Dispersion Modelling*.

An air dispersion model (ADM) was conducted using a Level 2 approach in terms of the *Regulations Regarding Air Dispersion Modelling* to assess the impact of the proposed facility on ambient air quality in the area. The AERMOD model was used to predict ambient concentrations of particulate matter that is smaller than 10 µm (PM_{10}), particulate matter that is smaller than 2.5 µm ($PM_{2.5}$), hydrogen fluoride (HF), volatile organic compounds (VOCs) and ammonia (NH_3). The ambient concentrations that were predicted were combined with baseline ambient air quality data that were obtained from an ambient air quality monitoring station in the vicinity of the site. These cumulative concentrations were then compared to the National Ambient Air Quality Standards (NAAQS).

Overall, the results of this AIR indicate that the proposed Alvi's Creations is expected to have a limited impact on the ambient air quality, both in the immediate vicinity of the proposed facility and at nearby sensitive receptors. Predicted pollutant concentrations from the facility alone (non-cumulative) were below the NAAQS and relevant international guidelines. Additionally, cumulative concentrations were not predicted to alter compliance with the NAAQS, i.e., baseline pollutant concentrations that were below the NAAQS remain below them, and those above remain above when the proposed facility's impact is included.

Based on these findings, Yellow Tree holds the view that the proposed Alvi's Creations CC may be authorised from an air quality perspective. To ensure compliance with the minimum emissions standard

[1] GN 984 of 2013

[2] GNR 747 of 2013

[3] GNR 533 of 2014

(MES) for PM, the installation of appropriate abatement equipment is required. The applicant intends to install an Electrostatic Adsorption Filter on the aluminium furnace.

2. Introduction

Alvi's Creations CC proposes to establish an aluminium recycling facility in Elsies River, Cape Town. The facility will be classified as an air quality Listed Activity as per Subcategory 4.4 (*Secondary Aluminium Production*) of G.N. 893 of 2013, as amended. Subcategory 4.4 refers to "*Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under subcategory 4.21*)." Thus, Alvi's Creations will require an Atmospheric Emission Licence (AEL) to operate.

As Alvi's Creations requires an AEL to operate, the facility triggers Activity 6 in EIA Listing Notice 2 and must, therefore, obtain environmental authorisation through a full scoping and environmental impact report (S&EIR) process before the secondary aluminium production activities at the site can be established and commenced.

This Atmospheric Impact Report (AIR) acts as a specialist air quality assessment to support the EIA process and AEL application. The purpose of the AIR is to evaluate the impact that the proposed secondary aluminium production facility will have on ambient air quality in the area.

This AIR report has been prepared per the requirements that are listed in Section 7.2.1 of the Code of Practice in the *Regulations Regarding Air Dispersion Modelling*.[4] A checklist showing that the requirements have been met is available in Appendix B of this report.

[4] GNR 533 of 2014

3. Enterprise Information

3.1. Enterprise Details

Enterprise Name	Alvi's Creations CC
Enterprise Registration Number (Registration Numbers if Joint Venture)	2006/083666/23
Registered Address	1 Steenbras Road, Sand Industria, Athlone, Cape Town, 7764
Postal Address	1 Steenbras Road, Sand Industria, Athlone, Cape Town, 7764
Telephone Number (General)	021 370 0041
Industry Sector	Aluminium Recycling
Land Use Zoning as per Town Planning Scheme	General Industrial

Name of Responsible Officer (ACO)	Donovan Leander
Name of Emission Control Officer (ECO)	Donovan Leander
Telephone Number	021 370 0041
Cell Phone Number	068 470 4330
Email Address	Recycle354@gmail.com
After Hours Contact Details	068 470 4330

3.2. Location and Extent of Plant

Physical Address of the Plant	14 8th Avenue, Elsies River, Cape Town
Description of Site (Where No Street Address)	Erf 9874 and 9875
Coordinates of Approximate Centre of Operations	-33.915858, 18.568717
Extent (km^2)	0.00089
Elevation Above Mean Sea Level (m)	31
Province	Western Cape
Metropolitan/District Municipality	City of Cape Town
Local Municipality	City of Cape Town
Designated Priority Area (if applicable)	N/A

Description of surrounding land use (within a 5 km radius)

The proposed Alvi's Creations facility is situated on the corner of 16th Street and 8th Avenue in Elsies River Industrial, an area zoned for General Industrial and Commercial Business purposes. The immediate surroundings are primarily characterised by light industrial and business activities.

Within a 5 km radius of the site, the broader land use context includes a mix of residential, industrial, and commercial zones. Key surrounding areas include:

- Riverton residential area, located approximately 0.3 km west of the site, adjoining the Ruyterwacht residential neighbourhood.
- Richmond, a residential suburb, lies approximately 0.8 km north of the facility.
- Parow, a well-established residential area, is situated about 1 km north-east of the site.
- Beaconvale, located approximately 1.1 km east, is a mixed-use area with industrial and business activity. It extends for around 1.7 km eastward before transitioning into the Parow Valley residential area. Further east, approximately 2.8 km from the facility, lies the Klipkop residential area.
- The Leonsdale residential area lies approximately 0.2 km south and south-east of the proposed site, transitioning into the Elsies River residential neighbourhood further south.
- To the south-west (approximately 0.9 km away) is the Epping Garden Village residential area. Just beyond, at approximately 1.3 km south-west, lies the Epping Industrial area.

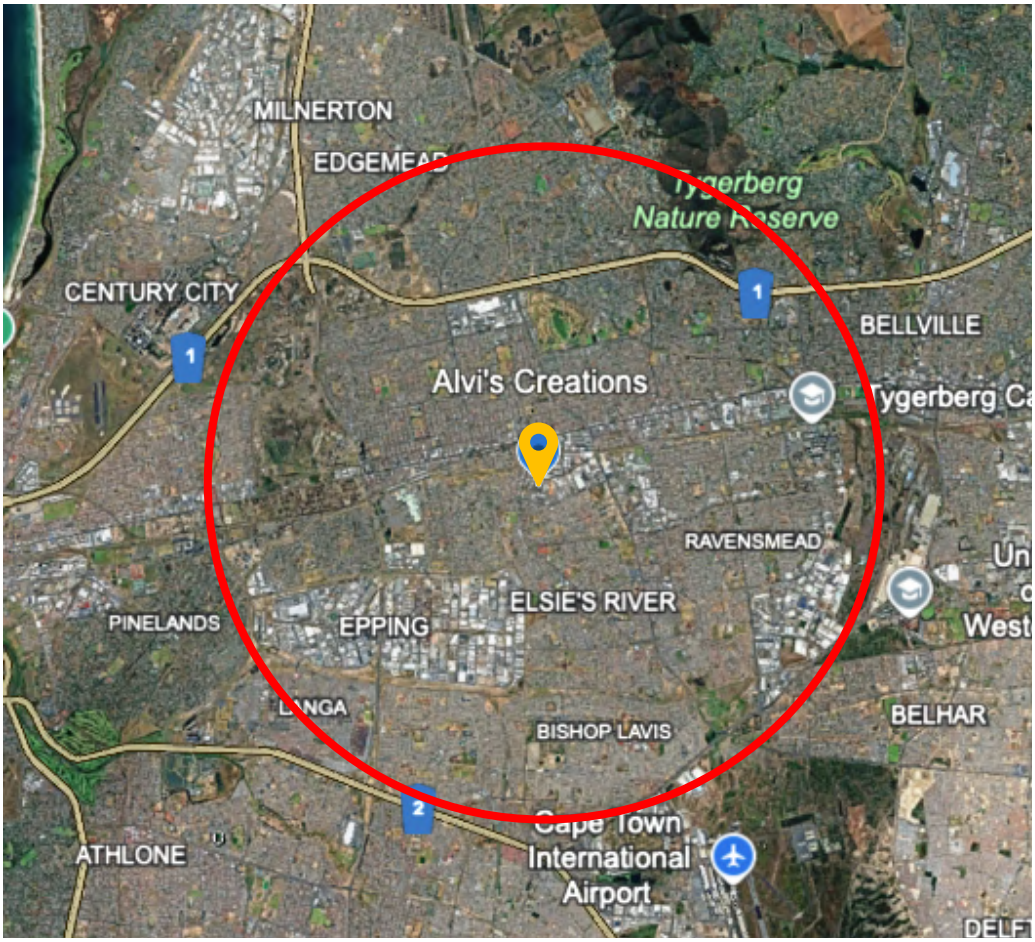


Figure 1: A Map Indicating the Surrounding Land Use within a 5 km Radius of the Proposed Facility

3.3. Atmospheric Emissions Licence and Other Authorisations

Licence Type	Licence Number
Environmental Authorisation	TBD
Atmospheric Emissions Licence	TBD

4. Nature of Process

4.1. Listed Activities

Category	Category of Listed Activity	Subcategory	Name of the Listed Activity	Description of the Listed Activity
4	Metallurgical Industry	4.4	Secondary Aluminium Production	Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under Subcategory 4.21)

4.2. Process Description

Aluminium soda cans will be delivered to the proposed facility using company-owned trucks and will be stored in the yard. The cans will arrive in baled form, stacked on wooden pallets, ready for processing.

Each batch of baled aluminium cans will be manually loaded into an electric induction furnace, which requires approximately one and a half hours to melt about 500 kg of material. The entire melting process will be conducted using an electric induction furnace.

Once molten, the aluminium will be cast onto a conveyor casting belt over a 15-minute period, forming aluminium ingots. The ingots will then be cooled, bundled, and strapped. Each bundle will weigh approximately 200 kg and will be stored in an on-site warehouse as the final product. The process will yield approximately 4 tonnes of aluminium ingots per day, with an expected monthly output of around 120 tonnes.

Final product bundles will be dispatched based on customer orders, either loaded onto flatbed trucks or into 20-foot containers, depending on the transport requirements.

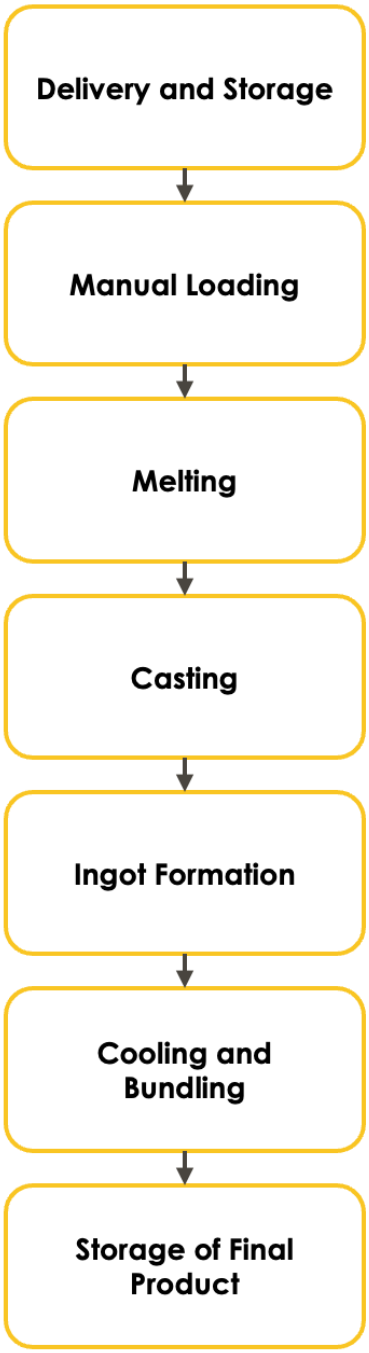


Figure 2: Summary of the Process Flow

4.3. Unit Processes

Unit Process	Unit Process Function	Batch/Continuous Process
Delivery and Storage of Aluminium Soda Cans	Delivery and storage of raw material required to produce the aluminium ingots	Batch Process
Aluminium Electric Induction Furnace	Melting and casting of aluminium products	Batch Process

4.4. Hours of Operation

Unit Process	Operating Hours	Days of Operation per Year
Aluminium Electric Induction Furnace	8 hrs/day	365

5. Technical Information

5.1. Raw Materials Used

Raw Material Type	Proposed Maximum Permitted Consumption Rate (Quantity)	Units (Quantity/Period)
Scrap Aluminium	126	Tonnes per month

5.2. Production Rates

Product Name	Design Production Capacity (Quantity)	Units (Quantity/Period)
Aluminium Ingots	120	Tonnes per month

By-Product Name	Maximum Production Capacity Permitted (Quantity)	Units (Quantity/Period)
Aluminium Dross	6.65	m^3 per month
Dust	<1	m^3 per month

5.3. Materials Used in Energy Sources

Materials for Energy	Sulphur (%)	Ash (%)	Design Consumption Rate (Quantity)	Units (Quantity/ Period)
Electricity	-	-	1 384	kWh per day

5.4. Appliances and Abatement Equipment Control Technology

Appliance Name	Appliance Type/Description	Appliance Function/Purpose
Wet Electrostatic Adsorption Filter Serving Aluminium Furnace	Electrostatic Adsorption Filter	Reduce PM emissions

6. Atmospheric Emissions

6.1. Point Source Parameters

Point Source Code	Point Source Name	Latitude	Longitude	Height of Release Above Ground (m)	Height Above Nearby Building (m)	Diameter at Stack Tip / Vent Exit (m)	Actual Gas Exit Temp (°C)	Actual Gas Volumetric Flow (m^3/hr)	Actual Gas Exit Velocity (m/s)	Emission Hours	Type of emission (continuous /batch)
SV0001	Aluminium Furnace Stack	-33.9158972	18.5686305	8	3.375	0.5	80	10 000[5]	14.15	8	Batch

[5] Obtained from the design specification sheet provided

6.2. Emission Unit Maximum Emission Rates (Normal Operating Conditions)

Point Source Number	Point Source Name	Pollutant Name	Average emission rate		Duration of emissions
			(mg/Nm³)	Averaging period	
TBC	Aluminium Furnace	Particulate Matter	30	Hourly	Continuous when Operating
		Total fluorides measured as hydrogen fluoride	1		
		Total volatile organic compounds	40		
		Ammonia	30		

6.3. Maximum Emission Rates (Start-Up, Shut-Down, Upset and Maintenance Conditions)

No significant variation in the emissions profile is anticipated with start-up, shut-down, upset and maintenance conditions

6.4. Emergency Incidents

Not applicable.

