

# EXECUTIVE SUMMARY

ATMOSPHERIC IMPACT REPORT FOR THE PROPOSED CLARITER RECYCLING AND REFINING FACILITY, EAST LONDON

## INTRODUCTION AND SCOPE

Airshed was commissioned by EOH Coastal & Environmental Services (EOH) to undertake an Air Quality Assessment for the proposed Clariter recycling and refining facility (the Project) in East London, Eastern Cape Province. Clariter Recycling and Refining Centre Ltd. (Clariter) has developed a technology for converting different types of polyolefin plastics into hydrocarbon liquid materials. Clariter proposes to establish a pilot-scale Industrial Scale Plant (ISP) in the East London Industrial Development Zone (ELIDZ) as a precursor to the establishment of a Full Scale Plant (FSP) at a location not yet determined.

The ELIDZ has an existing Environmental Authorization for light industry issued in 2001, which allows for the development of a light industrial zone. Additional activities specific to a particular facility must still obtain Environmental Authorisation. The facility is proposed to be constructed on erf number 60843 in ELIDZ Zone 1B. The process falls under two different Listed Activities (set out in regulations under Section 21 of the National Environmental Management Air Quality Act), namely Category 6: Organic Chemicals Industry, and thus requires an Atmospheric Emissions License (AEL) to operate. The operations may also trigger Category 2: Storage and Handling of Petroleum Products. As part of the AEL application, an Air Impact Report (AIR) is required.

The Air Quality Impact Assessment for the Project facility forms part of the subject of this Atmospheric Impact Report (AIR). The following tasks are included:

- A baseline assessment including:
  - The characterisation of atmospheric dispersion potential of the Project site based on updated meteorological data.
  - The characterisation of existing ambient air quality based on available ambient air quality monitoring data.
- An impact assessment, including:
  - The estimation of emissions from proposed operations.
  - Dispersion modelling to predict incremental and cumulative ambient air concentrations in order to assess compliance with National Ambient Air Quality Standards (NAAQS) and other international health risk screening criteria or guidelines; and
- A comprehensive atmospheric impact report (AIR) with;
  - A summary of all baseline monitoring results
  - Emissions inventory
  - Model input parameter description
  - Model results
  - Discussion of model results, with specific reference to the motivation for the AEL application.

## APPROACH AND METHODOLOGY

The baseline assessment includes a study of the legal requirements pertaining to air quality, a study of the physical environment of the area surrounding the project and the collection and analyses of available ambient air quality and meteorological data.

Meteorological data from the SA Weather Services station East London was obtained for the period 2012-2014 and is regarded representative of the weather conditions at the Project site.

In the evaluation of air emissions and ambient air quality impacts, reference was made to National Ambient Air Quality Standards (NAAQS), as well as National Minimum Emission Standards (MES) as set out in regulations under the National Environmental Management Air Quality Act (Act No. 39 of 2004) (NEMAQA). Health impacts associated with non-criteria pollutants emitted from mobile sources are assessed according to guidelines published by the following institutions

The study assesses the air quality impact of the proposed operation on human health and environment. Emissions from the stacks are expected to comply with the MES set out in regulations under Section 21 of the National Environmental Management Air Quality Act (Subcategory 6).

In the absence of actual values, emission values obtained from similar plant design were supplied by Clariter. Emissions from the proposed Project are expected to be similar to these designed values and have been utilized in the emissions inventory. A copy of the reports detailing these design emission values have been attached as additional information to this report.

The pollutants assessed included the following: PM10, CO, SO<sub>2</sub>, NO<sub>x</sub>, hydrogen chloride, ammonia, aromatic hydrocarbons, aliphatic hydrocarbons, hydrogen sulfide, acetylene, ethylene oxide, acetaldehyde, formaldehyde, methanol, trichloroethylene, tetrachloroethylene, methylene chloride, hydrochloric acid, sulfuric acid, acetic acid, iron, manganese, chromium, nickel and benzene.

## CONCLUSIONS AND RECOMMENDATIONS

Findings from this study reveal that all pollutants assessed do not exceed the respective standards, assessment criteria or guideline values, during routine and emergency operations. Long-term average GLCs were far below the respective standards, assessment criteria or guideline values. Also, the assessment of increased lifetime cancer risk for all carcinogens assessed resulted in qualitative description indicating “**very low risk**”. It should be noted that the maximum GLCs were utilized in the assessment in order to ensure a conservative approach.

The conclusion from the findings is that air quality impacts due to the proposed Project operation will be low. The contribution of the pollutants’ impacts to the baseline is expected to be minimal, having little effect on the cumulative pollutant levels in the region.

However, the findings from the study are valid provided that the operational emissions from the facility are similar to the design emissions utilized in this study. It is recommended, therefore, that an initial stack emission measurement campaign be conducted once the proposed facility is fully operational. This is to confirm that the emissions fall within the required standards. Subsequent stack monitoring campaign may be done as prescribed by the local authority.