Moss Vale Plastics Recycling and Reprocessing Facility

Technical Report 3 – Air Quality and Odour

Plasrefine Recycling Pty Ltd

25 January 2022

→ **The Power of Commitment**

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Executive summary

The proposal

Plasrefine Recycling Pty Ltd (Plasrefine Recycling) (‘the proponent’) is seeking approval to construct and operate a plastics recycling and reprocessing facility in Moss Vale, NSW (‘the proposal’).

The proposal involves constructing and operating a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics. The proposal also includes ancillary infrastructure to support the proposal.

The proposal would sort the plastics into different types and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report

This air quality report has been prepared on behalf of Plasrefine Recycling for the proposal to support the environmental impact assessment (EIS) for the proposal and responds to the Secretary’s Environmental Assessment Requirements (SEARs) for air quality.

This report outlines the existing air quality environment for the proposal and provides a risk-based assessment of potential impacts from the construction and operation.

Recommended mitigation and management measures were identified in response to the impact assessment findings.

Existing environment

The existing air quality environment in which the proposal is situated has been defined and the surrounding sensitive receptors identified. The local meteorology (weather) within the study area is of critical importance when assessing the potential for air quality impacts at sensitive receptors. A review of the data available at the Bureau of Meteorology’s Moss Vale AWS was undertaken, and the climate and wind environment established. Existing ambient air quality sources, including surrounding industrial sources and available monitoring data, have been reviewed.

Impacts from the proposal during construction

A review of fugitive construction air quality emissions was undertaken, and a risk-based approach in accordance with the IAQM guidance was adopted to assess dust from the construction of the proposal. The impact from all construction activities for nuisance, health impacts and impacts to ecological receptors was found to be low.

Impacts from the proposal during operation

Operation of the proposal includes the main processing facility (Building 1), the deep processing facility (Building 2) and the wastewater treatment plant. Potential emissions to air from the processes in Building 1 are expected to be particulate matter and volatile organic compounds (VOCs) from controlled crushing of plastics and extrusion granulation processes.

The deep processing processes (Building 2) involve heating of polyethylene (PE), polypropylene (PP) and polyethylene terephthalate (PET) plastic products. Heating of plastic products has the potential to cause emissions of particulate matter, VOCs and odours. Operational emissions from Building 1 and Building 2 would be minimised through four separate emission control systems.

Thus the primary pollutants generated during the operation of the proposal are expected to be:

– Particulate matter from mechanical processing of plastics (e.g. crushing)

- Particulate matter, volatile organic compounds and odour from heating of plastics
- Odour from the wastewater treatment plant

A review of sensitive receptor locations found that the nearest residential receptor is greater than 200 m from the closest point of the processing buildings and approximately 450 m from the wastewater treatment plant. Winds causing the nearest sensitive receptors to be located downwind of the proposal operations would be infrequent. The wastewater treatment plant will be used to treat and separate contaminants and from the water required in the main processing operations for reuse. Given the mostly physicochemical nature of the wastewater treatment processes, only minor odours would be generated.

Air quality dispersion modelling was undertaken for Building 1 and 2 operations using AERMOD version 9.5.0. AERMOD is the approved dispersion model recommended by the US EPA and is recognised by the Victoria EPA as a suitable and advanced dispersion model.

There are no predicted incremental exceedances of the assessment criteria. The worst-case impacts for all pollutants occurs at the commercial receptor R001, the Australian BioResources Facility. The results show that the maximum impacts at all receptors are significantly below the EPA criteria.

The potential for cumulative particulate matter impacts was assessed through contemporaneous assessment of 24-hour average $PM_{2.5}$ concentrations, using background data sourced from the Bargo DPIE AQMS for the years 2017 and 2018. The contemporaneous assessment found the potential for a small number of exceedances of the updated NEPM 2021 objective (20 µg/m³), with averages of 2.5 exceedances per year and one exceedance per year for the most affected commercial and residential receptors respectively.

Assessment of these exceedance dates showed that the cumulative impact was primarily driven by elevated background concentrations, making up an average of 82% of the impact for the 5 exceedances at the nearest commercial receptor.

The model has conservatively assumed that the proposal will be emitting at the highest permitted concentration and highest design flow rate for all hours of the year, which is not considered to be likely. Given this conservative assumption, and based on the analysis of exceedance dates, the risk of the proposal contributing significantly to cumulative impacts at the nearest receptors is concluded to be low.

A review of existing industrial facilities in the vicinity of the proposal identified a number of operations with potential to contribute to concentrations of pollutants (particulates, VOCs and odour) at the nearest sensitive receptors. However, given that the risk of impacts of these pollutants from these operations is predicted to be low, the subsequent risk of cumulative impacts has been assessed as low.

Recommended mitigation measures

Recommended mitigation and management measures have been identified in response to the impact assessment findings. The emission control systems described throughout should be kept operational and regularly maintained. Should any unit become faulty, production on those affected lines should halt immediately and not resume until emission control systems are fully operational again.

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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

Despite these difficulties, export markets still exist for clean, separated, pelletised plastics and resins. However, there is very little local capacity in NSW and within Australia to sort recovered plastics into different types and convert them into valuable products.

To help address this issue, Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') proposes to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal would sort the plastics into different types, and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal would have an ultimate capacity to receive up to 120,000 tonnes per year of mixed waste plastics.

1.1.2 Approval and assessment requirements

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to support the application for approval of the proposal and address the environmental assessment requirements of the Secretary of the NSW Department of Planning, Industry and Environment (SSD-9409987) dated 15 October 2020 (the SEARs).

1.2 The proposal

1.2.1 Location

The proposal would be located about 140 kilometres south west of the Sydney central business district and approximately 2.8 kilometres north west of the Moss Vale town centre within the Wingecarribee local government area.

The proposed plastics recycling and reprocessing facility and ancillary infrastructure would be located on the northern parcel of land in Lot 11 DP 1084421, with a current street address of 74-76 Beaconsfield Road, Moss Vale. This parcel of land is referred to as 'the plastics recycling and reprocessing facility site' for the purpose of the EIS. It has a total site area of about 7.7 hectares. The proposal would occupy a portion of the plastics recycling and reprocessing facility site.

The new access road which would extend from the plastics recycling and reprocessing facility to Lackey Road via:

- the currently unformed Braddon Road
- Lot 1 DP 26490 and Lot 10 DP 1084421 (the 'Braddon Road east extension').

The area that would be occupied by the proposal's permanent operational infrastructure, and/or directly disturbed during construction, is referred to as 'the proposal site' for the purposes of the EIS. The proposal site therefore comprises:

- The plastics recycling and reprocessing facility site (7.7 hectares)
- The new access road corridor (about 1.8 hectares)

It is noted that the areas that would be disturbed for construction of buildings, roads and water management would comprise about six hectares of the total 7.7 hectare plastics recycling and reprocessing facility site. Disturbance of the remaining 1.7 hectares would be limited to plantings as part of riparian vegetation management and landscaping.

The proposal would be located within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The proposal site location is shown on Figure 1.1.

1.2.2 Key features

The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

- Two main buildings for waste receival, recycling and reprocessing and finished product storage
- Wastewater treatment plant
- Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, business identification signage and utility connection
- Emissions control systems comprising exhaust gas collection and staged treatment by a pneumatic cyclone spray tower, an electrostatic degreasing device, dry filter and activated carbon adsorption prior to treated air being discharged from stacks at 4 locations.
- A new access road from the plastics recycling and reprocessing facility to Lackey Road via part of Braddon Road (currently unformed) and Lot 1 DP 26490 and Lot 10 DP 1084421 (the Braddon Road east extension).

The proposal would sort the plastics into different types and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

Further information on the proposal is provided in the EIS.

The proposed site layout is shown in Figure 1.2.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

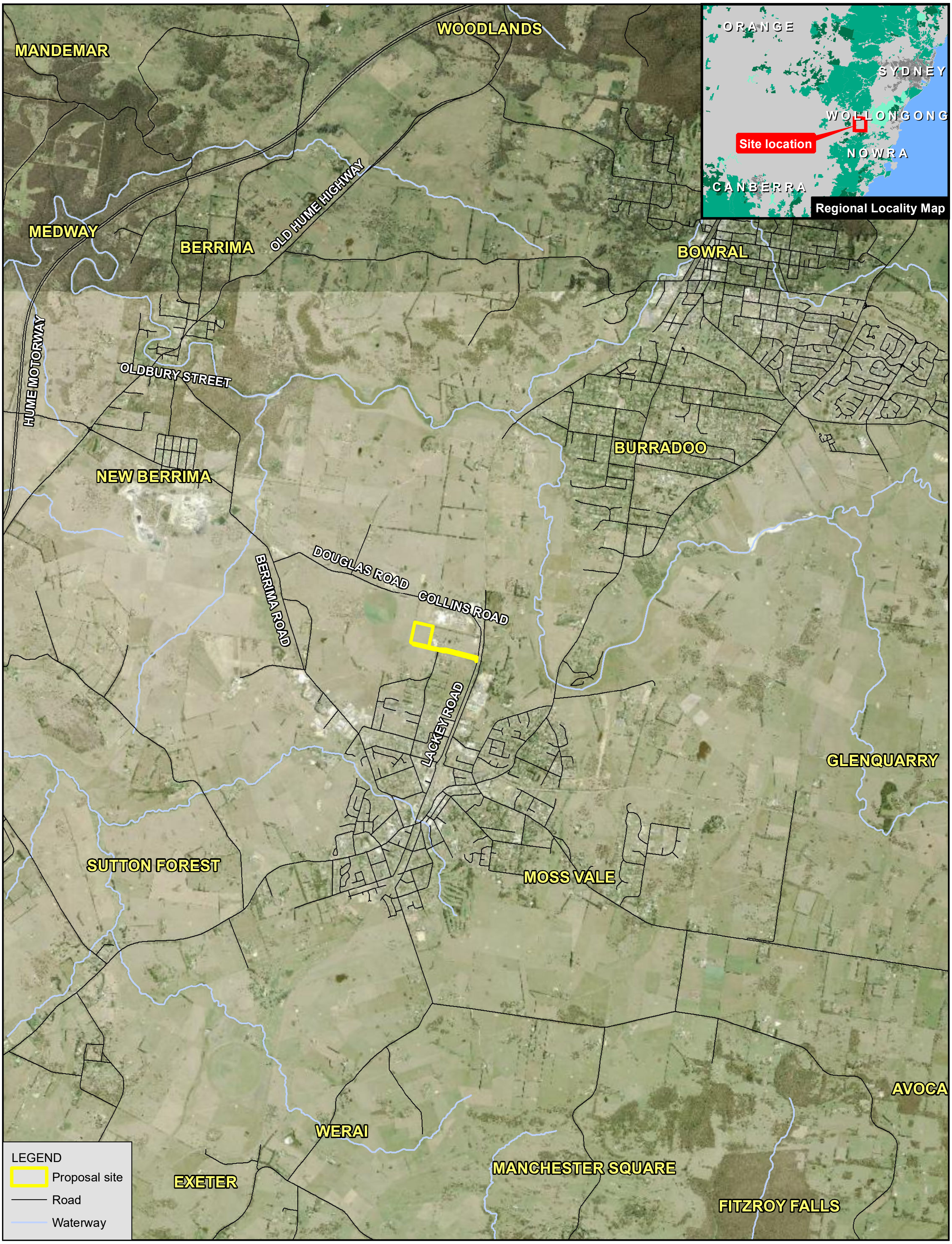
It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

- Early works and site establishment (1 month):
  - Construction of site access road
  - Utilities connection
  - Establishment of construction compound including construction staff amenities
  - Installation of temporary fencing
- Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
  - Bulk earthworks for site shaping and surface water drainage and the bioretention pond
  - Pouring concrete foundation slab, footings, hardstand and slabs for the buildings

- Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
- Installation of steel truss framework for structures
- Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
- Installation of processing equipment
- Building finishing works including fit out
- Installation of firewater and other tanks
- Installation of weighbridges
- Installation of permanent fencing and signage
- Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction

– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS.



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Kilometres

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Grid: GDA 1994 MGA Zone 56

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Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. **12524108**
Revision No. **A**
Date **22 Dec 2021**

Proposal site location

FIGURE 1.1

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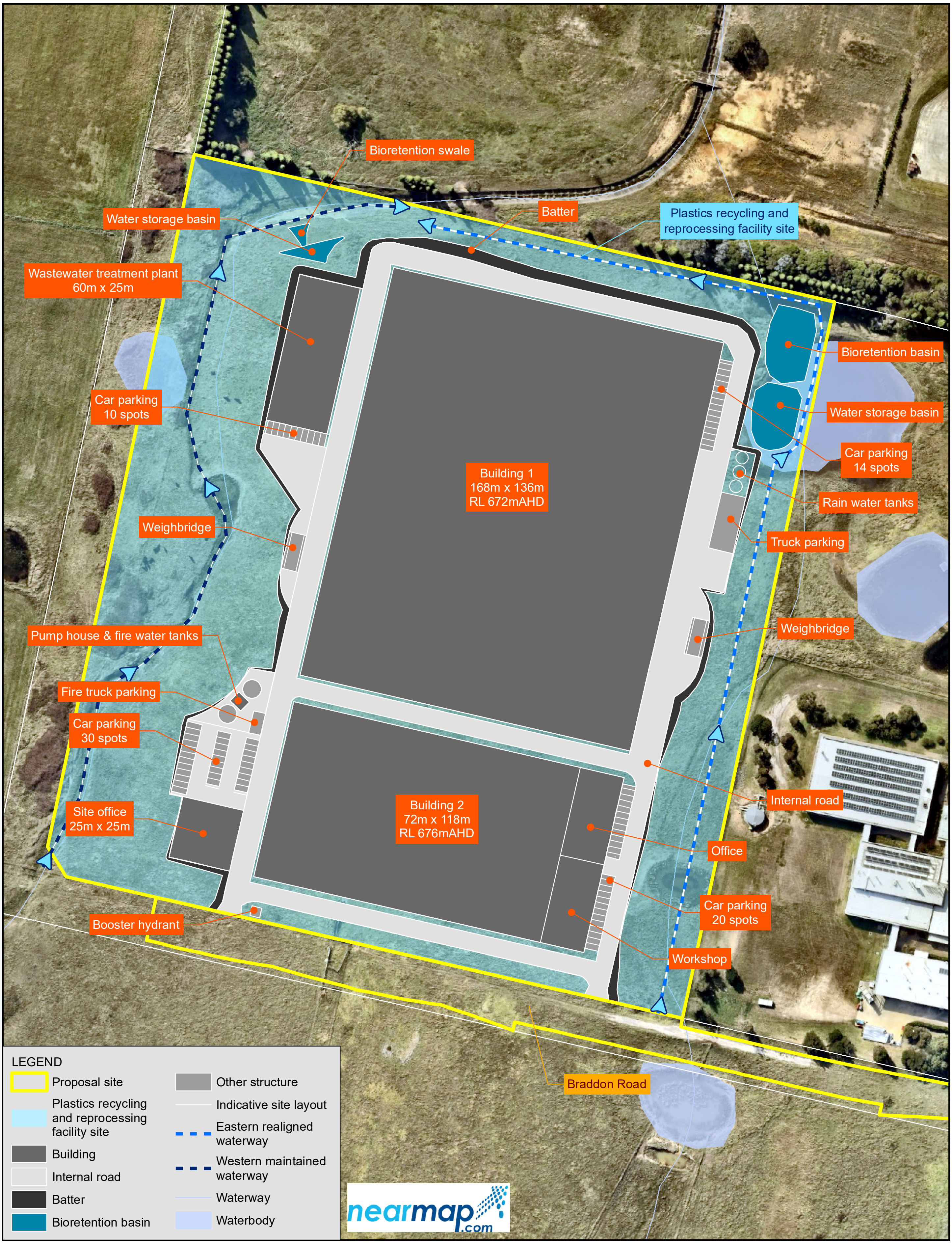

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Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. **12524108**
Revision No. **A**
Date **06 Oct 2021**

Proposed site layout

FIGURE 1.2

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1.3 Secretary's Environmental Assessment Requirements

The specific SEARs addressed in this report are summarised in Table 1.1. EPA inputs into the SEARs have also been included.