7. Impact of Enterprise on the Receiving Environment: Air Dispersion Model

7.1. Facility Information

7.1.1. Project Location

Project Area

Figure 3 shows the portion of land on which the proposed Alvi's Creation facility is to be located. The buildings that are shown in blue, were modelled to account for potential building downwash effects.

Figure 3: Satellite Map Showing the Proposed Facility

Area Maps

A satellite map showing the 10 km surrounding the proposed facility is presented in Figure 4, and a topographical map showing the 10 km surrounding the proposed facility is presented in Figure 5.

Figure 4: Satellite Map Showing the Area 10 km surrounding the Proposed Facility

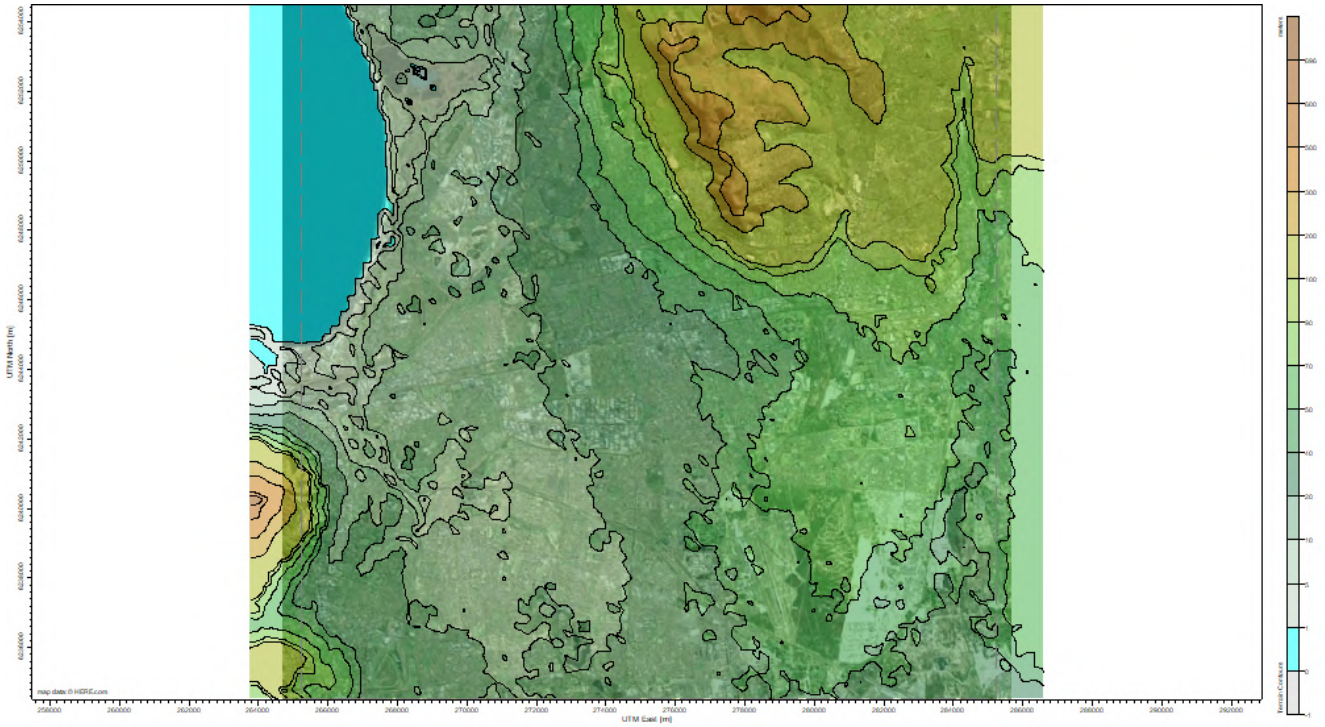


Figure 5: Topographical Map Showing the Area 10 km surrounding the Proposed Facility

A street map of the 10 km surrounding the proposed facility is shown in Figure 6 below. Roads and railroads are indicated. Hospitals and clinics/health care centres, which are classified as sensitive receptors, are indicated with red markers on the map and are identified in Table 1 below.

Figure 6: Street Map Showing the Area 10 km surrounding the Proposed Facility

Table 1: Hospitals and Clinics Surrounding the Proposed Facility

Number	Name	Distance from Alvi's Creations
1	Tygerberg Hospital	4.2 km E
2	Panorama Medical Centre	4.4 km N
3	Mediclinic Louis Leipoldt Hospital	4.4 km ENE

Many schools, also classified as sensitive receptors, were identified in the 10 km surrounding the proposed facility, and these were too numerous to mark on the map. A list of 59 schools that were identified in the 5 km surrounding the proposed facility is provided in Table 2 below.

Table 2: Schools in the 5 km Surrounding the Proposed Facility

School	Distance	School	Distance
Eldene Primary School	0.5 km SSW	Florida Secondary School	3.6 km ESE
Elsies River Secondary Adult Learning Centre	0.7 km S	Bishop Lavis Secondary School	3.6 km SES
Valhalla Secondary School	0.7 km SW	Arcadia Primary School	3.8 km SSW
Elsies River High School	0.9 km S	Valpark Primary School	4.0 km S
Norwood Central Primary	1.3 km S	Ikamvalethu Secondary School	4.1 km SW
I Can Centre	1.4 km S	Zimasa Primary School	4.1 km SW
President High School	1.4 km N	Bonteheuwel High School	4.1 km SSW
Range High School	1.8 km S	Tygerberg Campus	4.1 km E
Northlink College Goodwood Campus	1.9 km NW	Sunflower Educare Centre	4.2 km SW
Parow West Primary School	1.9 km NNE	The Settlers High School	4.2 km NE
Balvenie Primary School	2.0 km SSE	Parkvale Primary School	4.3 km S
Webner Street Primary	2.4 km SE	Isilimela Comprehensive School	4.3 km SW
Emmanuel Christian Academy	2.5 km WNW	Montana Primary School	4.4 km S
Goodwood Park Primary School	2.8 km NW	Abacus Daycare	4.4 km W
Kid Start Junior Academy	2.9 km N	Vredelust Primary School	4.5 km NE
Thornton Primary School	3.0 km W	Factreton Primary School	4.6 km W
Northlink College Wingfield Campus	3.0 km WNW	Akasiapark Primary School	4.6 km NW
CL Wilmot Primary School	3.0 km SE	Panorama Primary School	4.6 km N
St Andrew's Technical High School	3.0 km SSE	Umyezo Children's Garden	4.8 km S
Parow North Primary School	3.2 km NNE	Ilitha Day Care and Educare Centre	4.8 km SW
Pinedene Primary School	3.2 km ESE	Boundary Primary School	4.8 km SSW
Vorentoe Primary School	3.2 km SE	Montevideo Primary School	4.9 km S
De Tyger Primary School	3.3 km NE	Wingfield Primary School	4.9 km WNW
Ravensmead High School	3.3 km SE	The Lifezone Dream Centre	4.9 km WNW
Goodwood Park Bewaarskool	3.4 km NW	Incy Wincy College	5 km S
Tygersig Primary School	3.4 km SE	La Gratitude Pre-Prinary School	5.0 km WSW
College of Cape Town - Thornton Campus	3.5 km WSW	Windermere High School	5.0 km WNW
Tygerberg High School	3.5 km NE	Edgemead High School	5.0 km NNW
Parow High School	3.5 km NE	Kiddies World	5.0 km N
Northway Primary School	3.6 km ESE		

On-site meteorological data was obtained from the Weather Research and Forecasting Mesoscale Model Interface Program (WRF-MMIF) model, and thus, no meteorological stations have been indicated on the map.

Figure 7 shows a regional satellite map of the 50 km surrounding the proposed facility, and Figure 8 shows a topographical map of the 50 km from the proposed facility. Because the proposed facility will be situated in an urban area, numerous other emission sources exist in the region.

Figure 7: Satellite Map Showing the 50 km surrounding the Proposed Facility

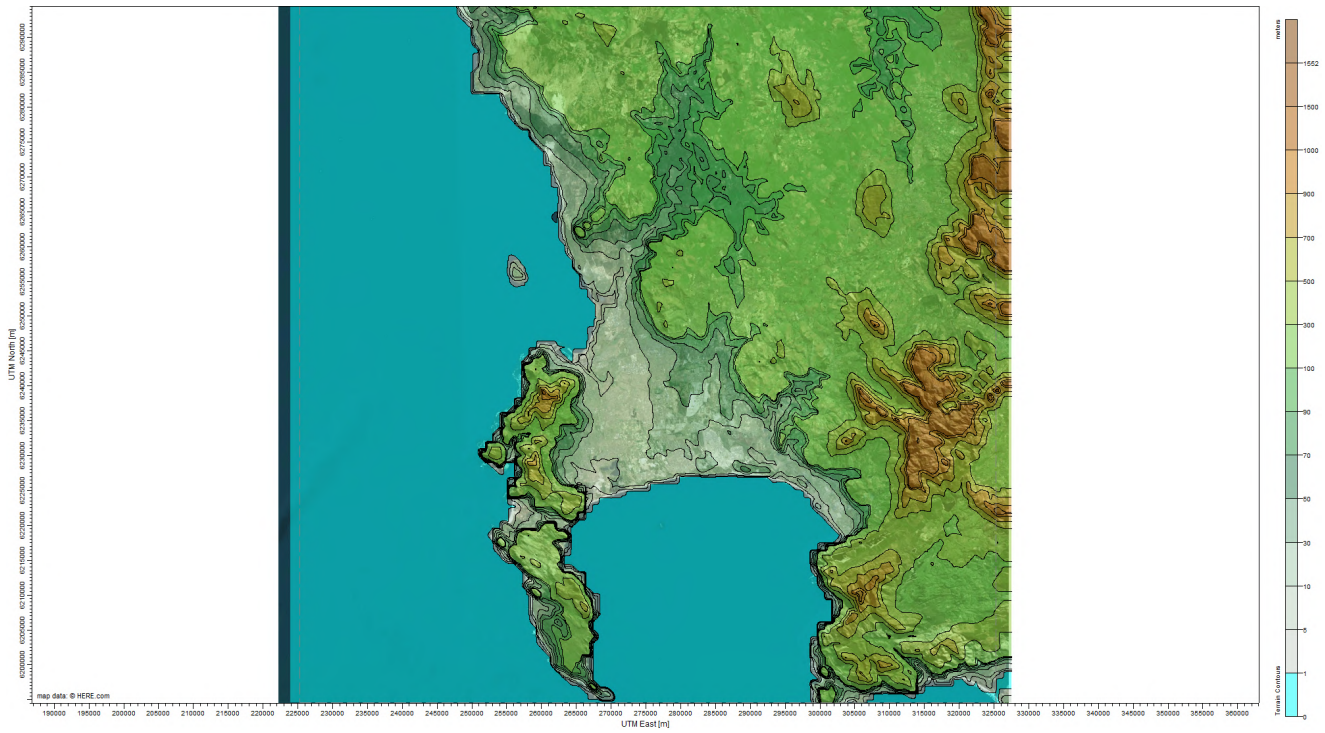


Figure 8: Topographical Map Showing the 50 km surrounding the Proposed Facility

7.1.2. Geophysical and Elevation Data

Land use in the 3 km surrounding the proposed facility has less than 35 % vegetation coverage. Thus, the area was determined to be urban, as per Section 6.3 of the *Code of Practice for Air Dispersion Modelling in Air Quality Management in South Africa,* 2014 (referred to hereafter as the Code of Practice).[6] Shuttle Radar Topography Mission (SRTM) 1 Version 3 (30-metre resolution) elevation data was obtained from WebGIS.

[6] Contained in the Regulations Regarding Air Dispersion Modelling (G.N.R. 533 of 2014)

7.2. Emissions Characterisation

7.2.1. Emissions Characteristics

The proposed Alvi's Creations facility will be classified as an air quality listed activity under Subcategory 4.4 (*Secondary Aluminium Production*) of G.N. 893 of 2013, as amended.

The pollutants that have been identified in G.N. 893 of 2013 from Subcategory 4.4 activities as potentially having a significant effect on the environment are particulate matter (PM), total fluorides measured as hydrogen fluoride (HF), total volatile organic compounds (TVOCs), and ammonia (NH_3). The minimum emission standards (MESs) for these pollutants are shown in Figure 9.

Description:	Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under subcategory 4.21).		
Application:	All installations.		
Substance or mixture of substances		**Plant status**	**mg/Nm^3 under normal conditions of 273 Kelvin and 101.3kPa.**
Common name	**Chemical symbol**		
Particulate matter	N/A	New	30
		Existing	100
Total fluorides measured as Hydrogen fluoride	F as HF	New	1
		Existing	5
Total volatile organic compounds	N/A	New	40
		Existing	40
Ammonia	NH_3	New	30
		Existing	100

Figure 9: MESs for Subcategory 4.4 (*Secondary Aluminium Production*) Activities

TVOCs is a collective term for an extensive range of organic chemicals. South Africa's National Ambient Air Quality Standards (NAAQS), as set out in G.N. 1210 of 2009 and G.N. 846 of 2012 specify standards for only one TVOC, which is benzene. Thus, benzene is the TVOC upon which focus has been placed in this report.

7.2.2. Operating Scenarios

Normal operating conditions were simulated in the dispersion model. Start-up, standby and shutdown conditions were not simulated, as these are not expected to be significantly different to normal operating conditions.

7.2.3. Emissions Inventory and Source Parameters

Section 3.3 of the Code of Practice states that MESs should be used as the basis for emissions inventories when conducting air dispersion modelling for licensing purposes. Using the MES concentrations, along with stack flow rate, results in emission rates that represent the maximum allowable emission rate (i.e., with the source operating *at* the MES concentration, which is the legal limit).

According to the Code of Practice, if the dispersion model predicts that pollutant concentrations will exceed the NAAQS, then the design of the facility should be reviewed. This may include the installation of abatement equipment, as seen in the excerpt in Figure 10 below.

> local sources and regional background. If the sum of background and predicted concentrations are (C_B + C_P) is more than the NAAQS, the applicant must review the design of the facility (including pollution control equipment) to ensure compliance with NAAQS. Compliance assessments must

Figure 10: Excerpt from the *Regulations Regarding Air Dispersion Modelling*

The proposed furnace is to be fitted with an electrostatic adsorption filter that is anticipated to reduce emissions to levels that are below the MESs.

MESs are stipulated in concentration units of mg/Nm^3. However, for AERMOD, emission rates in g/s are required. The flowrate of gas in the stack is needed to convert the MES concentrations into absolute emission rates. Along with pollutant emissions rates, stack temperature and velocity are required to be input into AERMOD as source parameters because these parameters affect the dispersion of pollutants from the stack.

The gas flowrate and temperature were provided by Alvi's Creations. Gas velocity was calculated based on the flowrate and stack diameter that were provided.

The MESs (in mg/Nm^3) and respective emission rates (in g/s) that were calculated for each pollutant are shown in Table 3 below. The electric induction furnace was modelled to operate for 8 hours a day, 365 days a year, as indicated by Alvi's Creations.

Table 3: Emissions Rates

Pollutant	MES Concentration (mg/Nm³)	Emission Rate (g/s)
PM	30	0.0644
HF	1	0.0021
VOCs	40	0.0859
NH_3	30	0.0644

While the MESs apply to total PM, the NAAQS apply specifically to PM_{10} (the fraction of PM that is smaller than 10 µm) and $PM_{2.5}$ (the fraction of PM that is smaller than 2.5 µm). To estimate the proportion of PM_{10} and $PM_{2.5}$ within total PM emissions, Yellow Tree referred to emission factors published in the European Environment Agency (EEA) *Air Pollutant Emission Inventory Guidebook* for Secondary Aluminium Production.[7] These emission factors were used to estimate the proportion of PM_{10} and $PM_{2.5}$ in total PM.

Table 4: Emissions Rates including PM_{10} and $PM_{2.5}$

Pollutant	MES Concentration (mg/Nm³)	Emission Rate (g/s)
PM_{10}	-	0.0451
$PM_{2.5}$	-	0.0177
HF	1	0.0021
VOCs	40	0.0859
NH_3	30	0.0644

7.3. Meteorological Data

Pre-processed on-site and upper air WRF-MMIF meteorological data for a period of three full calendar years (2022, 2023 and 2024) was purchased from Lakes Environmental. The WRF model is recommended for use in the Code of Practice. The base station elevation is 39.19 metres. The data was pre-processed using AERMET View Version 24142. No missing hours or calm periods were noted.

[7] https://www.eea.europa.eu/en/analysis/publications/emep-eea-guidebook-2023/part-b-sectoral-guidance-chapters/2-industrial-processes-and-product-use/2-c-metal-production/2-c-3-aluminium-production-2023/@@download/file

7.4. Ambient Impact Analysis

7.4.1. National Ambient Air Quality Standards

South Africa's National Ambient Air Quality Standards were promulgated in G.N. 1210 of 2009, with further standards for $PM_{2.5}$ promulgated in G.N. 486 of 2012. The following standards are applicable to PM_{10} and $PM_{2.5}$.

Table 5: PM_{10} NAAQS

Averaging Period	Concentration (µg/m³)	Frequency of Exceedance	Compliance Date
24 hours	120	4	Immediate – 31 December 2014
	75	4	1 January 2015
1 year	50	0	Immediate – 31 December 2014
	40	0	1 January 2015
The reference method for the determination of the particulate matter fraction of suspended particulate matter shall be EN 12341			

Table 6: $PM_{2.5}$ NAAQS

Averaging Period	Concentration (µg/m³)	Frequency of Exceedance	Compliance Date
24 hours	65	4	Immediate – 31 December 2015
	40	4	1 January 2016 – 31 December 2029
	25	4	1 January 2030
1 year	25	0	Immediate – 31 December 2015
	20	0	1 January 2016 – 31 December 2029
	15	0	1 January 2030
The reference method for the determination of $PM_{2.5}$ fraction of suspended particulate matter shall be EN 14907			

Table 7: Benzene NAAQS

Averaging Period	Concentration (µg/m³)	Frequency of Exceedance	Compliance Date
1 year	10 (3.2 ppb)	0	Immediate – 31 December 2014
	5 (1.6 ppb)	0	1 January 2015
The reference methods for the sampling and analysis of benzene shall either be EPA compendium method TO-14 A or method TO-17			

For PM_{10} and $PM_{2.5}$, daily average and annual average standards are specified. Four exceedances of the daily average standard are permitted in each calendar year.

For benzene only an average standard is specified.

7.4.2. International Guidelines

No South African NAAQS exist for hydrogen fluoride (HF) and ammonia (NH_3). Therefore, internationally recognised standards were used as a guideline in this report. Where a range of values was available, the lowest value was selected to ensure a conservative approach.

Table 8: HF Ambient Guidelines[8]

Averaging Period	International Standards	Source
1 hour	4.9 µg/m³	Alberta Provincial Guideline
24 hours	0.85 – 1.1 µg/m³	Manitoba Provincial Guideline, Canadian Ambient Air Quality Objectives

Table 9: NH_3 Ambient Guidelines[9]

Averaging Period	International Standards	Source
1 hour	170 – 3 200 µg/m³	Alberta Provincial Guideline, California and North Caroline State Guidelines
8 hours	640 – 1 800 µg/m³	Louisiana and Vermont State Guidelines
24 hours	100 – 1 742 µg/m³	New Hampshire, Oklahoma, Washington and Wisconsin State Guidelines
1 year	17 – 208 µg/m³	US Agency for Toxic Substances and Disease Registry, US Environmental Protection Agency, California and Texas State Guidelines

[8] Toxico-Logic Consulting Inc, 2006, Assessment Report on Hydrogen Fluoride for Developing Ambient Air Quality Objectives for Alberta Government

[9] WBK and Associates Inc., 2004, Assessment Report on Ammonia for Developing Ambient Air Quality Objectives for Alberta Government

7.4.3. Background Concentrations

Ambient air quality monitoring data was sourced from the South African Air Quality Information System (SAAQIS). Table 10 below shows the monitoring stations from which data was sourced and the distance between the station and the proposed Alvi's Creations facility.

Table 10: Ambient Air Quality Monitoring Stations

Station	Distance and Direction from RDM	Parameters Monitored
Goodwood	1.55 km N	PM_{10}, $PM_{2.5}$
Bellville South	6.9 km E	PM_{10}, $PM_{2.5}$

PM_{10}

The figures below show the daily average concentrations of PM_{10} at the Goodwood and Bellville South monitoring stations. Summaries of the data are shown in Table 11 and Table 12.

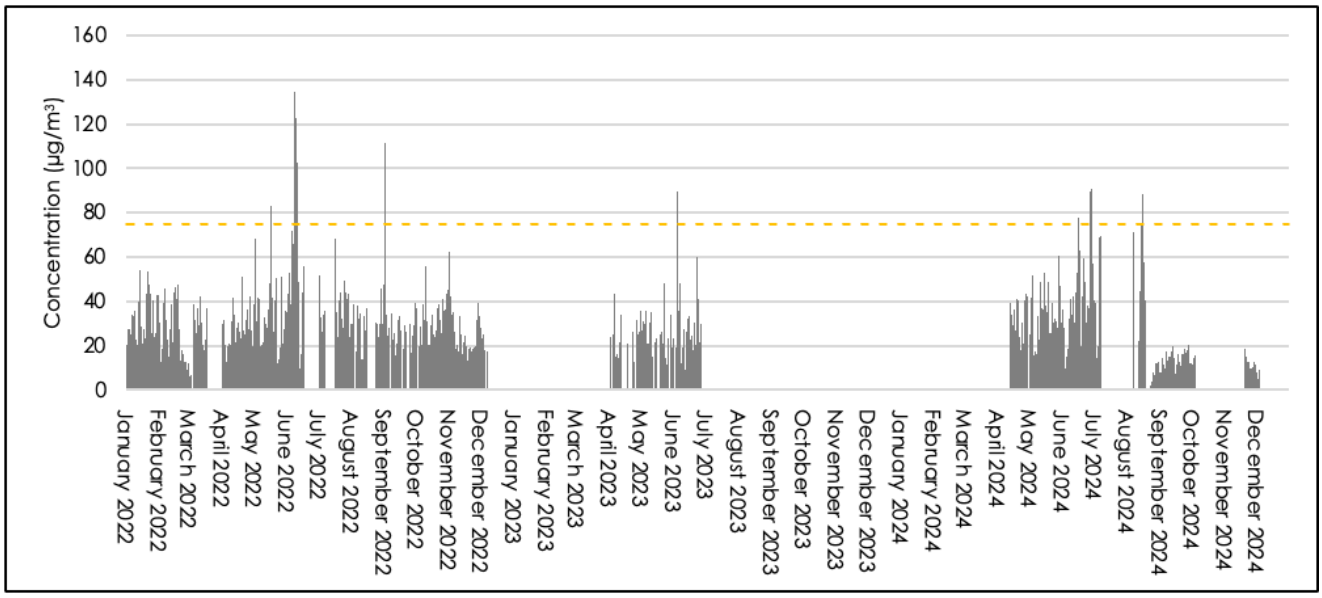


Figure 11: Daily Average PM_{10} Concentrations at the Goodwood Monitoring Station

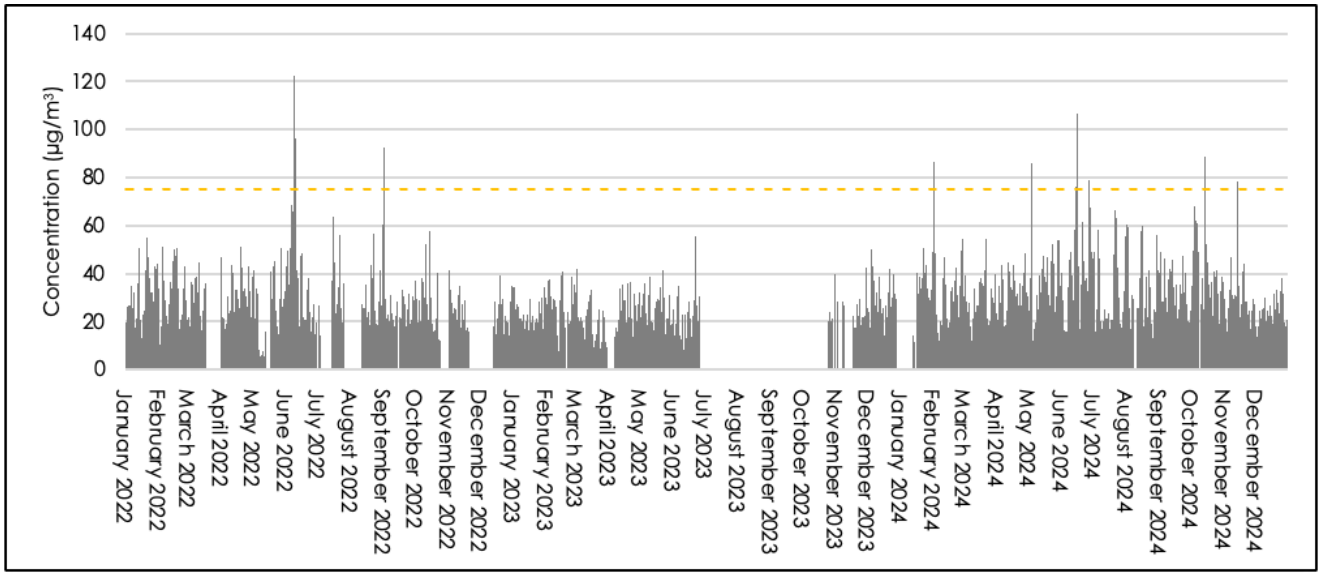


Figure 12: Daily Average PM_{10} Concentrations at the Bellville South Monitoring Station

Table 11: Daily PM_{10} Ambient Air Quality Monitoring Data Summary

Number of Exceedances per Annum	2022	2023	2024	Limit
Goodwood [10]	5	1	4	4
Bellville South [11]	4	0	7	

Table 12: Annual PM_{10} Ambient Air Quality Monitoring Data Summary

Concentration (µg/m³)	2022	2023	2024	Limit
Goodwood	31.3	26.5	27.0	40
Bellville South	29.9	24.3	33.0	

The Goodwood monitoring station was compliant with the daily NAAQS in 2023 and 2024. Non-compliance with the daily NAAQS was observed in 2022. It should be noted that data availability for 2023 and 2024 was below 45 %. Therefore, it is likely that more exceedances would have been experienced had monitoring occurred throughout the year.

The Belville South monitoring station was compliant with the daily NAAQS in 2022 and 2023. Non-compliance with the daily NAAQS limit was observed in 2024.

Both monitoring stations complied with the annual NAAQS in all three years.

The data from Bellville South monitoring station was used as the baseline data when assessing compliance with NAAQS. Overall, it had the most complete data, with above 75 % data availability in both 2022 and 2024, and is in reasonable proximity to the proposed facility.

[10] 78.1 %, 18.4 % and 42.6 % data availability in 2022, 2023 and 2024, respectively.

[11] 78.4 %, 60.3 % and 95.1 % data availability in 2022, 2023 and 2024, respectively.

$PM_{2.5}$

The figures below show the daily average concentrations of $PM_{2.5}$ at the Goodwood and Bellville South monitoring stations. Summaries of the data are shown in Table 13 and Table 14.