Table 1.1 SEARs relevant to this assessment

Requirement	Where addressed in this report
A quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines	An impact assessment has been completed for construction and operation as presented in Section 6.
The details of buildings and air handling systems and strong justification for any material handling, processing or stockpiling external to buildings	Buildings and air handling systems are described in Section 5, no material handling, processing or stockpiling is proposed to occur external to buildings.
Details of proposed mitigation, management and monitoring measures	Section 7
EPA input into SEARs	
Identify all sources or potential sources of air emissions from the development. Note: emissions can be classed as either: – point (e.g. emissions from stack or vent) or – fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).	Section 5
Provide details of the project that are essential for predicting and assessing air impacts including: a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored b) an outline of procedures for handling, transport, production and storage c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.	Section 5
Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models	Section 4.1
Describe surrounding buildings that may affect plume dispersion.	Building 1 and Building 2 of the proposal would influence plume dispersion and are described in Section 5.
Provide and analyse site representative data on following meteorological parameters: a) temperature and humidity b) rainfall, evaporation and cloud cover c) wind speed and direction	Section 4.2
Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data	Section 4.3
Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point	Section 6.2
Estimate the resulting ground level concentrations of all pollutants. Where necessary (e.g. potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the EPA.	Section 6.2

Requirement	Where addressed in this report
Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals	Section 6.2
Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.	Section 6.2.4
For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate. Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.	Section 6.2
Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.	Section 7

1.4 Purpose and scope of this report

The purpose of this report is to assess the potential air quality impacts from constructing and operating the proposal. The report:

- Addresses the SEARs listed in Table 1.1
- Describes the existing environment with respect to air quality
- Assesses the impacts of constructing and operating the proposal on air quality
- Recommends measures to mitigate and manage the impacts identified.

1.5 Structure of this report

The structure of the report is outlined below.

- Chapter 1 – provides an introduction to the report
- Chapter 2 – described the legislative context for the assessment
- Chapter 3 – describes the methodology for the assessment
- Chapter 4 – describes the existing environment
- Chapter 5 – outlines the project emissions and emission control systems
- Chapter 6 – outlines the impact assessment including construction, operation and cumulative impacts
- Chapter 7 – provides recommendations for mitigation measures
- Chapter 8 – provides evaluations and conclusion

1.6 Assumptions

The following assumptions were made to complete the assessment:

- Plastics being heated include Polyethylene (PE), polypropylene (PP) and polyethylene terephthalate (PET)
- Maximum emission concentrations from emission control units as provided by Plasrefine will be complied with during operation of the proposal.

2. Legislative and policy context

The relevant legislation and government guidance for the air quality assessment of the project are:

- NSW *Protection of the Environment Operations Act 1997* (POEO Act)
- NSW Protection of the Environment Operations (Clean Air) Regulation 2021 (POEO Clean Air Regulation)
- National Environment Protection Council (NEPC) National Environment Protection (Ambient Air Quality) Measure 2021 (the Air NEPM)
- Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007)
- Technical framework - Assessment and management of odour from stationary sources in NSW (the Technical Framework), NSW Department of Environment and Conservation (DECC 2006)
- NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2017) (the Approved Methods)
- Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management (2016) (IAQM guidance)

The POEO Act provides the statutory framework for managing pollution in NSW, including the procedures for issuing licences for environmental protection on aspects such as waste, air, water and noise pollution control. The POEO Act requires that no occupier of any premises causes air pollution (including odour) through a failure to maintain or operate equipment or deal with materials in a proper and efficient manner. The operator must also take all practicable means to minimise and prevent air pollution (sections 124, 125, 126 and 128 of the POEO Act). The POEO Act includes the concept of ‘offensive odour’ (section 129) and states it is an offence for scheduled activities to emit ‘offensive odour’, subject to limited defences.

The POEO Clean Air Regulation provides regulatory measures to control emissions from motor vehicles, fuels, and industry. The POEO Clean Air Regulation outlines air quality standards of concentration that apply to general and specific activities and plant for both scheduled and non-scheduled premises

The National Environment Protection Council of Environmental Ministers, now the National Environment Protection Council (NEPC), set uniform national standards for ambient air quality in February 2016. The document containing these standards is known as the Air NEPM, which also contains goals for the identified relevant pollutants inclusive of particulates and concentration limits, averaging periods and number of allowed exceedances for each of the identified pollutants.

The Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007) lists the methods to be used for the sampling and analysis of air pollutants in NSW for statutory purposes. While no emission sampling was conducted as part of this assessment, Plasrefine has a responsibility to undertake, where possible, all sampling in accordance with requirements outlined in the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007). This includes sampling type, duration, location and a number of other requirements.

The Technical Framework provides a legislative context for the control of odour and presents odour assessment criteria guidelines. It provides a framework for different levels of odour assessment, strategies to mitigate odour, and guidance for performance monitoring, regulation and enforcement.

The Approved Methods lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in NSW. It considers the above-mentioned legislation and guidance to provide pollutant assessment criteria.

The IAQM guidance provides guidance on the assessment of dust from demolition and construction activities. It provides a qualitative step by step process to assess the risk of dust impacts.

2.1 Emission limits

The POEO Clean Air Regulation outlines air quality standards of concentration that apply to general and specific activities and plant for both scheduled and non-scheduled premises. Standards of concentration relevant to the project have been reproduced in Section 6.2.2 and were sourced from Schedule 4 Standards of concentration for scheduled premises – general activities and plant (Group 6) category. Emissions to air from relevant project operations must comply with these emission limits

2.2 Air quality impact assessment

Assessment criteria for the project was taken from the NSW EPA's Approved Methods, with the exception of $PM_{2.5}$ which were sourced from the Air NEPM air quality objectives as they represent the most recent and stringent standards for protection of the air quality environment. Achieving compliance with the impact assessment criteria will help demonstrate the project will operate in a manner that protects human and environmental health.

The application of each impact assessment criteria is variable for each pollutant based on the following factors:

– **Averaging period** – the period over which modelled concentrations are averaged.
– **Statistic** – the statistic of the modelled concentrations. As an example for a 1-hour averaging period, the 'maximum statistic' would be the highest predicted value at any receptor for the entire modelling period. The 99.9^{th} percentile statistic would be (approximately) the ninth highest hour in a one year modelling period.
– **Impact location** – the location at which the impacts are to be assessed. For some pollutants, impacts are assessable only at sensitive receptor locations, while some impacts are assessable at and beyond the boundary of the site. The criteria apply at ground level where receptors are likely to be exposed.
– **Impact type** – the type of impact assessed. For some pollutants, the impacts are assessable only for the project's and Plasrefine contribution to pollutant concentrations at the relevant impact location (referred to as 'incremental impacts'). For other pollutants, the cumulative impact (which includes both the incremental concentration as well as the background concentration) is assessed.

Assessment criteria used in this assessment is provided in Section 6.2.3.

3. Methodology

3.1 General

This AQIA of the construction and operation of the project was completed in accordance with EPA and contemporary guidance to assess air quality impacts from the project. Atmospheric dispersion modelling was undertaken to evaluate the potential worst-case impacts from the project under routine operations and inform recommendations of appropriate mitigation measures to minimise any potential impacts

3.2 Approach

Based on a review of the air quality emissions from the construction of the proposal it was considered appropriate to adopt a qualitative risk-based approach to assess potential construction air quality impacts. This style of approach focuses on identifying the likely air emissions from the proposal and recommending appropriate mitigation measures to effectively management potential air quality impacts.

A quantitative assessment of air emissions during operation of the project has been undertaken using emission performance data and guarantees from the proposed emission control systems, and dispersion modelling in order to predict potential worst case pollutant concentrations in the surrounding environment.

3.3 Construction

A review of fugitive construction air quality emissions was undertaken, and a risk-based approach in accordance with the IAQM guidance was adopted to assess dust from the construction of the proposal. The IAQM guidance contains a four-step process to qualitatively assess potential dust impacts from construction activities. An overview of the methodology is provided in Table 3.1.

Table 3.1 Overview of IAQM guidance risk assessment

Step	IAQM Process
1	A conservative screening based on distance to the nearest sensitive receptor (human and ecological receptor). Further assessment is required if a sensitive receptor is located within the screening criteria.
2	Assess the risk of uncontrolled (no mitigation measures applied) dust impacts (including dust soiling effects, health effects and ecological effects) based on: Dust emission magnitude of construction activities (demolition, earthworks, construction and trackout) Sensitivity of the area (based on sensitivity of nearby receptors, number of nearby receptors and distance from source)
3	Determine site specific mitigation measures to appropriately manage all activities with potential to cause dust impacts.
4	Assess the residual risk of dust impacts after site specific mitigation measures have been implemented.

3.4 Operation

A quantitative level 2 assessment has been undertaken following guidance in the Approved Methods. The assessment included the following steps:

– Description of the process and emission generating activities.
– Outlining types and scale of emissions expected from each activity.
– Description of the emission control system and guaranteed pollutant concentrations
– Undertake an emission limit assessment with regards to the POEO Clean Air Regulation
– Review available ambient air quality in the local area including other emission sources nearby
– Review of local meteorology and preparation of a meteorological file for use in modelling
– Dispersion modelling to predict pollutant concentrations in the surrounding environment
– Comparison of predicted pollutant concentrations with the NSW EPA ground level criteria

4. Existing environment

4.1 Sensitive receptors

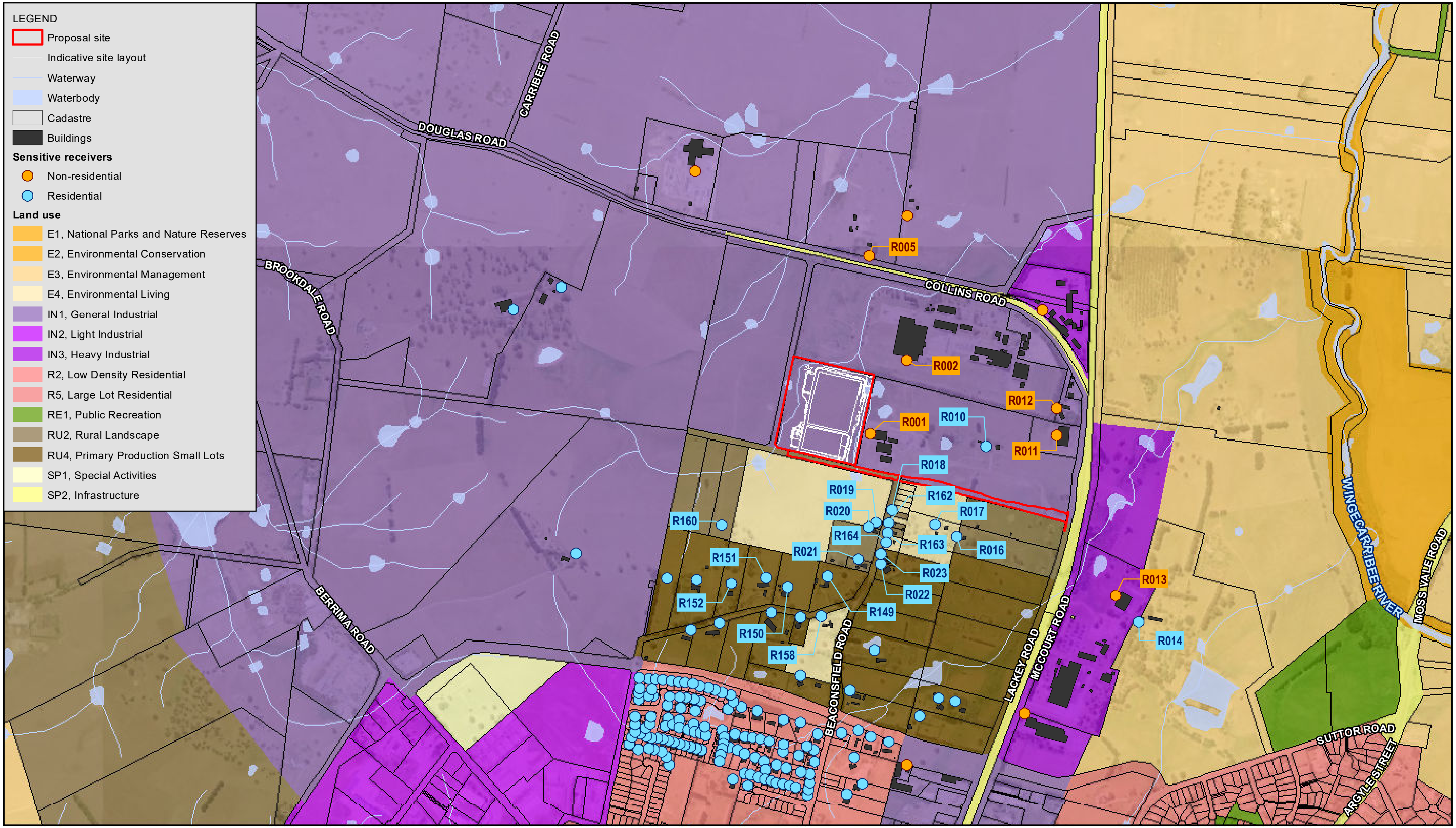
The Approved Methods defines sensitive receptors as locations where people are likely to work or reside and may include a dwelling, school, hospital, office or recreation areas.

Sensitive receptors identified for this proposal include the rural residential receptors surrounding the plastics recycling and reprocessing facility site, various industrial sites and one commercial premises.

Figure 4.1 shows the plastics recycling and reprocessing facility site with surrounding sensitive receptors. The nearest receptors are the commercial receptor (Australian BioResources) and industrial receptor (Dux Manufacturing Moss Vale). There are 20 residential receptors within 500 m of the of the construction footprint as outlined below in Table 4.1.

Table 4.1 Identified receivers within 500 m of construction works

ID	Receptor type	Address	Distance to construction footprint, m
R001	Commercial	Australian BioResources - 9/11 Lackey Rd, Moss Vale NSW 2577	<50
R002	Industrial	Dux Manufacturing Moss Vale - Lackey Rd, Moss Vale NSW 2577	<150
R017	Residential	Wyoming Farm, 77 Beaconsfield Rd, Moss Vale NSW 2577	<150
R018	Residential	79 Beaconsfield Rd, Moss Vale NSW 2577	<150
R010	Residential	9/11 Lackey Rd, Moss Vale NSW 2577	<200
R016	Residential	75 Beaconsfield Rd, Moss Vale NSW 2577	<200
R019	Residential	72 Beaconsfield Rd, Moss Vale NSW 2577	<200
R020	Residential	70 Beaconsfield Rd, Moss Vale NSW 2577	<200
R011	Industrial	A&I Coatings - 7 Lackey Rd, Moss Vale NSW 2577	<250
R023	Residential	69 Beaconsfield Rd, Moss Vale NSW 2577	<250
R013	Industrial	Komatsu Mining Corp. - 15-17 McCourt Rd, Moss Vale NSW 2577	<300
R021	Residential	66 Beaconsfield Rd, Moss Vale NSW 2577	<300
R022	Residential	67 Beaconsfield Rd, Moss Vale NSW 2577	<300
R012	Industrial	Moss Vale Recycled Timber Building Centre - 1 Lackey Rd, Moss Vale NSW 2577	<350
R160	Residential	50A Bulwer Rd, Moss Vale NSW 2577	<350
R005	Residential	Douglas Road, Moss Vale NSW 2577	<400
R014	Residential	16 McCourt Rd, Moss Vale NSW 2577	<400
R149	Residential	64 Beaconsfield Rd, Moss Vale NSW 2577	<400
R150	Residential	58 Bulwer Rd, Moss Vale NSW 2577	<450
R151	Residential	54-56 Bulwer Rd, Moss Vale NSW 2577	<450
R152	Residential	52 Bulwer Rd, Moss Vale NSW 2577	<500
R158	Residential	69 Bulwer Rd, Moss Vale NSW 2577	<500
R162	Residential	75 Beaconsfield Rd, Moss Vale NSW 2577	<200
R163	Residential	73 Beaconsfield Rd, Moss Vale NSW 2577	<200
R164	Residential	71 Beaconsfield Rd, Moss Vale NSW 2577	<250



Paper Size ISO A4

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Air Quality Assessment

Project No. **12524108**
Revision No. **A**
Date **25 Jan 2022**

Proposal site, sensitive receptors

FIGURE 3.1

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Data source: Aerial imagery - sixmaps 2022© Department of Customer Service 2020; General topo - NSW LPI DTDB 2020, 2015; Land zoning - DPE 2020/2018. Created by: eibbertson

4.2 Climate and meteorology

4.2.1 Overview

The local meteorology (weather) within the study area is of critical importance when assessing the potential for air quality impacts at sensitive receptors.

The emission potential (emission rates) from dust generating activities is dependent on both wind speeds at the activity location and the surface moisture content. Worst-case construction dust emissions would occur during periods of high winds speeds and low surface moisture content, where a combination of low rainfall, elevated temperatures and elevated solar radiation would lead to a drying of the surface.

Dispersion of pollutants within an environment is primarily dependent on wind direction, wind speed and the measure of atmospheric stability. The poorest (worst-case) air dispersion conditions for near-surface air emissions are generally characterised by low wind speeds, stable atmospheres and wind directions placing receptors directly downwind of an emission source.

The meteorological environment relevant to the plastics recycling and reprocessing facility site is best understood through review of data collected from long-running monitoring weather stations, most commonly operated by the Bureau of Meteorology (BOM) as well as state authorities (DPIE in this case) and in some instances private entities.

4.2.2 Wind environment

The Bureau of Meteorology (BOM) operates Moss Vale AWS (station number: 068239) which is located approximately 5 km east of the proposal. There are no intervening terrain features or significant variance in land use between the AWS and the proposal location. Given the proximity and similarity between the AWS and the proposal location, meteorological data recorded at the AWS is considered to effectively represent the meteorological environment at the proposal location.

Figure 4.2 displays the 5-year (2016-2020) wind rose for the Bureau of Meteorology's Moss Vale AWS. Figure 4.3 shows the seasonal wind roses for the same AWS for the same period. The wind roses show:

– The frequency of winds blowing from a direction as the length of the 'petal' for that direction.
– The frequency and distribution of various wind speeds from a direction as the colour of the 'petal' for that direction.

The wind rose plots shows the following relating to the wind environment at the plastics recycling and reprocessing facility site:

– An average wind speed of 4.9 m/s is expected during the year, with wind speeds consistent throughout the year.
– Calm wind conditions, classified as wind speeds less than 0.5 m/s were measured at occurring 3.5% of the time, and are most frequent during autumn and winter.
– The general pattern of wind sees the highest frequency of winds from the west, north-northeast and south-southeast (in order of prevalence). Generally, receptors downwind of the proposal in these directions are most likely to be impacted by fugitive emissions from the proposal.
– High wind speeds (>7 m/s), which are likely to cause elevated dust emissions during construction, are most prevalent from the west. High wind speeds occur most frequently during the spring months, suggesting that control of construction dust emissions will be most challenging during these months (subject to rainfall during the construction period).
– The pattern of low wind speeds (<3 m/s), a key driver of poor air dispersion, is consistent with the broader pattern of winds.

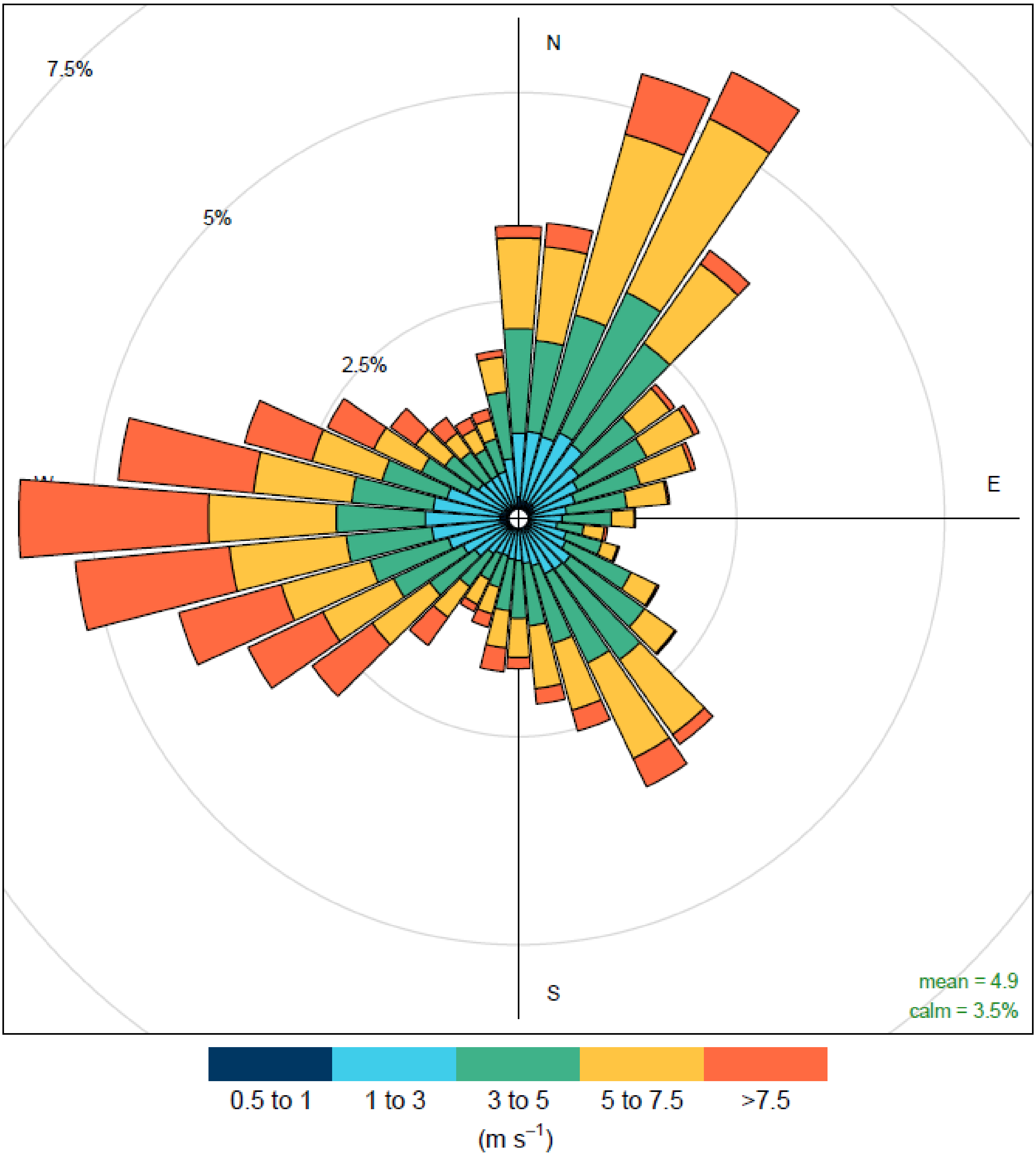


Figure 4.2 ***5 year wind rose at Moss Vale AWS BoM station***

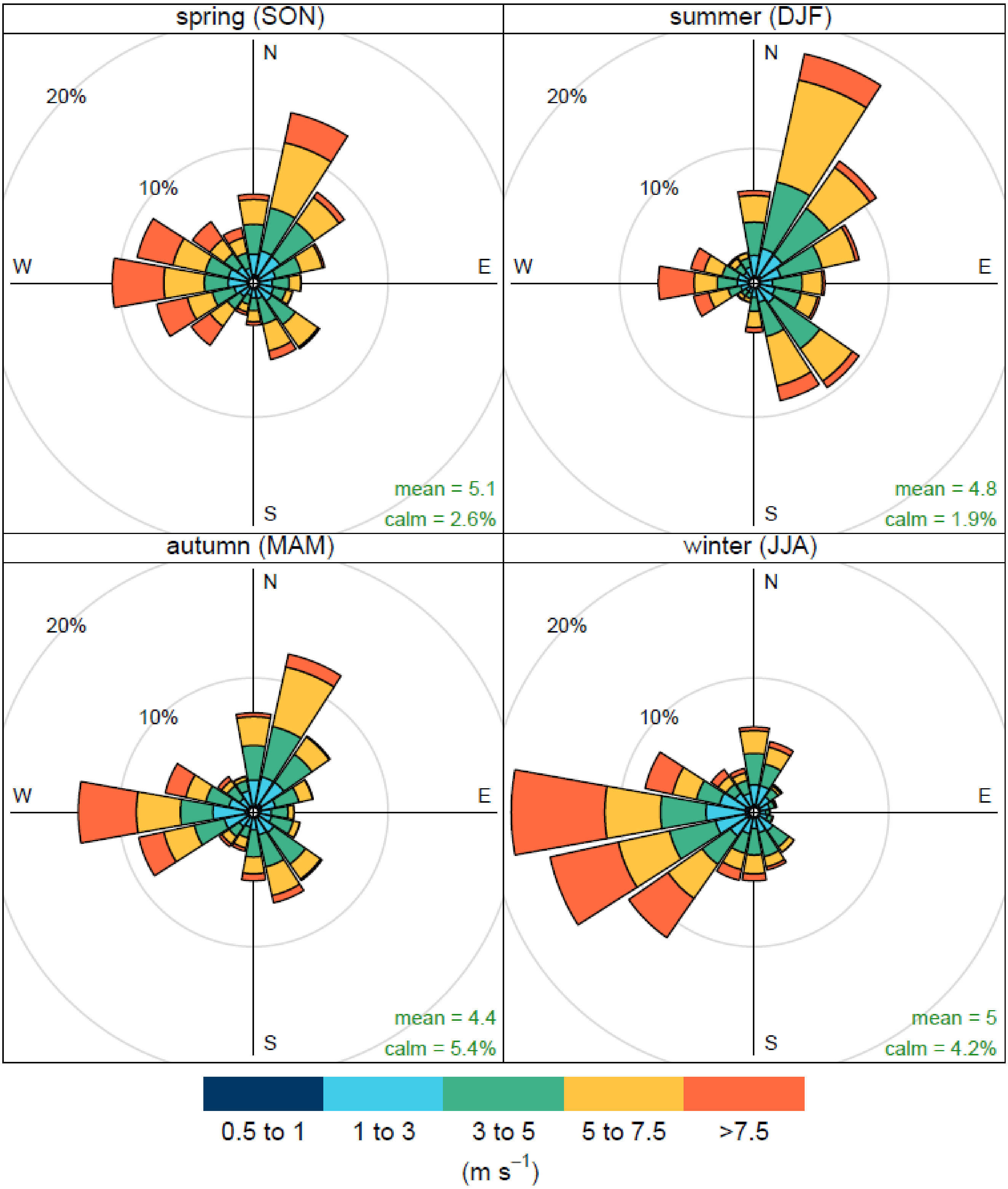


Figure 4.3 *5 year seasonal wind rose at Moss Vale AWS BoM station*

4.2.3 Other meteorological parameters

The 10 year climate data from Moss Vale AWS indicates a temperate climate with the average annual temperature is 13.3 C. The annual average maximum and minimum temperatures are 19.5° C and 8° C respectively. The average annual rainfall at Moss Vale is 736 mm with the wettest month being February with an average rainfall of 121 mm for the month and the driest month being April with an average of 18.2 mm for the month.

4.3 Ambient air quality

4.3.1 Overview

The existing ambient air quality environment at the plastics recycling and reprocessing facility site will influence the potential impacts associated with air emissions from the proposal. The existing air quality at the plastics recycling and reprocessing facility site is understood through a review of the existing sources of air pollution surrounding the proposal as well as a review of any publicly available air quality monitoring data.