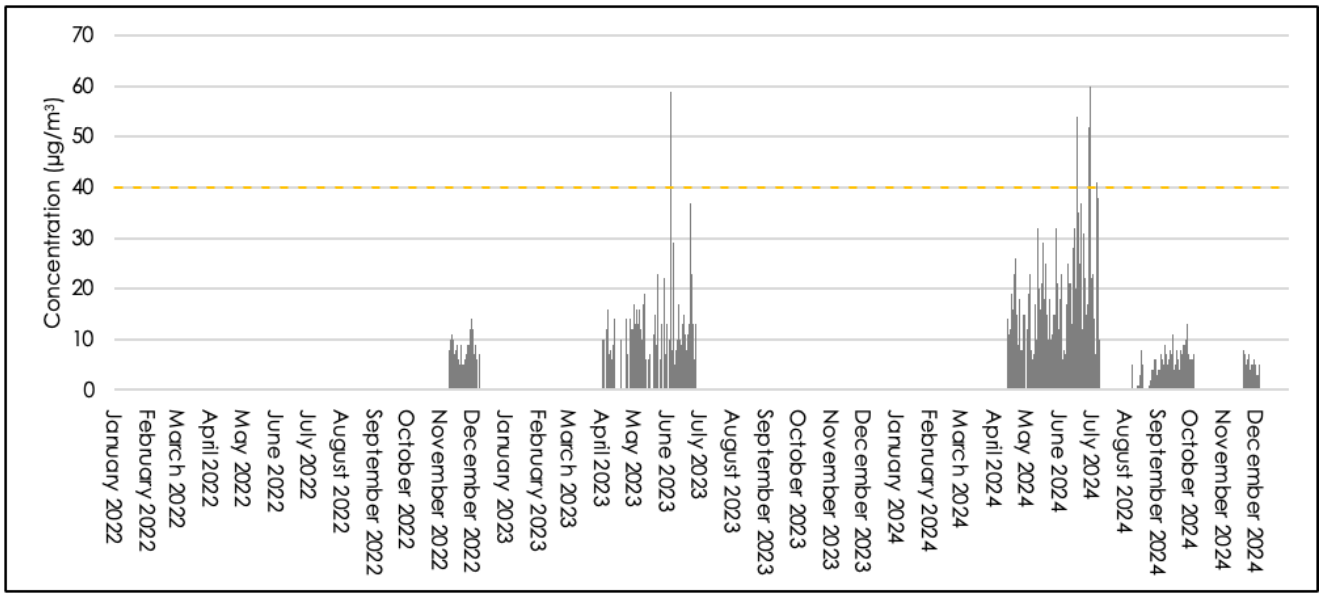


Figure 13: Daily Average $PM_{2.5}$ Concentrations at the Goodwood Monitoring Station

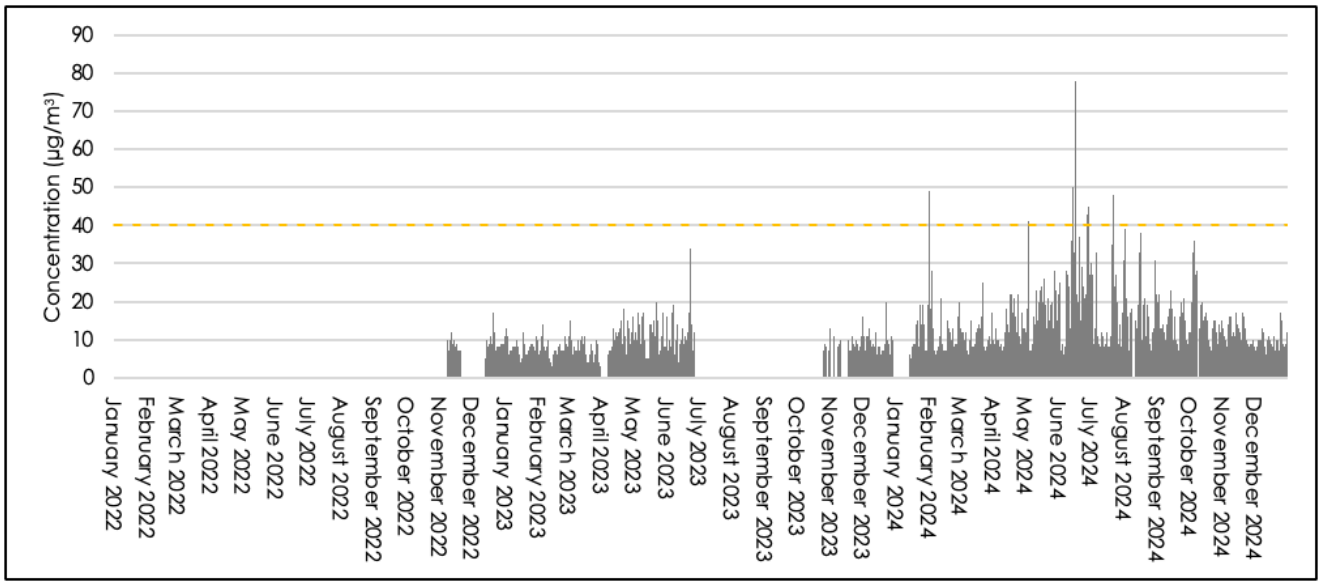


Figure 14: Daily Average $PM_{2.5}$ Concentrations at the Bellville South Monitoring Station

Table 13: Daily $PM_{2.5}$ Ambient Air Quality Monitoring Data Summary

Number of Exceedances per Annum	2022	2023	2024	Limit
Goodwood [12]	0	1	4	4
Bellville South [13]	0	0	8	

Table 14: Annual $PM_{2.5}$ Ambient Air Quality Monitoring Data Summary

Concentration (µg/m³)	2022	2023	2024	Limit
Goodwood	8.1	12.8	12.5	20
Bellville South	8.8	9.4	15.0	

The Goodwood monitoring station was compliant with the daily and annual NAAQS in all three years. However, data availability for all three years was below 45 %. Therefore, it is likely that more exceedances would have been experienced should monitoring have occurred throughout the year.

The Belville South monitoring station was compliant with the daily NAAQS in 2022 and 2023. Non-compliance with the daily NAAQS limit was experienced in 2024. It should be noted that data availability for 2022 was below 10 %. Therefore, it is possible that more exceedances would have been experienced had monitoring occurred throughout the year.

The data from the Bellville South monitoring station was used as the baseline data when assessing compliance with NAAQS. Overall, it had the most complete data, with above 60 % data availability in both 2023 and 2024 and is in reasonable proximity to the proposed facility.

[12] 7.7 %, 18.4 % and 42.6 % data availability in 2022, 2023 and 2024, respectively.

[13] 8.8 %, 60.3 % and 95.1 % data availability in 2022, 2023 and 2024, respectively.

7.5. Modelling Procedure

7.5.1. Model Used

Based on Section 2.1.2 of the Code Practice, a Level 2 assessment was performed, and the AERMOD model was chosen. The model was conducted using the AERMOD View Version 11.01.1 interface and AERMET View Version 11.0.1 pre-processor.

An elevated terrain height setting was chosen as the default setting for AERMOD. Surface characteristics in the pre-processed meteorological data were obtained from an MMIF-generated AERSURFACE output file.

7.5.2. Modelled Emissions

The following emission rates were modelled:

Source	Source Location (UTM)	Source Parameters	Pollutant	Emission Rate ($g/m^2/s$)
TBC	X: 275221.60 Y: 6244507.01	Stack Diameter: 0.5 m Stack Height: 8 m Temperature: 80 ˚C Velocity: 14.15 m/s	PM_{10}	0.0451
			$PM_{2.5}$	0.0177
			HF	0.0021
			VOCs	0.0859
			NH_3	0.0644

7.5.3. Receptors

Three sets of receptors were used in this model:

1. A cartesian plant boundary around Erf 9874 and 9875 (indicated in red on the following map). Intermediate receptors were placed at 50-metre intervals along the boundary of the facility (indicated by green markers). The plant boundary essentially acts as a set of receptors for the surrounding businesses and members of the public. The maximum concentrations at and close to the plant boundary were assessed.
2. Sensitive receptors (indicated by yellow markers) were placed at the boundaries of the adjacent residential areas rather than at individual hospitals and schools within them.
3. A uniform cartesian grid with 50-metre spacing up to 200 metres from the facility (shown by the blue markers and is the area of maximum impact) and 100-metre spacing beyond this (indicated by the grey grid).

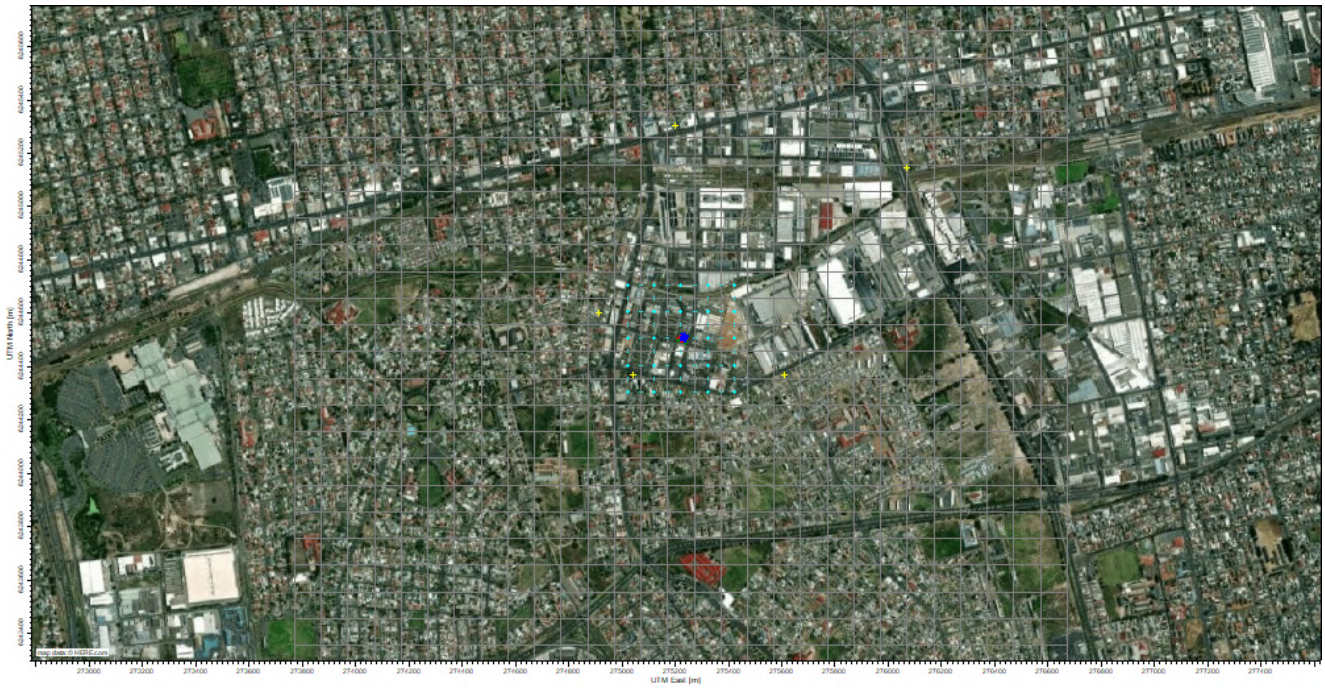


Figure 15: Receptor Map

Figure 16: Magnified Receptor Map

7.6. Results

As per the Code of Practice, all short-term averages (24 hours or less) were presented as 99th percentile concentrations.

In the three-year period, there were 1 096 days. The 99th percentile values for the daily average values for PM_{10} and $PM_{2.5}$ are thus the 11th highest value recorded (1 096 x 0.01 = 10.96).

For 8-hourly concentrations, there are three eight-hour periods in each day: 1 096 x 3 = 3 288. Thus, the 99th percentile value is the 33rd highest value (3 288 x 0.01 = 32.88).

For hourly concentrations, it was calculated that there were 1 096 x 24 = 26 304 hours in the 2022, 2023 and 2024 calendar years. The 99th percentile value is thus the 263rd highest value recorded (26 304 x 0.01 = 263.04).

No results inside the plant boundary were assessed in accordance with Section 5.2 of the Code of Practice, as these are subject to occupational air quality standards and not the NAAQS.

For PM_{10} and $PM_{2.5}$ the maximum concentrations that were predicted at the fenceline and surrounds, and sensitive receptors were added to the background concentrations to give cumulative concentrations, as per Section 6.2 of the Code of Practice. These cumulative concentrations were assessed against the NAAQS. For short-term averages, this is a very conservative way to assess the contribution of a facility to ambient air quality, as it assumes that the maximum concentration that was predicted will be experienced every hour/day in the period under assessment. This will not be the case in reality.

The results are presented in the following sections.

7.6.1. PM_{10}

Table 15: Non-Cumulative PM_{10} Results

Ave. Period	Parameter	Max Fence Line	Riverton	Richmond	Parow	Leonsdale South West	Leonsdale South East	NAAQS
Daily	**Conc. (µg/m³)**	4.726	0.0599	0.0203	0.0078	0.0686	0.0654	**75**
	Location	X: 275247.29 Y: 6244519.05	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.91	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2023/02/20	2024/10/15	2022/07/19	2023/01/24	2022/06/04	2022/05/11	-
Annual	**Conc. (µg/m³)**	1.351	0.0106	0.0064	0.0011	0.0182	0.0161	**40**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	-	-	-	-	-	-	-

According to the dispersion model, PM_{10} concentrations are predicted to remain below the daily (75 µg/m³) and annual (40 µg/m³) NAAQS, both in the immediate vicinity of the facility and at nearby sensitive receptors.

As no exceedances are predicted, the red isopleths in Figure 17 and Figure 18 represent the areas of highest modelled concentrations rather than non-compliances.