4.3.2 Sources of ambient air pollution

Given the regional location of the proposal, the ambient air quality environment across the plastics recycling and reprocessing facility site is likely to be largely influenced by natural sources air pollution including wind-blown dusts with major air pollution events likely associated with bushfires and/or dust storms. Generally, ambient concentrations of gaseous and toxic air pollutants (e.g. volatile organic compounds) are expected to be low in regional locations such as the proposal location.

However, the above characterisation of the plastics recycling and reprocessing facility site is likely to be changed at locations close to any existing or proposed sources of ambient air pollution. Key sources of ambient air pollution relevant to the study area are reviewed based on observations during attendance at the plastics recycling and reprocessing facility site, review of aerial imagery, review of Environmental Protection Licences (EPLs) and review of the National Pollutant Inventory (NPI) database.

Identified operations likely to emit significant amounts of air pollutants within 5 km of the proposal are described in Table 4.2.

Table 4.2 Existing or proposed sources of air pollution within 10 km of the proposal

Description of operation	Proximity to the proposal	Expected impact on air quality at proposal sensitive receptors	Annual emissions
Dux Manufacturing Moss Vale – metal coating and finishing	100 m northeast	Key emissions from Dux Manufacturing include volatile organic compounds and other gaseous air pollutants including oxides of nitrogen. Emissions from Dux Manufacturing have the potential to lead to elevated concentrations of pollutants at the nearest sensitive receptor locations. Given the proximity of Dux Manufacturing to the plastics recycling and reprocessing facility site, emissions from Dux Manufacturing have the potential to contribute to cumulative impacts at receptors closest to the proposal.	28,000 kg VOC
Australian BioResources – breeding of mice for pharmaceutical purposes	100 m east	The key emission from the Australian BioResources is likely to be odour. Odours from animal husbandry are typically associated with animal feed and animal wastes which are likely to produce a complex mixture of odorous pollutants, driven by sulphur compounds. Given the proximity of Australian BioResources to the plastics recycling and reprocessing facility site, emissions of odour have the potential to contribute to cumulative impacts at receptors closest to the proposal.	-
Moss Vale Meter Station – gas supply metering station	1.4 km southwest	Emissions from Moss Vale Meter Station include volatile organic compounds. The annual emission of VOCs as reported to the NPI from the facility is very low and therefore emissions from the meter station are not likely to significantly impact air quality surrounding the facility.	1,100 kg VOC
Moss Vale Sewage Treatment Plant	2 km southwest	The odour emissions from the Moss Vale Sewage Treatment Plant have the potential to lead to elevated odour levels surrounding the plant. However, given the distance to the from the treatment plant, odour impacts on receptors closest to the proposal are unlikely. A high density of sensitive receptors is located approximately 200 m northwest of the treatment plant.	2,100 kg ammonia
Moss Vale Refuelling Facility	2 km south	Emissions from the refuelling facility include volatile organic compounds. The annual emission of VOCs as reported to the NPI from the facility is very low and therefore emissions from the meter station are not likely to significantly impact air quality surrounding the facility.	77 kg VOC

Description of operation	Proximity to the proposal	Expected impact on air quality at proposal sensitive receptors	Annual emissions
Inghams Berrima Feedmill – stockfeed manufacture	2.5 km northwest	Emissions from Inghams Berrima Feedmill include particulate matter and have the potential to lead to elevated concentrations of pollutants at locations surrounding the facility. Given the distance from the feedmill to the proposal location, particulate matter impacts on proposal sensitive receptors are unlikely.	3800 kg PM_{10}
Berrima Cement Works – cement and lime manufacture	3.8 km northwest	Emissions from Berrima Cement Works including particulate matter, oxides of nitrogen, carbon monoxide, volatile organic compounds and sulfur dioxide have the potential to lead to elevated concentrations of pollutants at sensitive receptors surrounding the works. However, given the distance to the from the cement works, impacts on receptors closest to the proposal are unlikely. A high density of sensitive receptors is located less than 500 m north of the cement works.	11,000 kg VOC 130,000 kg PM_{10}
Bowral Sewage Treatment Plant	4.6 km northeast	The odour emissions from the Bowral Sewage Treatment Plant have the potential to lead to elevated odour levels at sensitive receptors closest to the treatment plant. However, given the distance to the from the treatment plant, odour impacts on receptors closest to the proposal are unlikely. A high density of sensitive receptors is located approximately 200 m east of the treatment plant.	2,900 kg ammonia

4.3.3 Air quality monitoring data

The Department of Planning, Industry and Environment (DPIE) operate air quality monitoring stations in various locations across NSW. The nearest station to the plastics recycling and reprocessing facility site is at Bargo (approx. 31 km).

The monitoring data for particulate matter at this station is shown in Table 4.3. The values presented in Table 4.3 are for comparison against the relevant criteria as presented in the NEPM (Ambient Air Quality).

Exceedances of the criteria, which are likely associated with extraneous events such as dust storms, backburning and bushfires, have been removed as per the Approved Methods guidance and the revised values are shown alongside raw results in brackets. The data from these stations give an understanding of the typical levels in similar environments however due to the large distances between the plastics recycling and reprocessing facility site and the monitoring station, the data is not considered to be entirely site representative.

Table 4.3 Particulate matter (PM_{10} and $PM_{2.5}$) monitoring data for Bargo and Goulburn DPIE stations

Location	Pollutant	Averaging period	Criteria µg/m³	Year				
				2016	2017	2018	2019	2020
Bargo	PM_{10}, µg/m³	Annual average	**25**	14.2 (13.8)	14.1 (13.9)	17.0 (16.4)	21.5 (16.7)	16.3 (13.7)
		24 hour maximum	**50**	57.5 (33.9)	60.2 (33.9)	59.1 (47.8)	307 (44.9)	263 (49.2)
	$PM_{2.5}$, µg/m³	Annual average	**7**	-	6.25	6.77 (6.58)	10.9 (7.07)	7.78 (5.75)
		24 hour maximum	**20**	-	24.6	38.0 (24.7)	298 (24.7)	125 (21.3)

5. Project emissions

5.1 Overview

The operation of the proposal includes the main processing facility (Building 1), the deep processing facility (Building 2) and the wastewater treatment plant. All operations are carried out within fully enclosed buildings. Control of air emissions occurs by capture of emissions at each processing unit, followed by treatment at a number of emission control units prior to discharge.

The operations of the main processing facility (Building 1) include sorting, cleaning and crushing of plastic waste products. Potential emissions to air from this process are expected to be particulate matter and volatile organic compounds (VOCs) from controlled crushing of plastics and extrusion granulation processes.

The deep processing processes (Building 2) involve heating of PE, PP and PET plastic products. Heating of plastic products has the potential to cause low level emissions of particulate matter, volatile organic compounds and odours. A literature review of the process of heating plastics was undertaken to determine the potential for emissions to air from the deep processing operations.

The proposal includes a comprehensive emission control system, further reducing emissions prior to discharging treated air at four locations above the rooflines of Buildings 1 and 2. The proposed emission control systems are considered best practice.

A wastewater treatment plant will be used to treat and separate contaminants and from the water required in the main processing operations for reuse. Given the mostly physicochemical nature of the wastewater treatment processes, only minor odours would be generated. The greatest risk for odour generation from the wastewater treatment plant is likely associated with handling and storage of sludges. Enclosure of the entire wastewater treatment plant is expected to limit the emissions to the surrounding environment.

5.2 Primary operations

5.2.1 Description of activities

The primary operations of the plastics recycling facility are divided across two main buildings. Building 1, the main processing building, is to be used for sorting, cleaning, crushing and extrusion granulation of various plastic waste products. Building 2, the deep processing building, will be used for reprocessing of the flakes and pellets produced in Building 1 to more advanced products such as resins and other plastic products. Finished products would also be stored in Building 2.

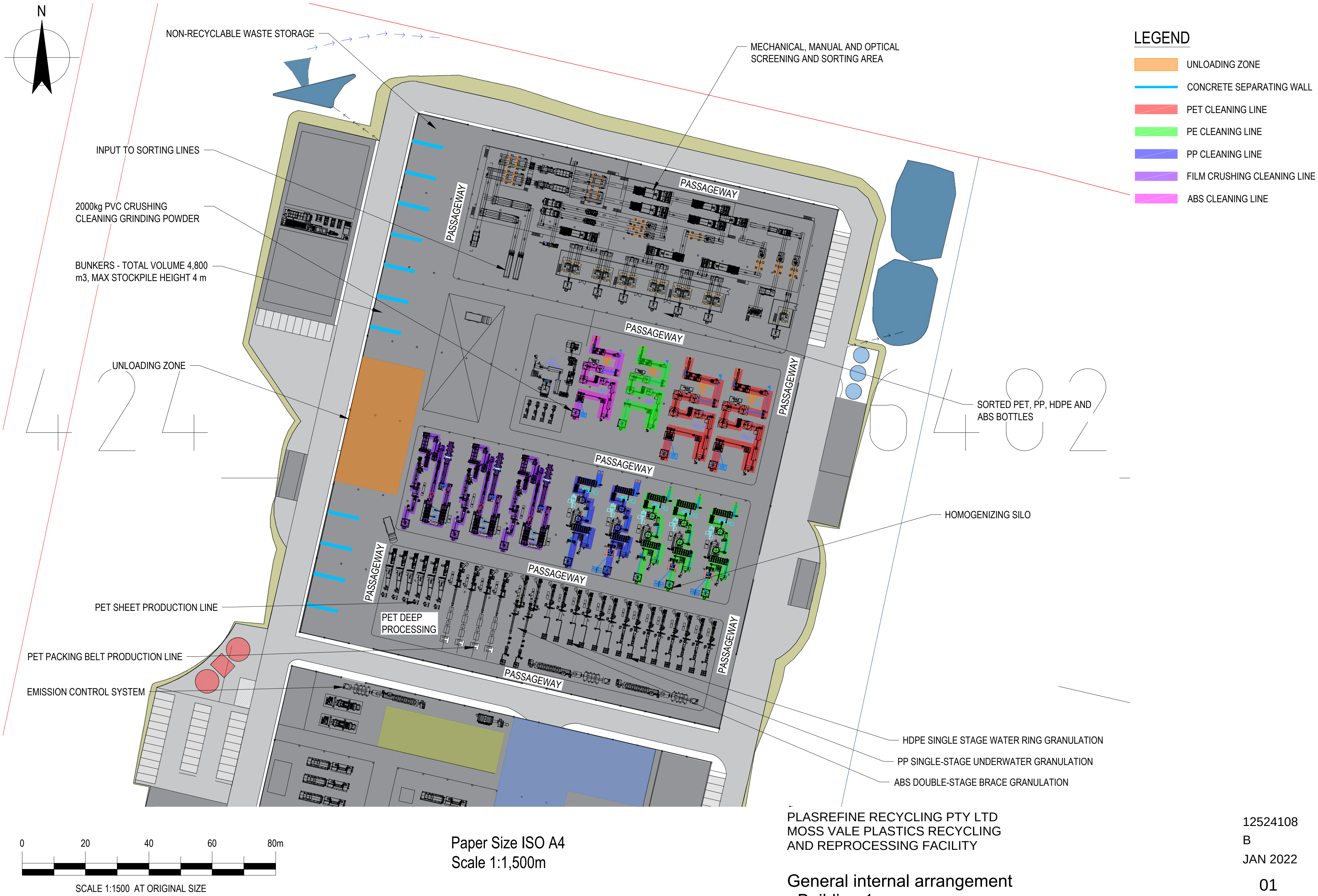
Figure 5.3 and Figure 5.4 shows the internal equipment arrangement of these processing buildings.

Mixed plastics and waste containing plastic would be received and processed within Building 1 and vehicles would enter via automatic roller doors on the western side of the building. The waste unloading zone would be located in the central east portion of Building 1 and surrounded by a series of conveyors and automatic sorting and processing equipment, similar to that shown in Figure 5.1. Waste plastic waste would be pelletised using crushing and extrusion granulation processes. Pellets and flakes produced in Building 1 would be moulded using extrusion or injection moulding processes within Building 2. Figure 5.2 shows an example extrusion moulding production line for PE and PP pipes. Milling and profiling of some finished products will occur

Extrusion and moulding processes involve heating the plastic to its melting point, less than 280°C, and reforming to the desired shape. Elements of the production lines involving heating of plastics or handling of melted plastics would be fully enclosed, with air flow from these elements directed to emission control units. Additionally, where products are required to be cut, emissions would be ventilated to an emission control unit for dust collection.

*Figure 5.1 PET bottle washing and recycling lines (**Beier Machinery**)*

*Figure 5.2 Extrusion moulding production line for PE and PP pipes (**Beier Machinery**)*



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PLASREFINE RECYCLING PTY LTD
MOSS VALE PLASTICS RECYCLING
AND REPROCESSING FACILITY

General internal arrangement
- Building 1

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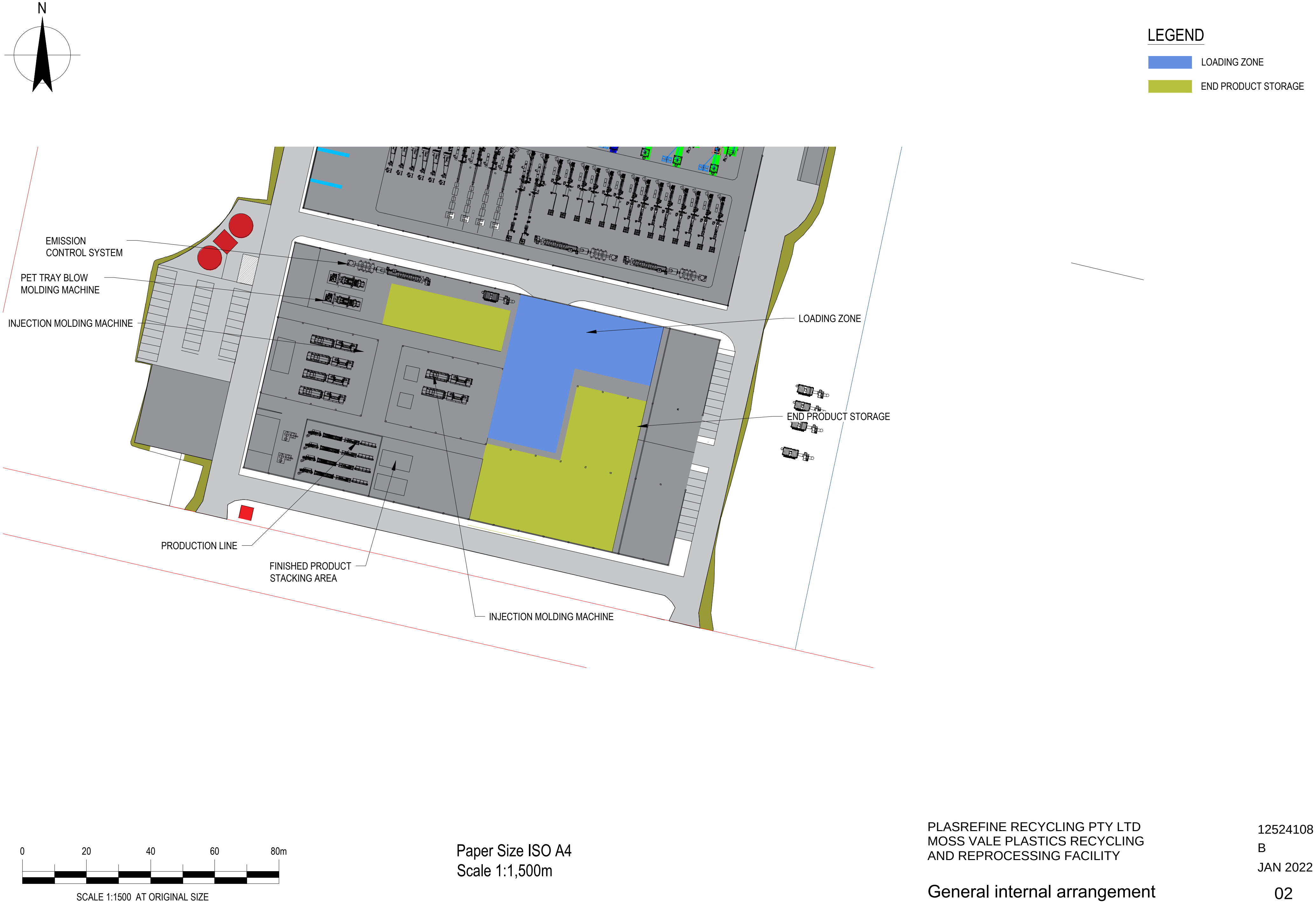

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PLASREFINE RECYCLING PTY LTD
MOSS VALE PLASTICS RECYCLING
AND REPROCESSING FACILITY

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General internal arrangement
- Building 2

02

5.2.2 Throughput

The processes and equipment to be used for operations in Building 1 are outlined in Table 5.1 and for Building 2 in Table 5.2. The maximum capacity is shown alongside the proposed material output from each production line.

Table 5.1 Summary of main processing activities and equipment

Process(es)	Type of raw material	Equipment/procedure name	Equipment capacity (t/y)	Material output (t/y)
Crushing and cleaning, Extrusion granulation	Domestic waste plastics (PET bottles, colourless and transparent)	PET crushing and cleaning line, PE Extrusion granulation line	20,000	16,000
Crushing and cleaning, Extrusion granulation	Domestic waste plastics (PET bottles, variegated)	PET crushing and cleaning line, PE Extrusion granulation line	5,000	4,000
Crushing and cleaning	Domestic waste plastics (PE bottles, natural colour)	Daily miscellaneous plastic crushing and cleaning line	20,000	18,000
Crushing and cleaning	Domestic waste plastics (PE bottles, variegated)	Daily miscellaneous plastic crushing and cleaning line	10,000	9,000
Crushing and cleaning, Extrusion granulation	Domestic waste plastics (PP bottles, natural colour)	Daily miscellaneous plastic crushing and cleaning line, PP extrusion granulation production line	10,000	9,000
Crushing and cleaning, Extrusion granulation	Domestic waste plastics (PP bottles, variegated)	Daily miscellaneous plastic crushing and cleaning line, PP extrusion granulation production line	10,000	9,000
Crushing and cleaning, Extrusion granulation	Domestic waste plastics (ABS, variegated)	Daily miscellaneous plastic crushing and cleaning line, PS extrusion granulation production line	5,000	5,000
Crushing and cleaning, Extrusion granulation	PE film (plastic film, plastic film, vest bag recycling film)	PE film crushing and cleaning line, PE film extrusion granulation production line	15,000	8,000
Crushing and cleaning, Extrusion granulation	PVC pipe	PVC pipe crushing and cleaning line (≤ 450 mm), PVC mill production line	10,000	9,000

Table 5.2 Summary of deep processing activities and equipment in Building 2

Process	Equipment	Raw material	Unit capacity, t/y
Deep processing (PET packing belt)	PET packaging belt extrusion moulding unit	PET household waste plastics (clean debris, mottled)	4,000
Deep processing (wood plastic composite extrusion)	Cone double extrusion unit	PP, PE recycled tablets, wood powder	5,000
Deep processing (logistics pallet)	Injection moulding machine	PP, PE recycled modified particles	5,000
Deep processing (beach chair, etc.)	Injection moulding machine	PP, PE recycled modified particles	5,000
Deep processing (turnover box, etc.)	Injection moulding machine	PP, PE recycled modified particles	5,000

5.2.3 Expected emissions from primary operations

The processes of crushing and granulation of plastic products are expected to result in emissions of particulate matter and volatile organic compounds, while negligible emissions to air are expected from the sorting and cleaning processes.

The crushing processes involve breaking the hard plastics into smaller flakes which are subsequently prepared for sale or use in deep processing using granulation extrusion. Some fine particles may be created during crushing, resulting in potential pollutants such as PM_{10} and $PM_{2.5}$. During the process the product would be washed, removing the majority of dust on the surface of the material.

The extrusion granulation process involves creating granulated particles of plastics through heating, extrusion and mechanical (e.g. rotary) processes. During this process, fine particles (as PM_{10} and $PM_{2.5}$) and volatile organic compounds may be emitted. PE, PP and PET are the polymer types that would be used in the extrusion granulation and deep processing activities. Each of these polymer types have different compositions including some volatile organic compounds, which could be released when polymers are heated.

Heating and processing of plastics has the potential to lead to emissions of volatile organic compounds found as impurities in the plastic. The specific types and quantities of volatile organic compounds generated during processing are dependent on a number of factors, including type of plastic, purity of material, processing methodology (injection vs extrusion), residence time and processing temperature.

Products such as doors and chairs produced in Building 2 would require milling to size or profiling. These activities have will lead to the emission of particulate matter. However they are proposed to be enclosed with air extraction and air treatment systems to minimise particulate matter emitted to the atmosphere.

The pollution control systems proposed to be used to reduce VOC and particulate emissions are outlined in Section 5.4.

5.3 Wastewater treatment plant

5.3.1 Description of activity

The wastewater treatment plant would be used to clean and recycle water used for the activities within Building 1. Sewage generated on site would be discharged to the Council sewerage system.

The wastewater treatment plant would be an enclosed structure placed on a slab-on-ground with a building height of at least six metres and the wastewater treatment plant configuration would include:

- Wastewater collection tank
- Filtration system
- Deposition tank
- Two flotation tanks
- Air compressor
- 2,000 litre dosing and pH adjustment system
- Sludge tank
- Sludge treatment system and screw presser
- Processed water storage tank

5.3.2 Potential emissions

The wastewater treatment plant will be used to separate contaminants (particles) from the water required in the main processing operations for reuse. The process has the potential to cause emissions of odour from the waste collected in the sludge tank. However, given the physicochemical nature of the wastewater treatment processes, only minor odours would be generated.

5.3.3 Description of source-receptor pathway

Odour emissions will be emitted directly to the enclosed wastewater treatment plant building. As for the two processing buildings, ventilation is required, and the building will be accessed via a single roller shutter door on the eastern façade. Any emissions from the building would be released fugitively through these systems.

The separation distance to the nearest residential receptor is over 450 m. The majority of residential receptors are to the south of the proposal with the closest located to the southeast. The wind rose presented in Figure 4.2 shows winds in the direction of these receivers, from the northwest, are rare.

5.3.4 Summary of potential risk

The proposed wastewater treatment plant is to be used to recycle water used in cleaning processes in Building 1. The majority of the treatment processes are not likely to generate significant amounts of odour, however some odour is likely to be generated from the handling and storage of the sludge generated during the treatment process. The wastewater treatment plant is fully enclosed, with air flow achieved through natural ventilation of the building.

The nearest residential receptor is greater than 450 m from the wastewater treatment plant, which is well in excess of the separation distance which would be required for a treatment plant of this scale and nature.

Based on the above characterisation of the activity and the source to receptor pathway, the potential risk is expected to be low to negligible at all sensitive receptors. Therefore, the risk of air quality impacts due to the operation of the wastewater treatment plant is considered low.

Recommendations to further reduce the risk of air quality impacts at sensitive receptor locations due to operation of the wastewater treatment plant are discussed in Section 7.2.

5.4 Emission control

The proposed emission control system includes localised capture of emissions from individual processing units, with emissions ventilated to a total of four emission control systems. Three emission control systems would be for the primary purpose of VOC treatment, and would include a pneumatic cyclone spray tower, an electrostatic degreasing device, and activated carbon adsorption prior to treated air being discharged from a stack. The fourth system would be for the treatment of particulate matter from the deep processing operations and would include fabric filters.

The extrusion granulation in Building 1 is expected to produce VOC emissions that would need to be treated prior to discharge. Two VOC emission control units are proposed for Building 1. In addition to VOC emissions, minor emissions of particulate matter are expected from extrusion granulation, which would be reduced further by the emission control system.

Moulding processes in Building 2 would similarly require treatment of VOC emissions before discharge to the atmosphere. Additionally, profiling activities occurring in Building 2 may require some treatment of particulate matter, depending upon the final choice of products. A single VOC emission control unit as well as a dust control unit would therefore be required to treat exhaust air within Building 2. In addition to VOC emissions, minor emissions of particulate matter would also be expected from extrusion granulation, which would be managed by the emission control system.

The proposed locations of each of the four stacks are shown on Figure 5.3 and Figure 5.4.

The emission control systems will be designed to comply with the relevant emission limits for general activities and plant (Group 6) as presented in the POEO clean air regulation. In order to estimate worst-case emission rates from each of the stacks, the POEO emission limits are assumed with the design (maximum) air flow rate. This method assesses the highest possible mass emission rate of pollutants where the emission control system is operating in compliance with its design.

Stack parameters for each of the four emission control systems are outlined in Table 5.3 and emission estimations are presented in Table 5.4. Emission estimation is based on maximum emission concentration as guaranteed by the equipment provider and provided to GHD by the client.

Table 5.3 ***Emission control unit discharge parameters (each stack)***

Parameter	Value
Stack height (m)	15
Stack diameter (m)	VOC – 1.2 PM – 1.0
Air flow (m^3/h)	50,000
Temperature (°C)	25 (ambient)
Exit velocity (m/s)	12

Table 5.4 ***Emissions estimation for pollution control systems***

Pollutant	Maximum emission concentration (mg/Nm^3, 273K, 1 atm)	Maximum normalised air flow per unit (Nm^3/h, 273K, 1 atm)	Maximum emission rate per unit (g/s)
PM	20[1]	45,807	0.25
TVOC	20[2]		0.25
Benzene	0.8		0.010
Toluene	5		0.064
Styrene	5		0.064

Notes:

1) The maximum emission concentration is equivalent to the relevant POEO limit: General activities and plant (group 6): Solid particles (Total) - Any crushing, grinding, separating or materials handling activity

2) The maximum emission concentration is equivalent to the relevant POEO limit: Afterburners, flares and vapour recovery units – Vapour recovery units and other non-thermal treatment plant (group 6): Volatile organic compounds (VOCs), as n-propane - Any vapour recovery unit treating air impurities that originate from material containing any principal toxic air pollutant

6. Impact assessment

6.1 Construction

6.1.1 Construction methodology

The construction of the proposal would follow the methodology outlined in Table 6.1, as provided by Plasrefine Recycling.

Table 6.1 Construction methodology

Stage	Activity	Equipment	Estimated duration
Stage 1 – Site establishment	– Site establishment	– Trucks – Hand tools	1 month
Stage 2 – Ground works and excavation	– Bulk earthworks for site shaping and surface water drainage and the bioretention pond – Pouring concrete foundation slab, footings, hardstand and slabs for the buildings – Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points	– Excavators – Bulldozer – Compactors – Tippers – Trucks	1.5 months
Stage 3 – Road access construction	– Excavation for placement of road base layers – Installation of concrete kerb and gutters – Paving of access road – Construction of retaining walls and batters	– Excavators – Bulldozer – Grader – Compactor – Tippers – Smooth drum roller – Concrete truck and pump – Trucks	1 month
Stage 4 – Construction of the main structures	– Installation of steel truss framework for structures – Erection of pre-cast concrete panels for external and internal partition walls and metal roof for site buildings – Installation of firewater and other tanks – Installation of weighbridges	– Excavator – Bobcat – Forklift – Mobile crane – Boom lift – Tippers – Trucks	7 months
	– Installation of processing equipment	– Forklift – Mobile crane – Scissor lift (cherry picker) – Mini loader – Trucks	3 months
Stage 5 – Testing and commissioning	– Testing and commissioning	– Truck – welder	3 months

The key emissions to air from the construction of the proposal have been identified upon review of the construction methodology. Low levels of dust emissions are expected during Stage 1 and Stage 5 of the construction. Stage 2, Stage 3 and Stage 4 have the potential to cause greater dust emissions and a risk-based assessment of potential impact has been undertaken in accordance with IAQM guidance.

Minor vehicle exhaust emissions are expected throughout the construction period; however, sources will be discontinuous, transient, and mobile, and therefore the air quality risk associated with vehicle emissions during construction is low.

6.1.2 Assessment approach

A risk-based approach in accordance with IAQM guidance was adopted to assess potential particulate matter impacts during the construction of the proposal.

The IAQM guidance recommends that a detailed risk assessment be undertaken where there is a human receptor within 350 m or an ecological receptor within 50 m of the construction footprint, or where there is a human or ecological receptor within 50 m of any haulage routes up to 500 m from the site entrance.

Given there are human receptors within 350 m of the construction footprint, a detailed risk assessment has been undertaken.

6.1.3 Risks identified

The construction program has been divided into three activity groups that have potential to cause significant dust emissions. These activities are earthworks, construction and track-out.

- **earthworks** include the activities described in Stage 2 of Table 6.1,
- **construction** includes activities in Stage 3 and Stage 4, and
- **track-out** includes transport actives associated with all stages of the construction.

In order to identify the risk of dust impact from each stage of the construction the size and scale of each activity must be determined as well as the sensitivity of the surrounding environment.

Size and scale

The size and scale of the activities are determined by not only the physical size of the project but other factors that are likely to increase or decrease the amount of dust created during each construction activity. Table 6.2 outlines these factors for each activity and the resulting size and scale descriptor as defined by the IAQM Guidance.