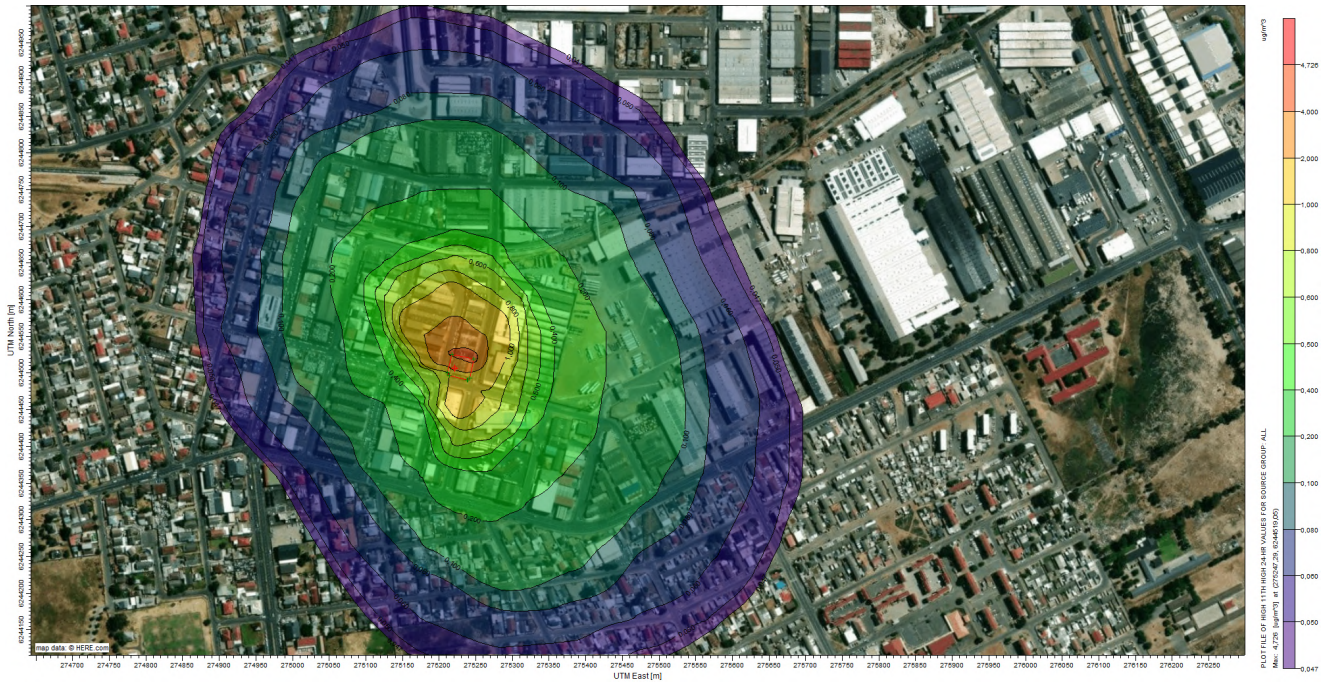


Figure 17: Isopleths of *Daily* PM_{10} Concentrations

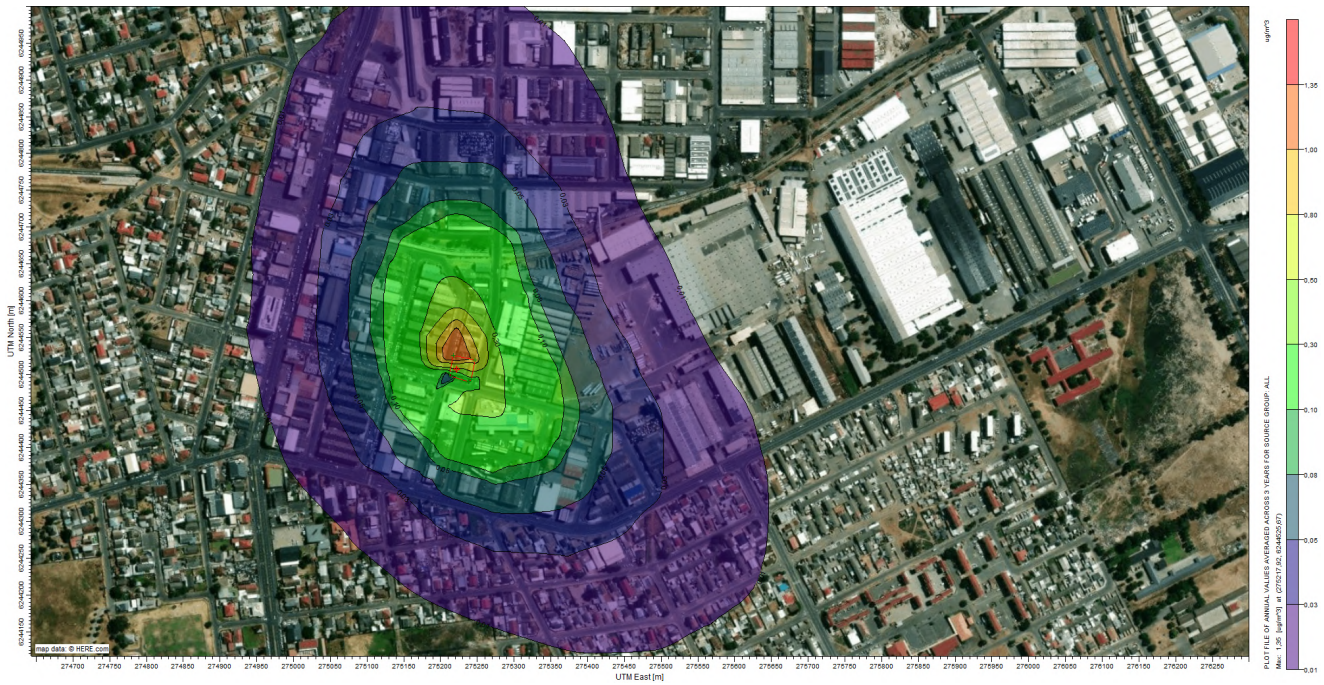


Figure 18: Isopleths of *Annual* PM_{10} Concentrations

When conducting air dispersion modelling for a facility that has yet to be developed, it is important to account for existing sources of air pollution in the area. This is typically achieved by combining modelled incremental emissions from the proposed facility with baseline ambient air quality data to estimate cumulative pollutant concentrations. These cumulative values provide a more realistic assessment of expected pollutant levels in the environment.

For annual averages, determining the cumulative concentrations involves adding the predicted maximum annual concentrations to the baseline annual average concentrations for the period under review. Compliance with the NAAQS limit value was then assessed. Table 16 below presents the results of this cumulative impact assessment.

Table 16: Cumulative *Annual* PM_{10} Results

Concentration (µg/m³)	2022	2023	2024	Limit
Baseline (Bellville South)	29.9	24.3	33.0	40
Fence Line	31.2	25.6	34.4	40
Riverton	29.9	24.3	33.1	40
Richmond	29.9	24.3	33.0	40
Parow	29.9	24.3	33.0	40
Leonsdale South West	29.9	24.3	33.1	40
Leonsdale South East	29.9	24.3	33.1	40

No exceedances of the annual NAAQS of 40 µg/m³ were predicted.

Predicting the cumulative impact of a facility on short-term average (hourly and daily) pollutant concentrations is more complex than for annual averages. This is because short-term datasets contain a large number of values for each year (8 760 for hourly and 365 for daily averages), making it difficult to determine a single baseline that applies across all times and locations.

The *British Columbia Air Quality Dispersion Modelling Guidelines*, which form the basis for much of South Africa's Code of Practice, recommend applying a single baseline value uniformly across all hours or days of the year and throughout the modelling domain. For Level 2 air dispersion models, the guidelines advise using the **98th percentile of measured concentrations** as the baseline for each averaging period.

Modelled short-term maximum concentrations are then added to these baseline values to estimate cumulative concentrations. These cumulative values are compared to the NAAQS to assess compliance. It is important to note that this is a conservative approach, as it assumes that the maximum concentration will occur every hour of every day over the assessment period – an unlikely scenario in reality.

The cumulative daily average PM_{10} results are presented in Table 17.

Table 17: Cumulative *Daily* PM_{10} Results

Concentration (µg/m³)	2022	2023	2024	Limit
Baseline (Bellville South)	64.3	41.9	68.7	75
Fence Line	69.1	46.6	73.4	75
Riverton	64.4	41.9	68.7	75
Richmond	64.4	41.9	68.7	75
Parow	64.4	41.9	68.7	75
Leonsdale South West	64.4	41.9	68.7	75
Leonsdale South East	64.4	41.9	68.7	75

No exceedances of the daily NAAQS of 75 µg/m³ were predicted.

7.6.2. $PM_{2.5}$

Table 18: Non-Cumulative $PM_{2.5}$ Results

Ave. Period	Parameter	Max Fence Line	Riverton	Richmond	Parow	Leonsdale South West	Leonsdale South East	NAAQS
Daily	**Conc. (µg/m³)**	1.855	0.0235	0.0080	0.0031	0.0269	0.0257	**40**
	Location	X: 275247.29 Y: 6244519.05	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.91	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2023/02/20	2024/10/15	2022/07/19	2023/01/24	2022/06/04	2022/05/11	-
Annual	**Conc. (µg/m³)**	0.530	0.0042	0.0025	0.0004	0.0071	0.0063	**20**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	-	-	-	-	-	-	-

According to the model, $PM_{2.5}$ concentrations will remain below the daily (40 µg/m³) and annual (20 µg/m³) NAAQS, both immediately around the facility and at the sensitive receptors.

As no exceedances are predicted, the red isopleths in Figure 19 and Figure 20 represent the areas of highest modelled concentrations rather than non-compliances.

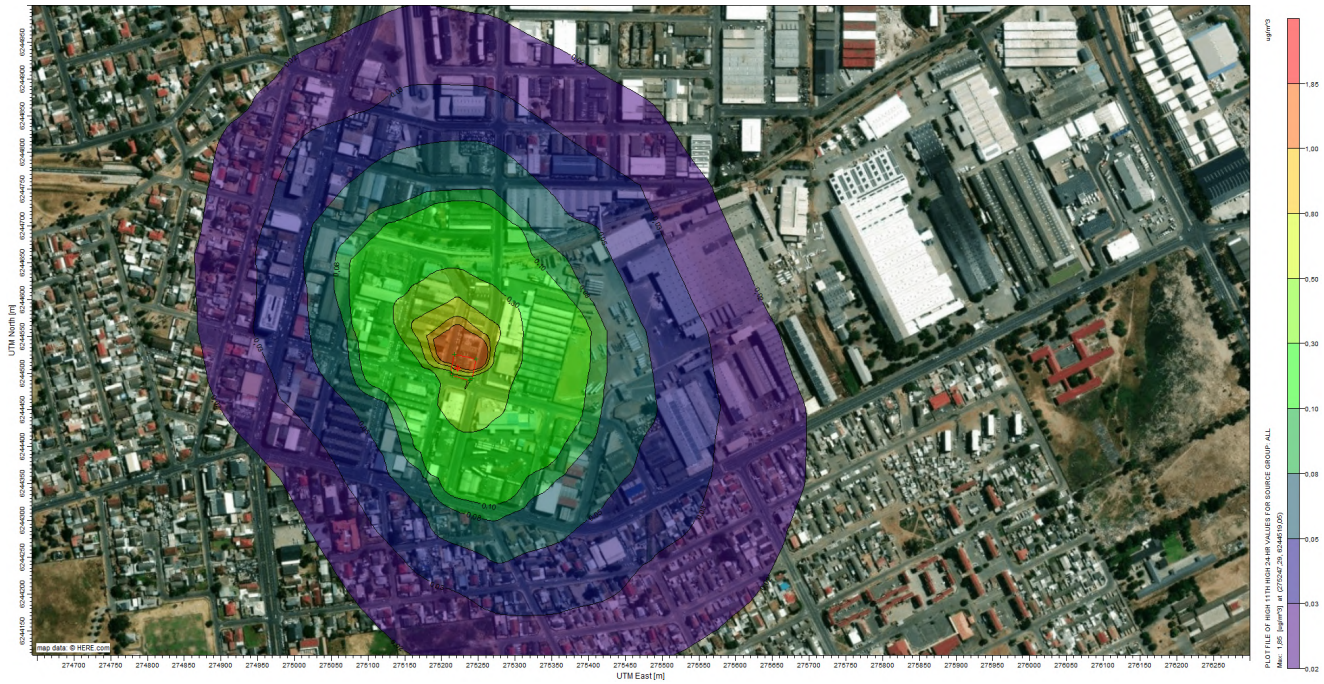


Figure 19: Isopleths of *Daily* $PM_{2.5}$ Concentrations

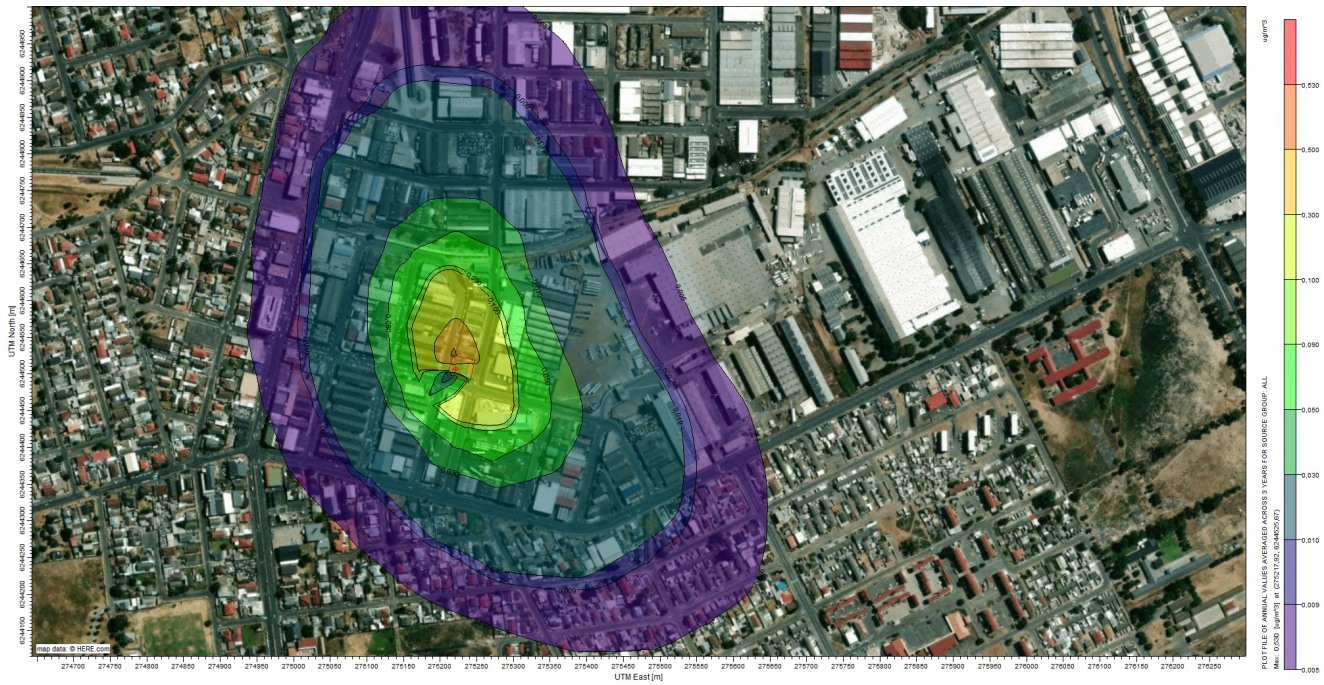


Figure 20: Isopleths of *Annual* $PM_{2.5}$ Concentrations

The cumulative results are shown in Table 19 and Table 20.