Table 6.2 Size and scale of construction activities

Activity	Description	Size and scale descriptor
Earthworks	– Area requiring earthworks is > 54,000 m^2 – Significant leveling of earth required prior to construction of the building – Earth required to be loosened and stockpiled	Large
Construction	– Buildings being constructed are > 400,000 m^3 in volume – Construction of roadway, including mixing and pouring asphalt	Large
Track-out	– Estimated that there will be < 50 vehicle movements per day – Vehicle movements along paved roads	Medium

Sensitivity

The sensitivity of the surrounding environment is determined by the number of high risk, medium risk and low risk receptors within a certain proximity of the construction footprint. High sensitivity receptors include dwellings, educational institutions, and medical facilities. Medium sensitivity receptors include commercial, and industrial premises. Low sensitivity receptors include farmland, recreational parklands, and other public spaces. The sensitivity is determined for three areas of concern, these are:

- Sensitivities of people to dust soiling effects
- Sensitivities of people to the health effects of PM_{10}
- Sensitivities of receptors to ecological effects.

The sensitivities for each area for all construction activities are outlines in Table 6.3.

Table 6.3 Sensitivity of areas of concern for all construction activities

Activity	Description	Sensitivity
Sensitivities of people to dust soiling effects	– Two medium sensitivity receptors greater than 20 m from any construction activity	Low

Activity	Description	Sensitivity
	– More than 10 highly sensitive receptors within 50 m of the construction activity with none of these within 20 m of the construction areas	
Sensitivities of people to the health effects of PM_{10}\	– No representative numerical ambient PM_{10} levels are available and therefore the maximum threshold has been used – Two medium sensitivity receptors over 20 m from the construction activities – More than 10 highly sensitive receptors within 200 m of the construction activity with none of these within 50 m of the construction areas	Low
Sensitivities of receptors to ecological effects.	– No high or medium sensitive ecological features within 50 m of the construction activity	Low

Risk summary

The risk matrix uses the sensitivity and scale to determine the risk of dust impacts on the surrounding receptors. Table 6.4 outlines the risk matrix determined for the construction of the proposal. The risk identified for all construction activities is **Low Risk** for all sensitivity types. Proposed specific mitigation measures and residual impacts are provided in Section 7.1 to further minimise the risk of dust impacts at receptor locations during construction works.

Table 6.4 Risk matrix for dust impacts during construction

Impact	Risk		
	Earthworks	Construction	Track-out
Dust soiling	Low risk	Low risk	Low risk
Human health	Low risk	Low risk	Low risk
Ecological	Low risk	Low risk	Low risk

6.2 Operation

6.2.1 Modelling methodology

Air quality dispersion modelling was undertaken using AERMOD version 9.5.0. AERMOD is the approved dispersion model recommended by the US EPA and is recognised by the Victoria EPA as a suitable and advanced dispersion model that improves upon Ausplume. Ausplume is listed in the NSW EPA Approved Methods. AERMOD is not explicitly mentioned in the Approved Methods but has been approved for use by the NSW EPA in numerous air quality dispersion assessments.

AERMOD is a steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrains.

AERMOD was configured using site-representative meteorological data as described in section 5.1 and in accordance with EPA Victoria AERMOD modelling guidance (publications 1550 and 1551):

– Meteorological data for the period January 2016 – December 2020 from meteorological observations measured at Moss Vale AWS (BoM, SN 068239). The measured data was processed along with local land use characteristics using AERMET, the meteorological pre-processor for AERMOD.
– The effects of terrain were included by the model which utilised terrain data at a 30 m resolution.
– Sensitive receptors, as identified in Section 4.1, were included in the model.
– Model results were exported as 1-hour (99.9th percentile), 24-hour (100th percentile) and annual (100th percentile) averaging periods.
– Buildings were included in the model, with building wake effects taken into consideration by the BPIP algorithm.

6.2.2 Modelled emissions

The modelling assessment included emissions from the four air pollution control system stacks only. As outlined in section 5.4, three of the control systems will be for the control of VOCs, with one for the control of particulate matter from the deep processing area. The locations of the stacks are shown in Figure 5.4.

Given the above, modelling is carried out for the following parameters:

- Particulate matter, including PM_{10} and $PM_{2.5}$ (from one stack) - it is assumed that 100% of the particulate matter emission is $PM_{2.5}$ (which is an extremely conservative assumption). On this basis, total particulate emissions are equal to PM_{10} emissions, which are equal to $PM_{2.5}$ emissions.
- Individual VOCs, including benzene, toluene and styrene (from three stacks)

As there are no TVOC criteria available for assessment, TVOC emissions are not modelled, and VOC impacts are instead assessed by modelling of key individual VOCs (benzene, toluene, styrene).

6.2.3 Assessment criteria

Assessment criteria used for the project was from the NSW EPA's Approved Methods, with the exception of $PM_{2.5}$ which was sourced from the Air NEPM air quality objectives, which represent the most recent and stringent standards for protection of the air quality environment.

The adopted air quality assessment criteria are summarised in Table 6.5.

Table 6.5 Air quality impact assessment criteria

Pollutant	Averaging period	Statistic	Impact location	Impact type	Assessment Criteria (µg/m^3)	
					EPA	Air NEPM
PM_{10}	24 hour	Maximum	Sensitive receptor	Cumulative	50	50
	Annual	Maximum	Sensitive receptor	Cumulative	25	25
$PM_{2.5}$	24 hour	Maximum	Sensitive receptor	Cumulative	25	20
	Annual	Maximum	Sensitive receptor	Cumulative	8	7
Benzene	1 hour	99.9th percentile	At or beyond site boundary	Incremental	29	-
Styrene*	1 hour	99.9th percentile	Sensitive receptor	Incremental	120	-
Toluene*	1 hour	99.9th percentile	Sensitive receptor	Incremental	360	-
Note: criteria for styrene and toluene are sourced from Table 7.4.a of the Approved Methods – 'Impact assessment criteria for individual odourous air pollutants (Victorian Government Gazette 2001). These criteria are for the protection against odour impacts.						

6.2.4 Predicted impacts

The predicted impacts were assessed at nearby sensitive receptors for the primary production of the facility. The predicted concentrations were assessed against the assessment criteria provided in Table 6.5.

Recommendations to further reduce the risk of air quality impacts at sensitive receptor locations due to processing operations are discussed in Section 7.2.

Predicted incremental concentrations

The predicted impacts (impacts from facility operations only) for PM and VOC are presented in Table 6.6 and Table 6.7 respectively. There are no predicted incremental exceedances of the assessment criteria. The "worst-case" predicted impacts for all pollutants occur at the commercial receptor R001, the Australian BioResources Facility. Impacts for particulate matter have also been presented for the worst affect residential receptor. However, the results show that the maximum impacts at both receptors are significantly below the EPA criteria.

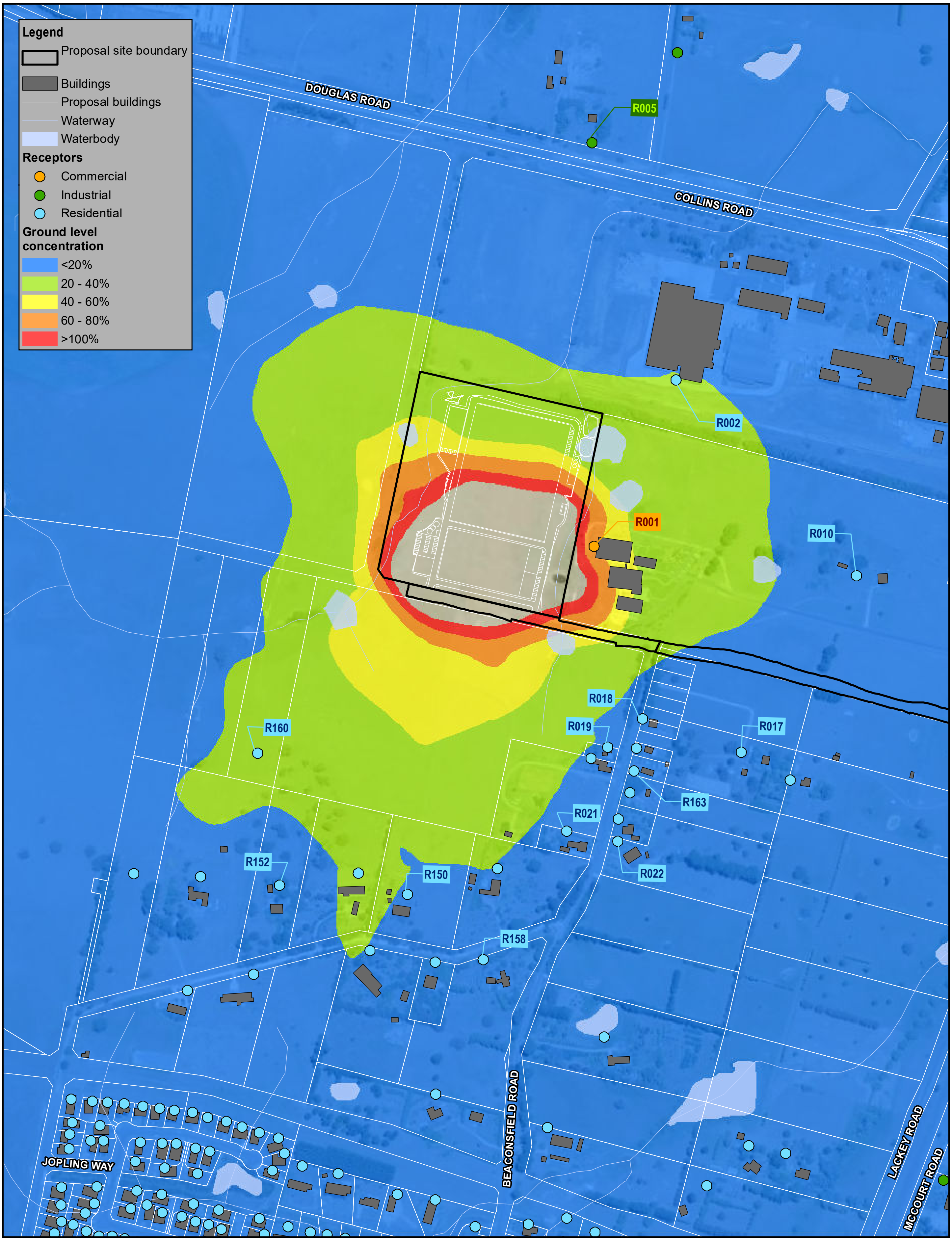
Contour plots showing incremental $PM_{2.5}$, PM_{10} and benzene dispersion are provided in Figure 6.1, Figure 6.2 and Figure 6.3. Concentrations of styrene and toluene do not exceed 20% of the criteria level and as such contour plots have not been provided.

Table 6.6 Predicted incremental particulate concentrations

Receptor	PM_{10}		$PM_{2.5}$	
	24- hour max	Annual average	24- hour max	Annual average
Assessment criteria (µg/m³)	**50**	**25**	**20**	**7**
Maximum impact (µg/m³) at commercial receptor	14	2.2	14	2.2
Maximum impact (µg/m³) at residential receptor	7	0.58	7	0.58
Compliance	Yes	Yes	Yes	Yes
As noted above, it is conservatively assumed that total PM = PM_{10} = $PM_{2.5}$				

Table 6.7 Predicted incremental VOC concentrations

Receptor	Benzene	Toluene	Styrene
	1-hour 99.9th percentile	1-hour 99.9th percentile	1-hour 99.9th percentile
Assessment criteria (µg/m³)	**29**	**360**	**120**
Maximum ground level concentration (µg/m³)	9.1	-	-
Maximum impact (µg/m³) at commercial receptor	6.2	39	39
Maximum impact (µg/m³) at residential receptor	2.7	17	17
Compliance	Yes	Yes	Yes



Paper Size ISO A4

0 50 100 150 200

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Air Quality Assessment

Contour plot of maximum 24 hour incremental $PM_{2.5}$ concentration

Project No. **12524108**
Revision No. **B**
Date **25/01/2022**

FIGURE 6.2

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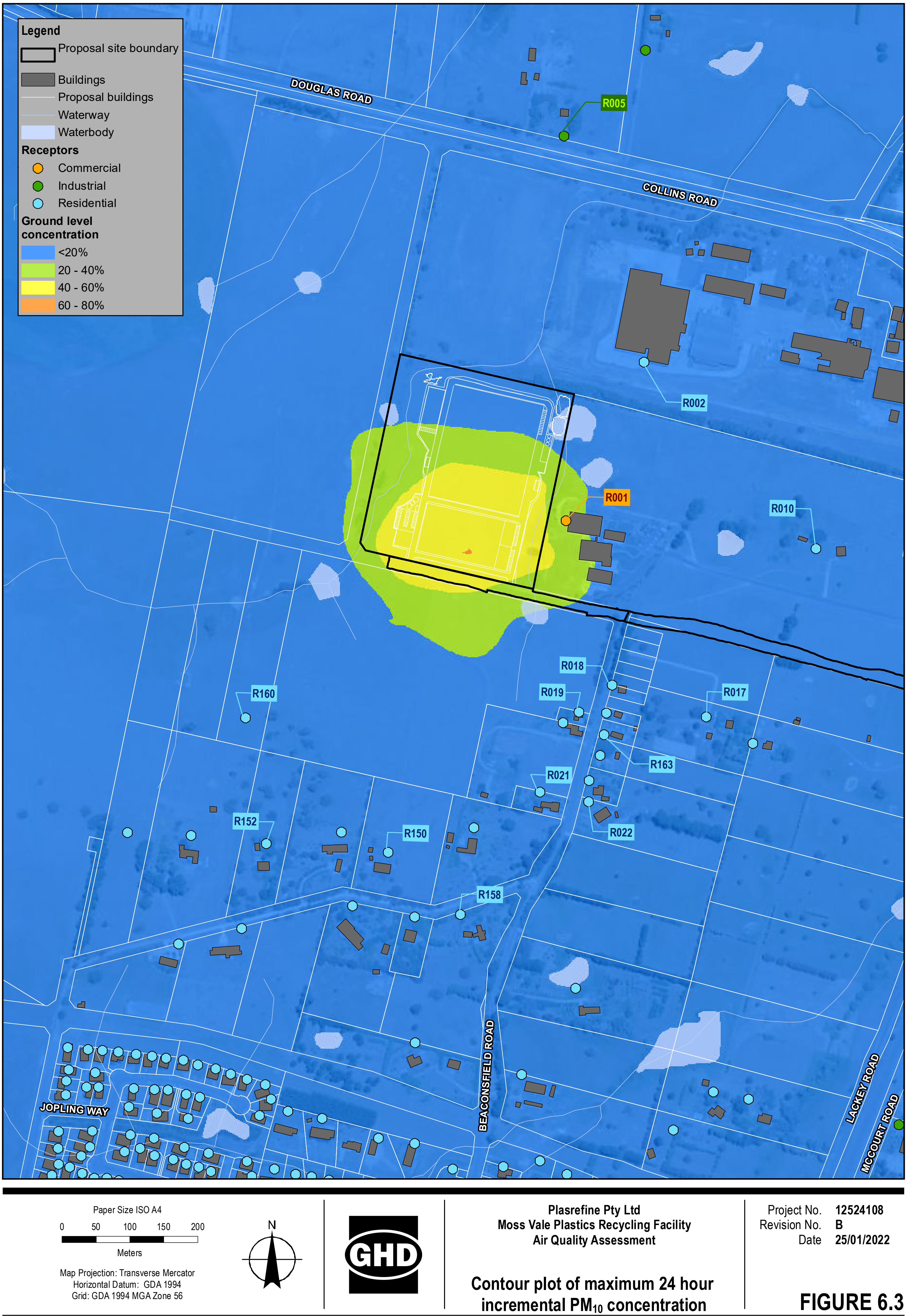

Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Air Quality Assessment

Contour plot of maximum 24 hour incremental PM_{10} concentration

Project No. **12524108**
Revision No. **B**
Date **25/01/2022**

FIGURE 6.3

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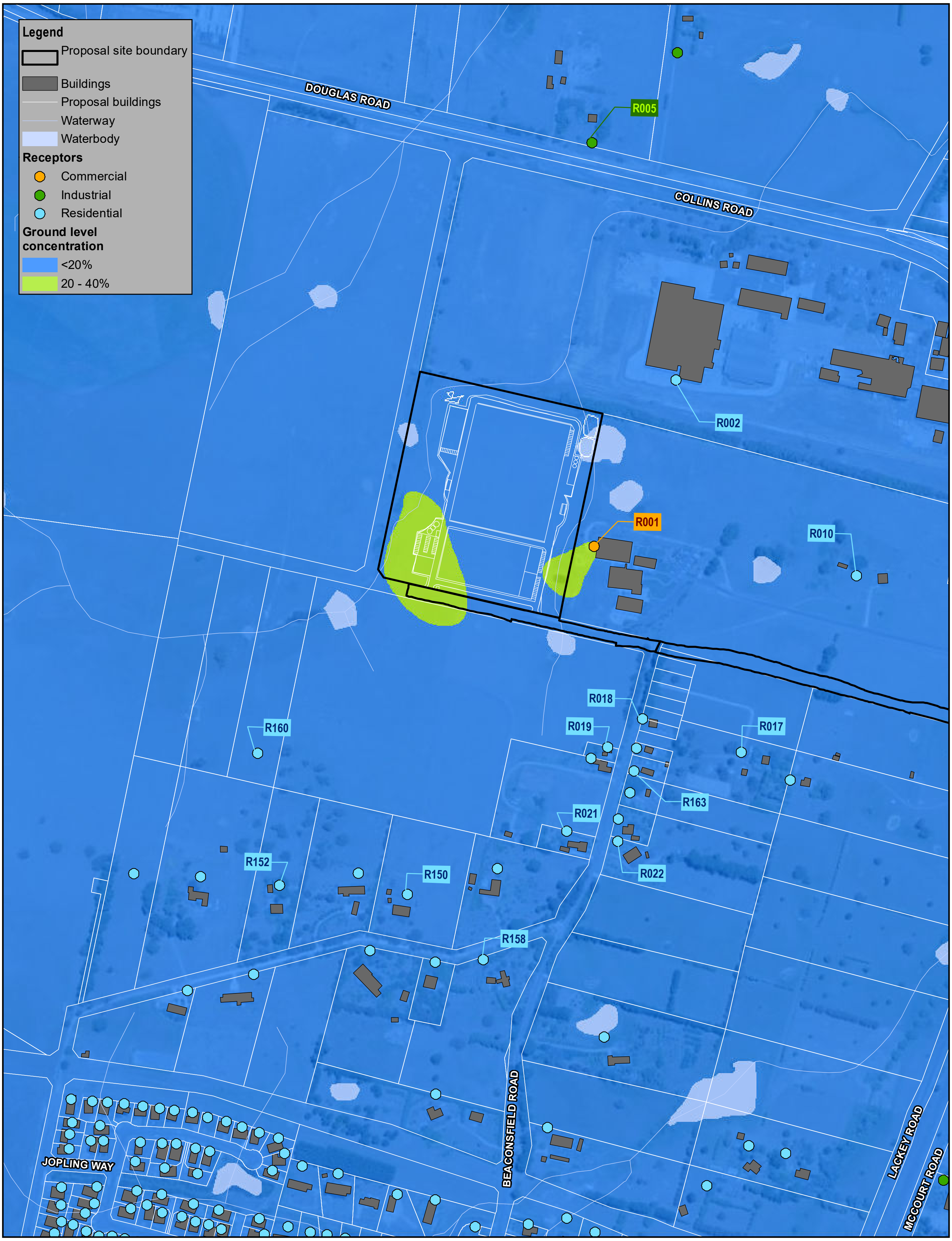
Data source: © Department of Customer Service 2020. Created by: eibbertson



Paper Size ISO A4

0 50 100 150 200

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Air Quality Assessment

Contour plot of 99th percentile 1 hour incremental benzene concentration

Project No. 12524108
Revision No. B
Date 25/01/2022

FIGURE 6.4

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Data source: © Department of Customer Service 2020. Created by: eibbertson

Cumulative impacts (particulate matter)

The greatest risk of cumulative impacts (background plus proposal) is associated with $PM_{2.5}$ emissions. This is since $PM_{2.5}$ emissions are assumed to be equivalent to PM_{10} emissions and the criteria level for $PM_{2.5}$ is significantly less than for PM_{10}. The dispersion modelling shows that the incremental (proposal only) impact for $PM_{2.5}$ is well within the criteria levels, however assessment of the cumulative impact is required.

Background 24-hour average $PM_{2.5}$ concentrations are measured at the Bargo DPIE station, as presented in section 4.3.3. The data from Bargo shows that, as for the many locations in New South Wales, short-term ambient $PM_{2.5}$ concentrations are sometimes in exceedance of the air quality objectives. At locations such as Bargo, these exceedance periods are most commonly and likely associated with regional sources such as bushfires and controlled burns.

The maximum cumulative impact can be determined through a contemporaneous assessment where the daily proposal impact and the daily background concentration are added to give the maximum total impact for each 24-hour period. A contemporaneous assessment has been completed using background $PM_{2.5}$ concentrations from Bargo DPIE stations for the years 2017 and 2018. The years 2019 and 2020 have not been included in the assessment as they are heavily affected by bushfire activity.

Figure 6.4 and Figure 6.6 show a time series of the incremental (proposal only) and background data stacked to show the total cumulative impact for the most affected commercial (R001) and residential (R160) receptors respectively. The total cumulative impact has been ranked (high to low) and is shown on Figure 6.5 and Figure 6.7 for each of these receptors respectively.

From the figures the following are observed

– Over the two-year period there are a total of five cumulative exceedances of the 24-hour average $PM_{2.5}$ objective at the most affected commercial receptor (R001). This represents approximately 2.5 exceedances per year.
– There are a total of two cumulative exceedances of the 24-hour average $PM_{2.5}$ objective at the most affected residential receptor (R160). This represents 1 exceedance per year.
– Exceedances occur on days where there are significantly elevated background concentrations ($PM_{2.5}$), and the incremental impact from the proposal on the exceedance days is very low. This is further demonstrated through the values presented in Table 6.8 below.
– The data presented in Table 6.8 shows that for the exceedance days, the average percentage of total concentration associated with the proposal was 18% and 9% for the most affected commercial and residential receptors respectively.

Table 6.8 Analysis of exceedance days (2017 and 2018)

$PM_{2.5}$ exceedance days at R001				$PM_{2.5}$ exceedance days at R160			
Model date	Background concentration (µg/m³)	Proposal impact (µg/m³)	Cumulative concentration (µg/m³)	Model date	Background concentration (µg/m³)	Proposal impact (µg/m³)	Cumulative concentration (µg/m³)
9/05/2018	15.7	8.7	24.4	11/05/2017	19.2	2.3	21.5
11/05/2017	19.2	3.1	22.3	26/05/2018	19.0	1.6	20.6
2/08/2018	18.3	3.0	21.3	-			
29/07/2017	16.8	4.0	20.8				
26/05/2018	19.0	1.4	20.4				

Given the above the risk of the proposal contributing significantly to cumulative impacts is considered to be **low**. For the proposal to contribute significantly to cumulative impacts, the following would need to be true:

- The proposal would need to operate at maximum emission concentration and maximum flow rate continuously, as modelled. This is not considered realistic, as it is expected that the emission control system will perform well within the POEO limits, and consequently actual emissions will be significantly reduced.
- Worst-case emissions (as above), specific meteorological conditions and poor background air quality would also need to align, which is considered unlikely.

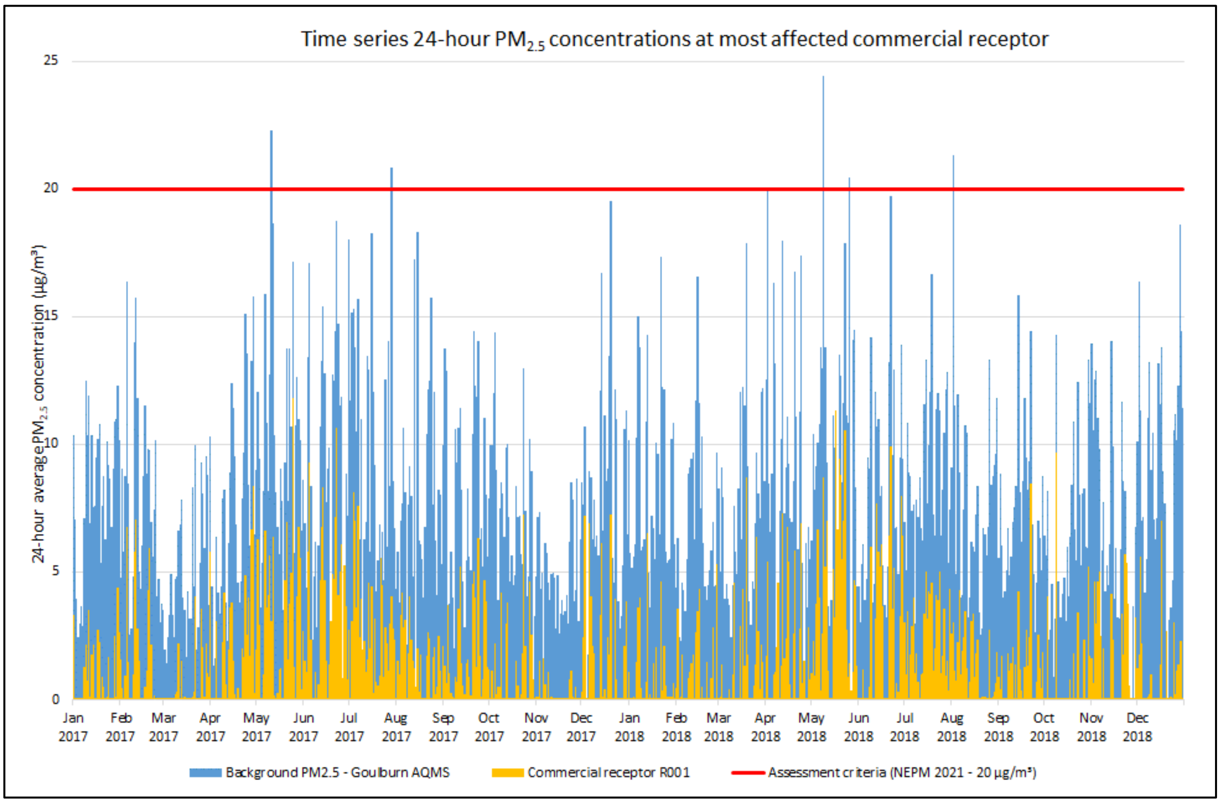

Figure 6.4 ***Timeseries (2017 – 2018) of cumulative 24-hour average $PM_{2.5}$ concentrations at most affected commercial receptor (R001)***

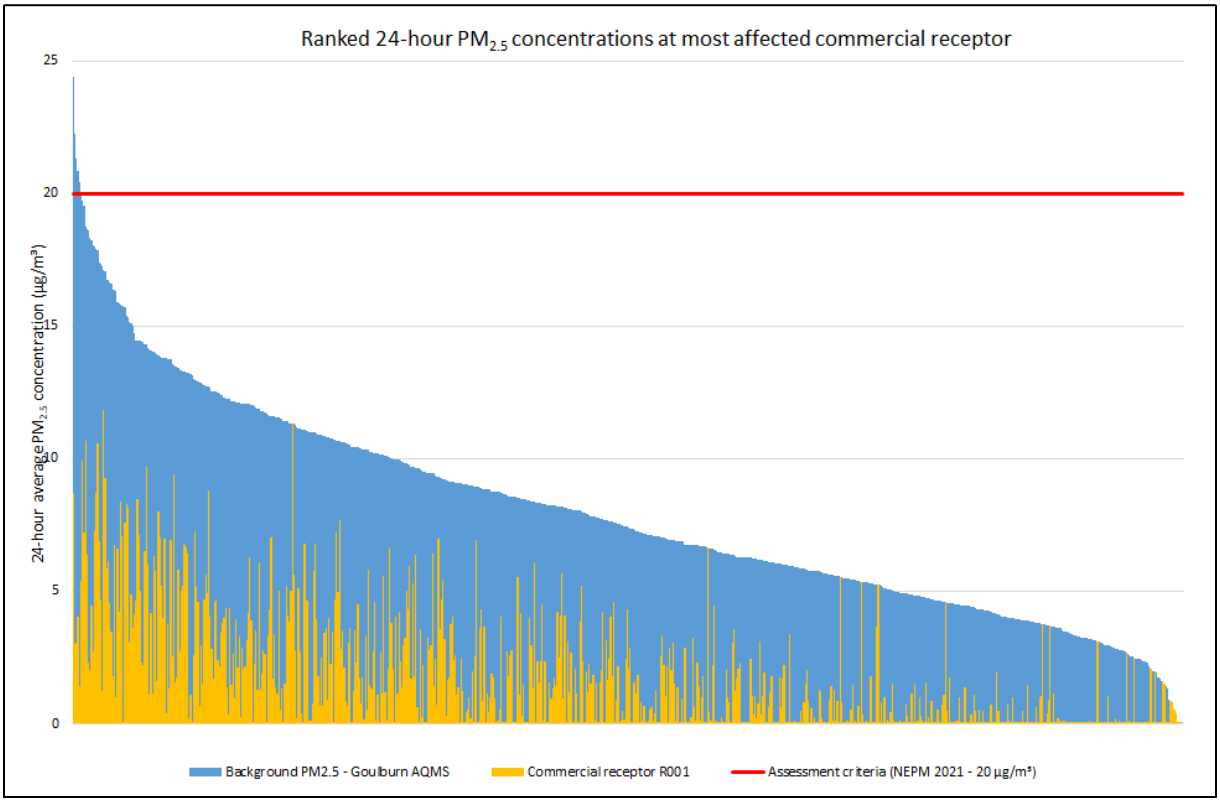

Figure 6.5 ***Ranked (highest to lowest) cumulative 24-hour average $PM_{2.5}$ concentrations at most affected commercial receptor (R001)***