Table 19: Cumulative *Daily* $PM_{2.5}$ Results

Concentration (µg/m³)	2022	2023	2024	Limit
Baseline (Bellville South)	13.9	17.6	41.0	40
Fence Line	15.8	19.5	42.9	40
Riverton	13.9	17.6	41.0	40
Richmond	13.9	17.6	41.0	40
Parow	13.9	17.6	41.0	40
Leonsdale South West	13.9	17.6	41.0	40
Leonsdale South East	13.9	17.6	41.0	40

No exceedances of the daily NAAQS of 40 µg/m³ were predicted in 2022 and 2023. However, exceedances were predicted in 2024. This is attributed to baseline data from the Bellville South monitoring station, which already exceeded the daily NAAQS in 2024 when assessed using the 98th percentile value. As a result, the cumulative daily $PM_{2.5}$ concentrations also exceeded the NAAQS. Thus, the proposed facility is not predicted to alter the compliance status at the Bellville South monitoring station.

Table 20: Cumulative *Annual* $PM_{2.5}$ Results

Concentration (µg/m³)	2022	2023	2024	Limit
Baseline (Bellville South)	8.8	9.4	15.0	20
Fence Line	9.4	9.9	15.6	20
Riverton	8.8	9.4	15.0	20
Richmond	8.8	9.4	15.0	20
Parow	8.8	9.4	15.0	20
Leonsdale South West	8.8	9.4	15.1	20
Leonsdale South East	8.8	9.4	15.0	20

No exceedances of the annual NAAQS of 20 µg/m³ were predicted.

7.6.3. HF

Table 21: Non-Cumulative HF Results

Ave. Period	Parameter	Max Fence Line	Riverton	Richmond	Parow	Leonsdale South West	Leonsdale South East	Int. Guideline
Hourly	**Conc. (µg/m³)**	0.684	0.00684	0.00281	0.00095	0.00737	0.00872	**4.9**
	Location	X: 275241.48 Y: 6244492.79	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.96	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2024/11/24, 9 hour	2024/10/21, 16 hour	2022/04/14, 12 hour	2022/05/04, 11 hour	2023/11/07, 13 hour	2024/07/26, 12 hour	-
Daily	**Conc. (µg/m³)**	0.220	0.0028	0.00095	0.00036	0.0032	0.0031	**0.85**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2024/07/04	2024/10/15	2022/07/19	2023/01/24	2022/06/04	2022/05/11	-

According to the model, HF concentrations will remain well below the hourly (4.9 µg/m³) and daily (0.85 µg/m³) international guidelines, both immediately around the facility and at the sensitive receptors.

As no exceedances are predicted, the red isopleths in Figure 21 and Figure 22 represent the areas of highest modelled concentrations rather than non-compliances.

Because no baseline data is available for HF, cumulative concentrations were not assessed.

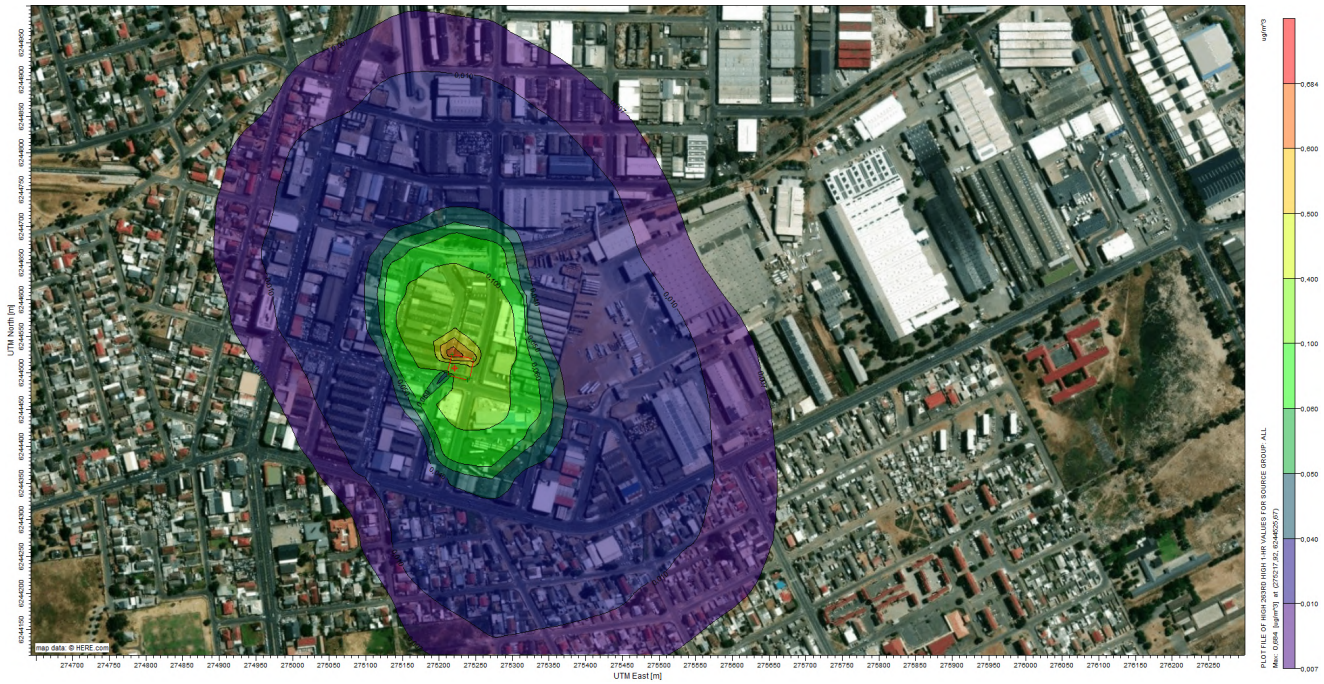


Figure 21: Isopleths of *Hourly* HF Concentrations

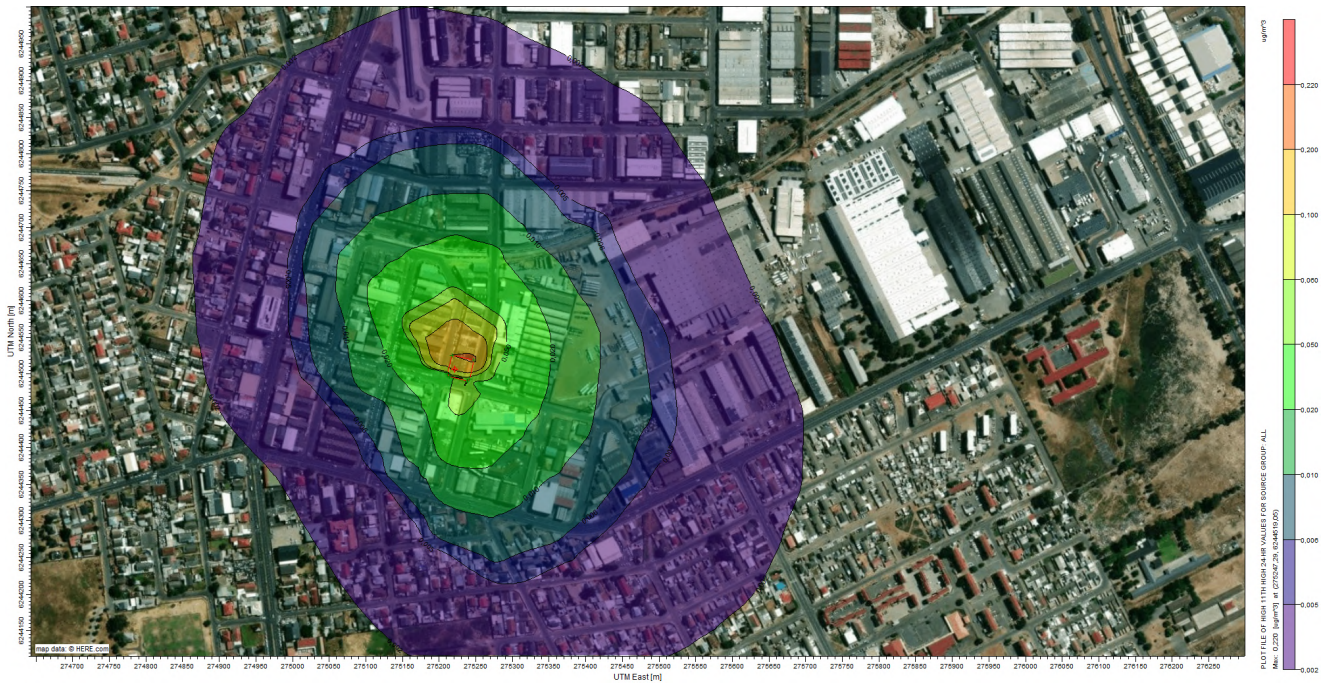


Figure 22: Isopleths of *Daily* HF Concentrations

7.6.4. Benzene

Table 22: Non-Cumulative Benzene Results

Ave. Period	Parameter	Max Fence Line	Riverton	Richmond	Parow	Leonsdale South West	Leonsdale South East	NAAQS
Annual	**Conc. (µg/m³)**	2.573	0.0202	0.0121	0.0020	0.0346	0.0306	**5**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	-	-	-	-	-	-	-

According to the model, benzene concentrations will remain below the annual (5 µg/m³) NAAQS immediately around the facility and at the sensitive receptors.

As no exceedances are predicted, the red isopleths in Figure 23 represent the areas of highest modelled concentrations rather than non-compliances.

Because no baseline data is available for benzene, cumulative concentrations were not assessed.

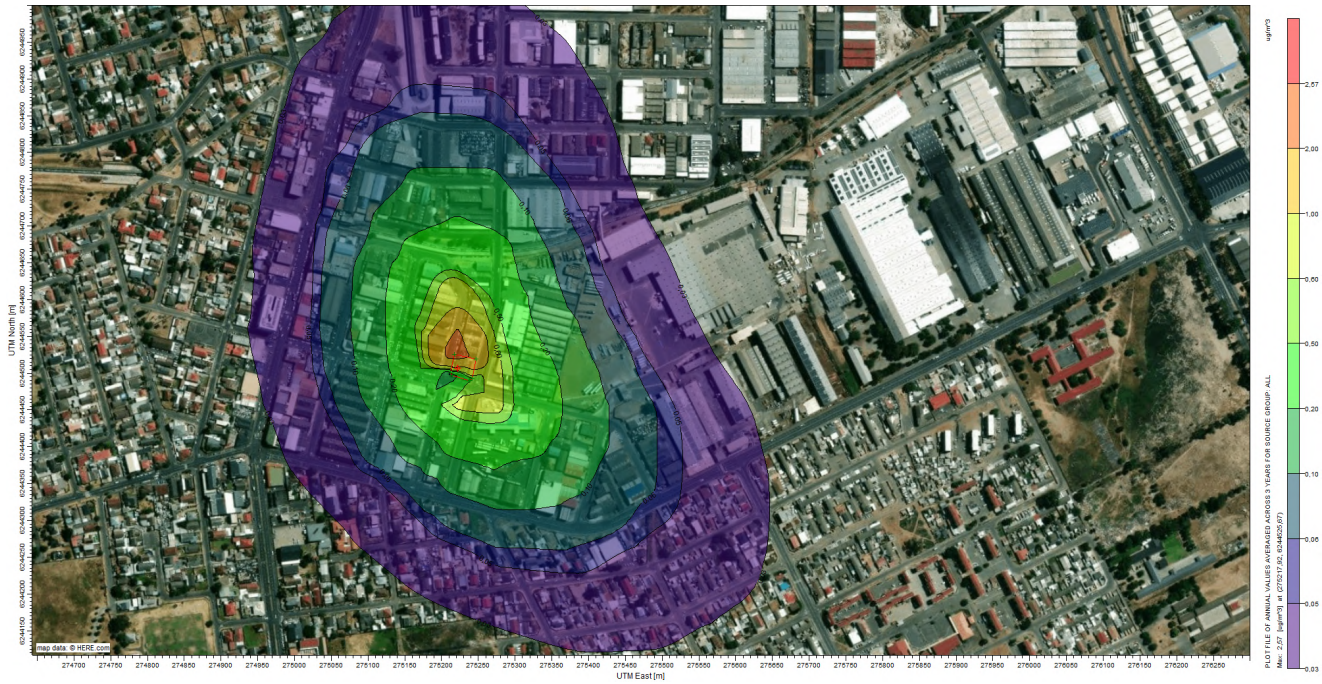


Figure 23: Isopleths of *Annual* Benzene Concentrations

7.6.5. NH_3

Table 23: Non-Cumulative NH_3 Results

Ave. Period	Parameter	Max Fence Line	Riverton	Richmond	Parow	Leonsdale South West	Leonsdale South East	Int. Guideline
Hourly	**Conc. (µg/m³)**	20.966	0.210	0.0862	0.0291	0.226	0.267	**170**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2023/02/24, 11 hour	2024/10/21, 16 hour	2022/04/14, 12 hour	2022/05/04, 11 hour	2023/11/07, 13 hour	2024/07/26, 12 hour	-
8-Hourly	**Conc. (µg/m³)**	17.616	0.1694	0.0772	0.0235	0.2192	0.2295	**640**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2023/05/01, 16 hour	2024/08/22, 16 hour	2023/11/25, 16 hour	2023/07/23, 16 hour	2024/07/21, 16 hour	2024/11/26, 16 hour	-
Daily	**Conc. (µg/m³)**	6.748	0.0855	0.0290	0.0111	0.0979	0.0934	**100**
	Location	X: 275247.29 Y: 6244519.05	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.91	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	2023/02/20	2024/10/15	2022/07/19	2023/01/24	2022/06/04	2022/05/11	-
Annual	**Conc. (µg/m³)**	1.929	0.0151	0.0091	0.0015	0.0259	0.0230	**17**
	Location	X: 275217.92 Y: 6244525.67	X: 274911.07 Y: 6244603.00	X: 275198.90 Y: 6245302.42	X: 276071.34 Y: 6245144.06	X: 275040.54 Y: 6244372.40	X: 275607.77 Y: 6244369.52	-
	Elevation	30.07	31.17	34.47	35.00	32.02	36.85	-
	Date/Hour	-	-	-	-	-	-	-

According to the model, NH_3 concentrations will remain well below the hourly (170 µg/m³), 8-hourly (640 µg/m³), daily (100 µg/m³) and annual (17 µg/m³) international guidelines, both immediately around the facility and at the sensitive receptors.

As no exceedances are predicted, the red isopleths in Figure 24, Figure 25, Figure 26 and Figure 27 represent the areas of highest modelled concentrations rather than non-compliances.

Because no baseline data is available for NH_3, cumulative concentrations were not assessed.

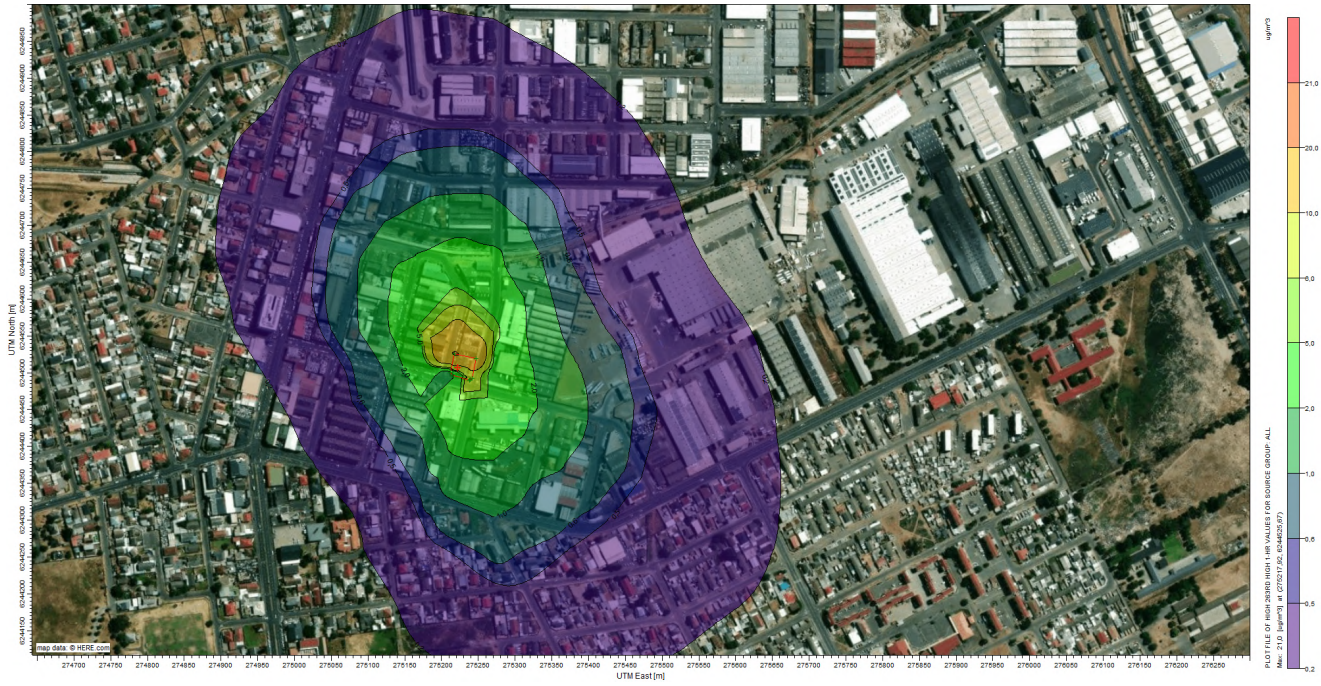


Figure 24: Isopleths of *Hourly* NH_3 Concentrations

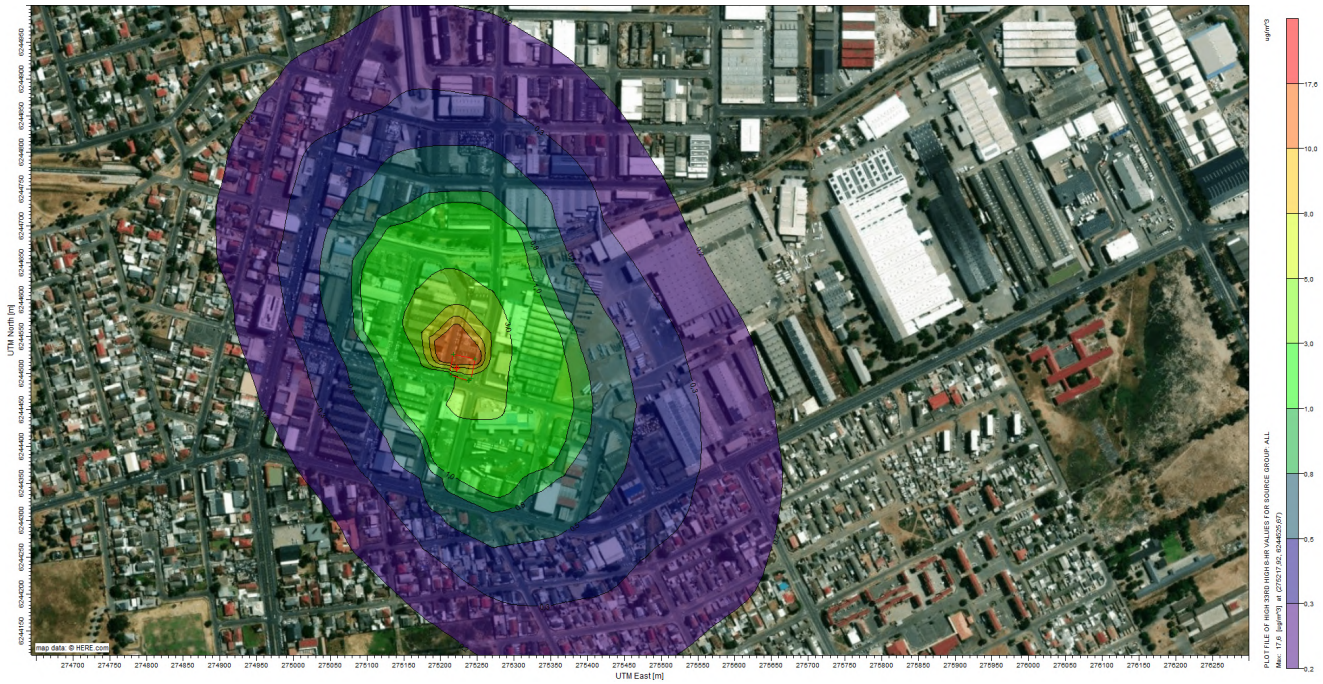


Figure 25: Isopleths of *8-Hourly* NH_3 Concentrations

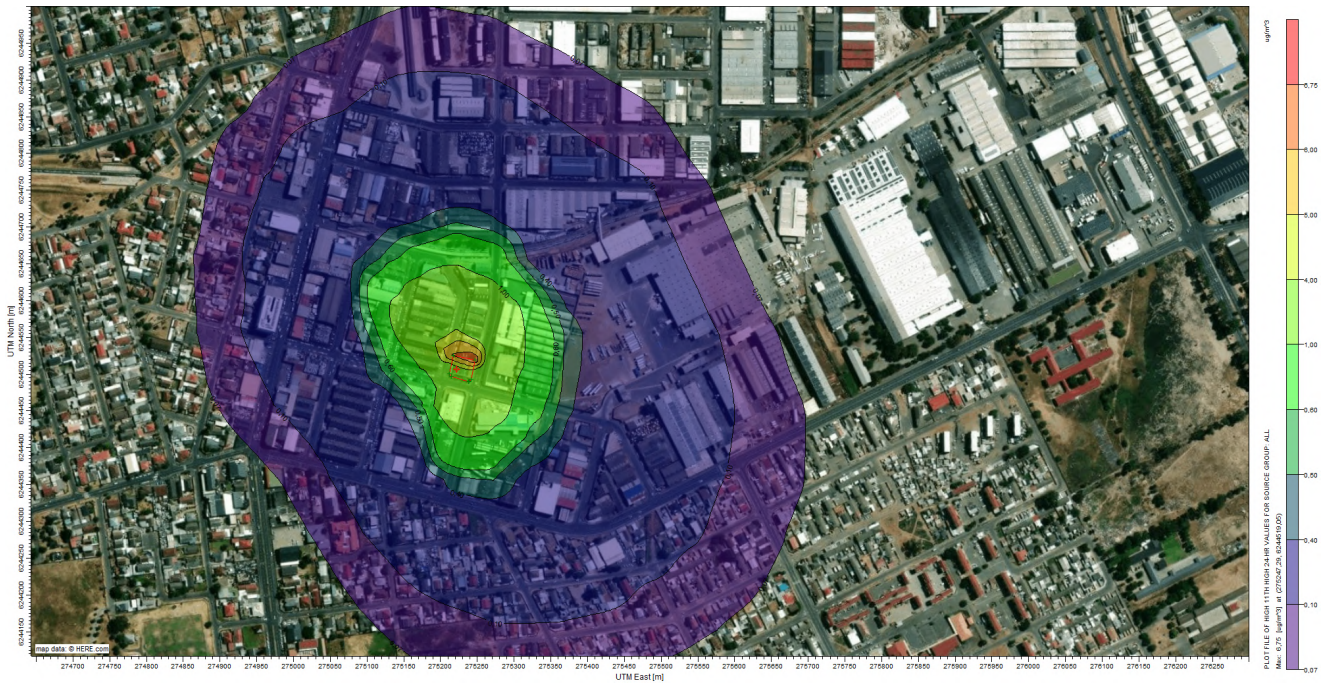


Figure 26: Isopleths of *Daily* NH_3 Concentrations

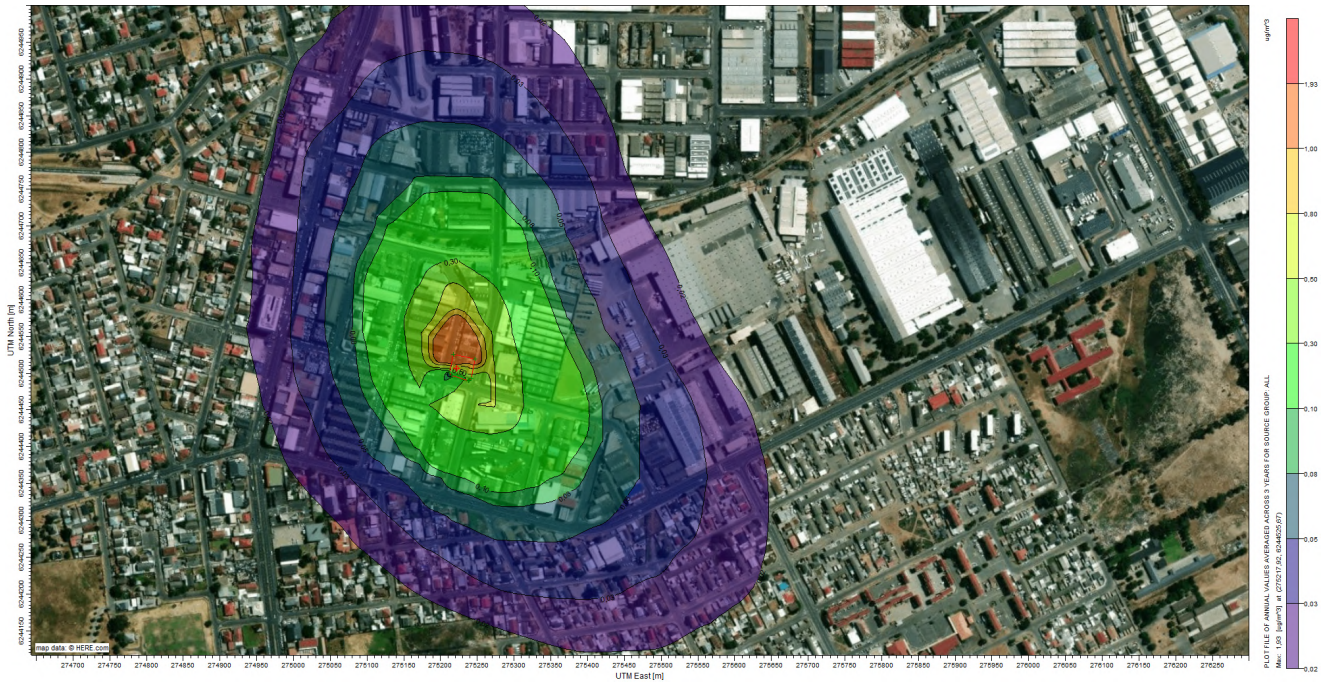


Figure 27: Isopleths of *Annual* NH_3 Concentrations

7.7. Air Dispersion Modelling Conclusions

The air dispersion modelling results predict that the proposed Alvi's Creations will have a limited impact on NAAQS compliance in the immediate vicinity of the proposed facility and at nearby sensitive receptors.

Based on these results, Yellow Tree holds the view that the proposed Alvi's Creations CC may be authorised from an air quality perspective. To ensure compliance with the MESs, the installation of the proposed Electrostatic Adsorption Filter on the aluminium furnace is recommended.

8. Complaints

Not applicable.

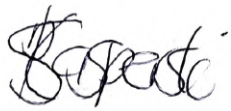
9. Current or Planned Air Quality Management Interventions

Not applicable.

10. Compliance and Enforcement History

Not applicable

11. Appendix A: Report Details

Reporting Conducted by:	Yellow Tree Unit B7, Westlake Square Westlake Drive Westlake 7845
Report Compiled by:	Sasha Kasperski 
Report Reviewed by:	Caitlin Dunn 
Report Compiled for:	Alvi's Creations CC 1 Steenbras Road Sand Industrai Athlone Cape Town 7764

12. Appendix B: Air Dispersion Modelling Study Reporting Requirements[14]

	Chapter 1: Facility and modellers' information	Submitted Yes/No	Comments, References
1.1	**Project identification information requirements**		
	• Applicant	Y	6
	• Physical address of facility	Y	7
	• Air Emissions License reference number (if applicable)	Y	8
	• Environmental authorisation reference number (if applicable)	NA	NA
	• Modelling contractor(s), when applicable	Y	52
1.2	**Project background**		
	• Purpose(s) and objectives of the air dispersion modelling under consideration.	Y	5
	• General descriptive narrative of the plant processes and proposed new source or modification.	Y	9
1.3	**Project location requirements**		
1.3.1	Detailed scaled layout plan of proposed project area including the following:		
	• UTM coordinates of facility property lines, including fence	Y	15
	• Property lines, including fence lines	Y	15
	• Roads and railroads that pass-through property line	Y	15
	• Location and dimensions of buildings and/or structures (on or off property) which could cause downwash	Y	15
1.3.2	**Area map(s) that include the following:**		
	• Map of adjacent area (10 km radius from proposed source) indicating the following	Y	16
	° Latitude/Longitude on horizontal and vertical axis		
	° Nearby known pollution sources		
	° Schools and hospitals within 10km of facility boundary		
	° Topographic features		
	° Any proposed off-site or on-site meteorological monitoring stations		
	° Roads and railroads		
	• Regional map that includes the following	Y	16
	° UTM coordinates		
	° Modelled Facility		
	° Topography features within 50 km		
	° Known pollution sources within 50 km		
	° Any proposed off-site meteorological monitoring stations		
1.4	**Land use determination in modelling domain**		
	• Urban	Y	20
	• Rural/agricultural	Y	20

[14] Section 7.2.2 Code of Practice

Chapter 1: Facility and modellers' information		Submitted Yes/No	Comments, References
1.5	**Elevation data (DEM) and resolution** • Discuss DEM data utilised	Y	20
Chapter 2. Emissions characterisation		**Submitted Yes/No**	**Comments, References**
2.1	**Emissions characteristics** • Include fugitive and secondary emissions when applicable • Emission unit descriptions and capacities (including proposed emission controls) • New structures or modifications to existing structures as a result of project	Y Y Y	21 21 21
2.2	**Operating scenarios for emission units** • Operating conditions simulated in the modelling study ° Upset conditions ° Normal ° Start-up ° Standby ° Shut-down	Y	21
2.3	**Emissions and source parameter table(s)** • List all identifiable emissions • Include parameter table(s) for each operating scenario of each emission unit, which may include, but not be limited to the following: ° Operating scenario(s) ° Source location (UTM Coordinates) ° Point source parameters ° Area source parameters ° Volume source parameters • Include proposed emissions (and supporting calculations) for all identifiable emissions	Y Y	22 22
Chapter 3: Meteorological data		**Submitted Yes/No**	**Comments, References**
3.1	**Surface data discussions must include:** • Off-site ° Source of data ° Description of station (location, tower height, etc.) ° Period of record ° Demonstrate temporal and spatial representativeness	NA	NA

Chapter 3: Meteorological data		Submitted Yes/No	Comments, References
	° Seasonal wind-rose(s) ° 3-year of representative off-site data ° Evaluate if off-site data complies with regulatory Code of Practice ° Program and version used to process data ° Method used to replace missing hours ° Method used to handle calm periods • On-site ° Description of station (location, tower height, etc.) ° Period of record ° Demonstrate spatial representativeness ° Minimum 1-year of representative on-site data ° Evaluate if off-site data complies with regulatory Code of Practice ° Program and version used to process data ° Method used to replace missing hours ° Method used to handle calm periods	NA	NA
3.2	**Discuss upper air data utilised** • Discuss upper air data utilised from the most representative station. • Explain why it is most representative.	NA NA	NA NA
Chapter 4: Ambient impact analysis and ambient levels		**Submitted Yes/No**	**Comments, References**
4.1	**Standards Levels** • National Ambient Air Quality Standards	Y	24
4.2	**Background Concentrations** • Specify background values used including supporting documentation	Y	26
Chapter 5: Modelling Procedures		**Submitted Yes/No**	**Comments, References**
5.1	**Model used in the Study Assessment level proposed** • Assessment level proposed and justification • Dispersion model used. • Supporting models and input programs • Version of models and input programs	 Y Y Y Y	 31 31 31 31
5.2	**Specify modelled emissions** • Pollutants • Scenarios and emissions that will be modelled • Conversion factor utilised for converting NO_x to NO_2	 Y Y NA	 22 22 NA
5.3	**Specify setting utilised within the model(s), which may include:** • Recommended settings utilised within model • Terrain settings (simple flat/simple elevated/complex) • Land characteristics (Bowen ratio, surface albedo, surface roughness)	 Y Y Y	 31 31 31

Chapter 5: Modelling Procedures		Submitted Yes/No	Comments, References
5.4	**Describe the receptors grids utilised within the analysis**		
	• Property line resolution	Y	32
	• Fine grid resolution	Y	32
	• Medium grid resolution(s)	Y	32
	• Course grid resolution	Y	32
	• Figures that show locations of receptors relative to modelled facility and terrain features.	Y	32
Chapter 6: Ambient impact results documentation		**Submitted Yes/No**	**Comments, References**
6	At a minimum, the Ambient Air Quality Standards results are to be documented as follows:		
6.1	**Table(s) of modelling results including**		
	1. Pollutant	Y	34
	2. Averaging time	Y	34
	3. Operating scenario	Y	34
	4. Maximum modelled concentration	Y	34
	5. Receptor location of maximum impact (coordinates)	Y	34
	6. Receptor elevation	Y	34
	7. Date of maximum impact	Y	34
	8. Grid resolution at maximum impact	Y	34
	9. Name of output e-file(s) where data was taken from.	N	e-Files available on request
6.2	**Figure(s) showing source impact area including**		
	1. UTM coordinates on horizontal and vertical axis	Y	34
	2. Modelled facility	Y	15
	• Boundary		
	• Buildings		
	• Emission points		
	3. Topography features	Y	16
	4. Isopleths of impact concentrations	Y	34
	5. Location and value of maximum impact	Y	34
	6. Location and value of maximum cumulative impact.	Y	34
Chapter 7: Ambient impact supporting documentation		**Submitted Yes/No**	**Comments, References**
7.1	All warning and informational messages within modelling output files must be explained and evaluated.	NA	NA
7.2	Required electronic files to be submitted with report 1. Input & output files for models 2. Input & output files for pre-processors 3. Input & output files for post-processors 4. Digital terrain files	All files available on request	

	5. Plot files Final report		
7.3	Report shall include a list and description of electronic files	All files available on request	
7.4	Report shall include a discussion on deviations from the modelling protocol	NA	NA

13. Appendix C: Specialist Report Requirements[15]

Specialist reports	Submitted Yes/No	Comments, References
A specialist report prepared in terms of these Regulations must contain		
(a) details of:		
(i) the specialist who prepared the report; and	Y	52
(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Y	60
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Y	63
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Y	5
(cA) an indication of the quality and age of base data used for the specialist report;	Y	26
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Y	34
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Y	23
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Y	31
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Y	15
(g) an identification of any areas to be avoided, including buffers;	NA	
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	NA	
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Y	21
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Y	34
(k) any mitigation measures for inclusion in the EMPr;	NA	
(l) any conditions for inclusion in the environmental authorisation;	NA	
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Y	As per G.N. 893 of 2013, as amended
(n) a reasoned opinion		
(i) whether the proposed activity, activities or portions thereof should be authorised;	Y	3
(iA) regarding the acceptability of the proposed activity or activities; and	Y	3
(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	NA	

[15] Appendix 6, EIA Regulations

Specialist reports	Submitted Yes/No	Comments, References
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	NA	
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	NA	
(q) any other information requested by the competent authority.	NA	

14. Appendix D: Curriculum Vitaes

CAITLIN DUNN

CHEMICAL ENGINEER | YELLOW TREE

EXPERIENCE

CHEMICAL ENGINEER • YELLOW TREE • OCTOBER 2014 – PRESENT

- Stack emissions sampling and reporting
- Atmospheric Emissions Licence (AEL) applications, renewals and variations
- Greenhouse gas (GHG) emissions inventory development and reporting
- Carbon tax consulting
- Carbon footprint consulting
- Level 1, 2 and 3 air dispersion modelling including the development of emissions inventories for, amongst others, creosote treatment facilities, aluminium processing facilities, foam production facilities, charcoal production facilities, sand drying facilities and sugar mills.
- NAEIS reporting since the system's launch in 2015 on behalf of 72 different facilities that span a wide range of industries in South Africa. Reporting on the NAEIS system involves the collection of activity data, the compilation of emissions inventories, reporting on the system, and addressing any comments that are raised by the auditor during the auditing period.
- Emissions inventory training in 2021 and 2022 on behalf of the Department of Forestry Fisheries and the Environment as part of their Emission Management Training course. This course is attended by air quality officials from around the country. The training focused on developing emissions inventories for point emission sources and tanks using the US EPA TANKS software.

EDUCATION

401 GHG VERIFICATION FOR INVENTORIES AND PROJECTS • 2023 • GHG MANAGEMENT INSTITUTE

An overview of GHG verification approaches such as ISO 14064 Part 3 and the UNFCCC Clean Development Mechanism (CDM) Validation and Verification Manual; A step-by-step process to planning, executing and completing a GHG verification; Reference case studies including verification GHG inventory developed according to the WRI-WBCSD GHG Protocol for Corporate Accounting and Reporting Standard and GHG projects developed according to ISO 14064 Part 2

THE CORPORATE VALUE CHAIN (SCOPE 3) STANDARD ONLINE COURSE• 2023 • GHG PROTOCOL

Course covering the GHG Protocol's Scope 3 Standard which allows companies to account and report their full value chain impacts.

201 BASICS OF ORGANIZATIONAL GHG ACCOUNTING• 2022 • GHG MANAGEMENT INSTITUTE

Course covering the basics of GHG accounting for organisations. The course materials are based on the WRI/WBCSD GHG Protocol Corporate Standard, while referring to the ISO 14064: Part 1 international standard for GHG inventories.

LLM ENVIRONMENTAL LAW • 2020 • UNIVERSITY OF CAPE TOWN

Professional Master's degree in Environmental Law awarded with Distinction

BSC CHEMICAL ENGINEERING 2013 • UNIVERSITY OF CAPE TOWN

Honours degree in Chemical Engineering

yellowtree
WHERE INTEGRITY & SCIENCE MEET

SASHA KASPERSKI

CHEMICAL ENGINEER | YELLOW TREE

EXPERIENCE

CHEMICAL ENGINEER • YELLOW TREE • MARCH 2022 – PRESENT

- Review of Level 1 and 2 air dispersion modelling projects including the development of emissions inventories for, amongst others, crematoria, creosote treatment facilities, aluminium processing facilities, foam production facilities, charcoal production facilities and sand drying facilities.
- Stack emissions sampling for NEM:AQA Section 21 Listed Activities and Section 23 Controlled Emitters, data analysis, report writing, client liaison and client feedback.
- Technical information-sharing presentations to various air quality forums on GHG reporting and the Carbon Tax Act.
- Greenhouse gas (GHG) emissions inventory development and reporting in terms of the National Greenhouse Gas Emissions Reporting Regulations
- Carbon tax payment eligibility and tax liability assessments in terms of the Carbon Tax Act.
- Voluntary carbon budget applications on behalf of three clients, all of which were approved in 2022.

EDUCATION

401 GHG VERIFICATION FOR INVENTORIES AND PROJECTS • 2023 • GHG MANAGEMENT INSTITUTE

Achieved 86 % in final examination. The course material included an overview of GHG verification approaches such as ISO 14064 Part 3 and the UNFCCC Clean Development Mechanism (CDM) Validation and Verification Manual; a step-by-step process to planning, executing and completing a GHG verification; reference case studies including verification GHG inventory developed according to the WRI-WBCSD GHG Protocol for Corporate Accounting and Reporting Standard and GHG projects developed according to ISO 14064 Part 2.

MENG CHEMICAL ENGINEERING • 2023 • UNIVERSITY OF STELLENBOSCH

Master's degree in Chemical Engineering. Graduation ceremony and presentation of degree due in March 2023.

BOILER SUPERVISION AND MANAGEMENT COURSE • 2022 • JOHN THOMPSON

The course material included information related to boiler construction, design & controls; boiler efficiency; steam generation; steam utilisation; water treatment; fuel selection; trouble shooting; and cost saving.

BENG CHEMICAL ENGINEERING • 2019 • UNIVERSITY OF STELLENBOSCH

Honours degree in Chemical Engineering

yellowtree
WHERE INTEGRITY & SCIENCE MEET

15. Appendix E: Applicant Declaration of Accuracy

ANNEXURE A

DECLARATION OF ACCURACY OF INFORMATION - APPLICANT

Name of Enterprise: _____

Declaration of accuracy of information provided:

Atmospheric Impact Report in terms of section 30 of the Act.

I, _____[*duly authorised*], declare that the information provided in this atmospheric impact report is, to the best of my knowledge, in all respects factually true and correct. I am aware that the supply of false or misleading information to an air quality officer is a criminal offence in terms of section 51(1)(g) of this Act.

Signed at _____ on this _____ day of _____

_____

SIGNATURE

_____

CAPACITY OF SIGNATORY

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16. Appendix F: Specialist Declaration of Independence

ANNEXURE B

DECLARATION OF INDEPENDENCE - PRACTITIONER

Name of Practitioner: _____

Name of Registration Body: _____

Professional Registration No.: _____

Declaration of independence and accuracy of information provided:

Atmospheric Impact Report in terms of Section 30 of the Act.

I, _____, declare that I am independent of the applicant. I have the necessary expertise to conduct the assessments required for the report and will perform the work relating the application in an objective manner, even if this results in views and findings that are not favourable to the applicant. I will disclose to the applicant and the air quality officer all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the air quality officer. The information provided in this atmospheric impact report is, to the best of my knowledge, in all respects factually true and correct. I am aware that the supply of false or misleading information to an air quality officer is a criminal offence in terms of section 51(1) (g) of this Act.

Signed at _____ on this _____ day of _____

_____

SIGNATURE

_____

CAPACITY OF SIGNATORY

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