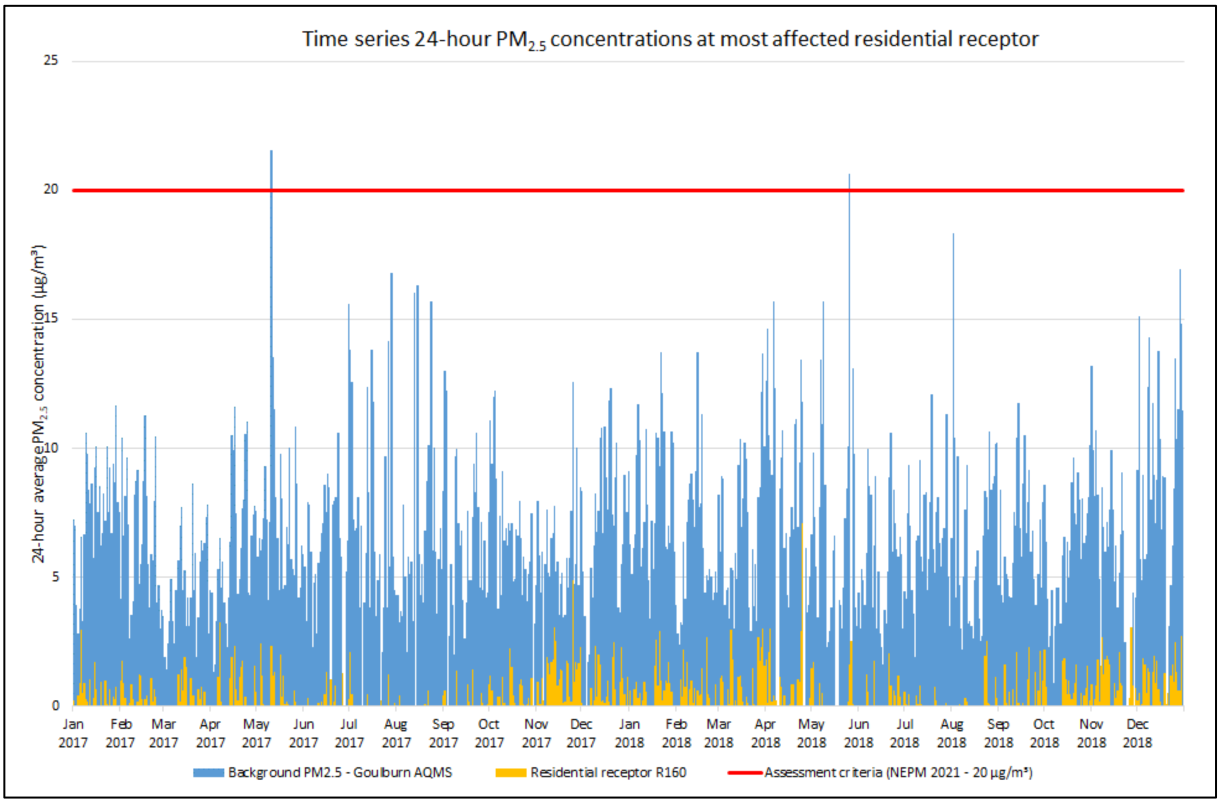

Figure 6.6 Timeseries (2017 – 2018) of cumulative 24-hour average $PM_{2.5}$ concentrations at most affected residential receptor (R160)

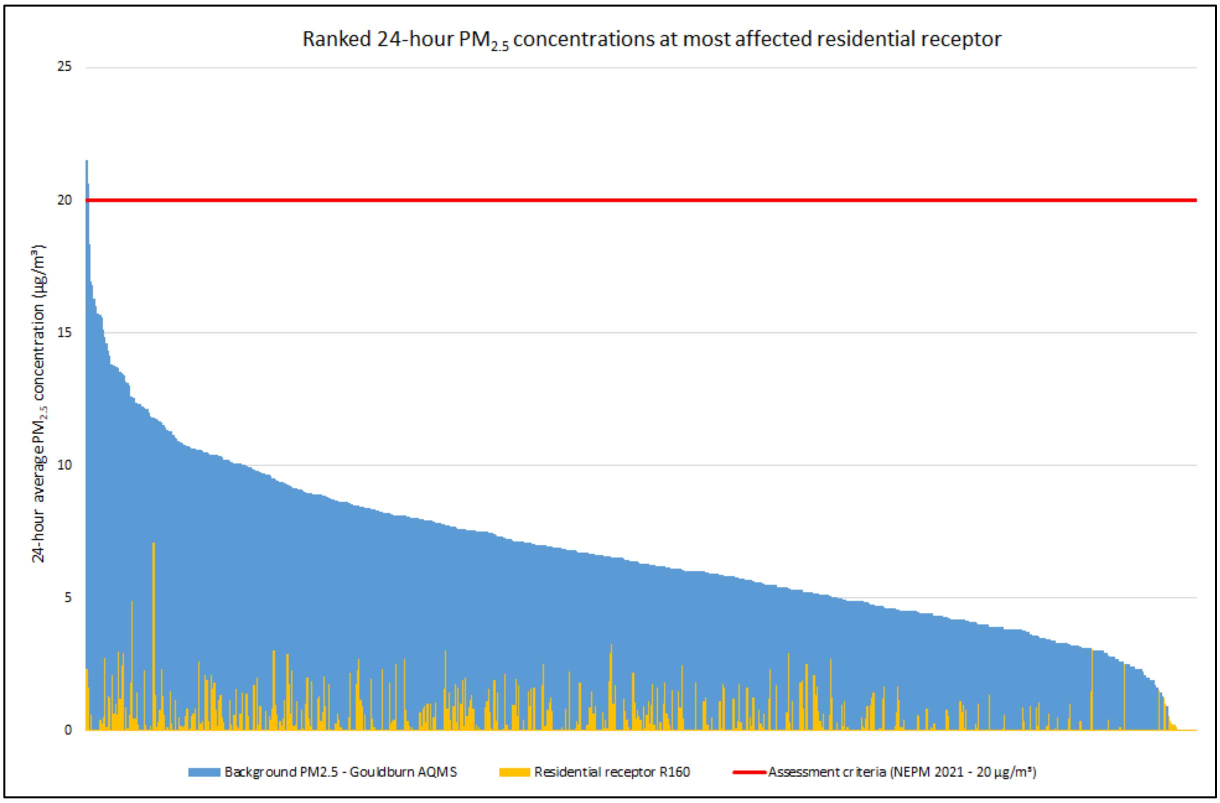

Figure 6.7 Ranked (highest to lowest) cumulative 24-hour average $PM_{2.5}$ concentrations at most affected commercial receptor (R001)Cumulative impacts (volatile organic compounds)

Cumulative impacts (VOCs)

Operations within 5 km of the plastics recycling and reprocessing facility site have been reviewed and industrial sources with the potential to contribute to elevated concentrations of key pollutants have been identified as described in section 3.3.2.

Of the facilities identified, two of those facilities were identified as having the potential to lead to air quality (volatile organic compounds and odour) impacts at sensitive receptors closest to the plastics recycling and reprocessing facility site.

As demonstrated by the dispersion modelling, the risk of volatile organic compound and odour impacts due to operation of the proposal is low. Emissions generated from the operation are minor due to the proposal's pollution control equipment.

Further, the distance from existing sources of emissions to the nearest sensitive receptors is significant, and therefore impacts from existing sources are not likely.

The risk of cumulative VOC impacts is considered to be **low.**

7. Recommended mitigation measures

7.1 Construction

Construction mitigation measures are recommended from the IAQM guidance based on the low-risk outcomes determined in section 6.1. General construction mitigation is presented in Table 7.1 with specific mitigation for construction and track-out presented in Table 7.2 and Table 7.3 respectively.

Table 7.1 Mitigation for all sites: Dust management (IAQM, 2014)

Mitigation measure
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
Develop and implement a Dust Management Plan (DMP), which will detail the management measures outlined in this table.
Site management
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.
Monitoring
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Preparing and maintaining the site
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel
Ensure all vehicles switch off engines when stationary - no idling vehicles.
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
Impose and signpost a maximum-speed-limit of 20 km/h on surfaced and 10 km/h on un- surfaced haul roads and work areas.

Construction operations
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
Use enclosed chutes and conveyors and covered skips.
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management
Avoid bonfires and burning of waste materials.

Table 7.2 Measures specific to construction (IAQM, 2014)

Mitigation measure
Avoid scabbling (roughening of concrete surfaces) if possible
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Table 7.3 Measures specific to track-out (IAQM, 2014)

Mitigation measure
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Record all inspections of haul routes and any subsequent action in a site log book.
Implement a wheel washing system (with rumble grids to dislodge accumulated dustand mud prior to leaving the site where reasonably practicable).

7.2 Operation

No operational impacts are predicted; however, the following good practice recommendations are provided to ensure the low level emissions are maintained.

Table 7.4 Operational mitigation measures

Mitigation measure
Emission control systems
The emission control systems described throughout should be kept operational and regularly maintained.
Should any unit become faulty, production on those affected lines should halt immediately and not resume until emission control systems are fully operational again
Odour
An odour complaints management procedure should be developed as part of the broader complaints management procedures to ensure that any complaints regarding odour are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.
Monitoring
Once operational, sampling of the proposal operational emissions should be undertaken to confirm assumptions made throughout this assessment.
Emission sampling should be carried out upon commissioning and regularly throughout operation to demonstrate that actual emissions are compliant with the relevant POEO limits and within the maximum emission concentrations as outlined in this report.
General
To maintain dust levels within both Building 1 and Building 2, regular sweeping and housekeeping practices should be undertaken.
No activities, including stockpiling, should occur external to buildings. Building doors should remain closed at all times except when allowing vehicles to enter or exit

8. Evaluation and conclusion

Plasrefine Recycling proposes to construct and operate a plastics recycling facility in Moss Vale. The proposal consists of two main buildings for waste receival, recycling and reprocessing and finished product storage, a wastewater treatment plant and ancillary infrastructure including an office building, workshop, truck, staff and visitor parking, internal roadways, weighbridges, water management and fire management.

Potential impacts associated with dust emissions during construction of the proposal were assessed using a risk assessment based on the UK IAQM guidance. The impact from all construction activities for nuisance, health impacts and impacts to ecological receptors was found to be low. Recommendations for dust management during construction have been provided in section 7.1 to further reduce the risk of dust impacts from construction of the proposal.

Potential air quality impacts from the operation of the proposal are associated with emissions of air from the main processing building (Building 1), the deep processing building (Building 2) and the wastewater treatment plant. Assessment of potential impacts was by Level 2 air quality impact assessment

The primary pollutants generated during the operation of the proposal are expected to be:

– Particulate matter from mechanical processing of plastics (e.g. crushing, cutting, profiling)
– Particulate matter, volatile organic compounds and odour from heating of plastics
– Odour from the wastewater treatment plant

The proposed emission control system includes localised capture of emissions from individual processing units, with emissions ventilated to a total of four emission control systems. Three emission control systems would be for the primary purpose of VOC treatment, and would include a pneumatic cyclone spray tower, an electrostatic degreasing device, and activated carbon adsorption prior to treated air being discharged from a stack. The fourth system would be for the treatment of particulate matter from the deep processing operations and would include fabric filters.

A review of sensitive receptor locations found that the nearest receptor is greater than 200 m from the closest point of the processing buildings and approximately 450 m from the wastewater treatment plant. Winds causing the nearest sensitive receptors to be located downwind of the proposal operations would be infrequent.

Air quality dispersion modelling for Building 1 and 2 operations was undertaken using AERMOD version 9.5.0. AERMOD is the approved dispersion model recommended by the US EPA and is recognised by EPA Victoria as a suitable and advanced dispersion model that improves upon Ausplume. Ausplume is listed in the NSW EPA Approved Methods. AERMOD is not explicitly mentioned in the Approved Methods but has been approved for use by the NSW EPA in numerous air quality dispersion assessments.

There are no predicted incremental exceedances of the assessment criteria. The worst-case impacts for all pollutants occurs at the commercial receptor R001, the Australian BioResources Facility. Impacts for particulate matter have also been presented for the worst affect residential receptor. However, the results show that the maximum impacts at both receptors are significantly below the EPA criteria.

The potential for cumulative particulate matter impacts was assessed through contemporaneous assessment of 24-hour average $PM_{2.5}$ concentrations, using background data sourced from the Bargo DPIE AQMS for the years 2017 and 2018. The contemporaneous assessment found the potential for a small number of exceedances of the updated NEPM 2021 objective (20 µg/m³), 2.5 exceedances per year and one exceedance per year for the most affected commercial and residential receptors respectively. Assessment of these exceedance dates showed that the cumulative impact was primarily driven by elevated background concentrations, making up an average of 82% of the impact for the 5 exceedances at the nearest commercial receptor.

The model has conservatively assumed that the proposal will be emitting at the highest permitted concentration and highest design flow rate for all hours of the year, which is not considered to be likely. Given this conservative assumption, and based on the analysis of exceedance dates, the risk of the proposal contributing significantly to cumulative impacts at the nearest receptors is concluded to be low. Further, the existing level of control for particulate matter emissions represents best available technology, including all material processing occurring within enclosed buildings with air being treated by a pollution control system prior to release to the atmosphere by an elevated stack.

A review of existing industrial facilities in the vicinity of the proposal identified some operations with potential to contribute to concentrations of pollutants (particulates, VOCs and odour) at the nearest sensitive receptors. However, given that the risk of impacts of these pollutants from these operations is predicted to be low, the subsequent risk of cumulative impacts has been assessed as low.

For the proposal to contribute significantly to cumulative impacts, it would need to operate at maximum emission concentration and maximum flow rate continuously, as modelled. This is not considered realistic, as it is expected that the emission control system will perform well within the POEO limits, and consequently actual emissions will be significantly reduced.

Worst-case emissions (as above), specific meteorological conditions and poor background air quality would also need to align, which is considered unlikely.

Recommended mitigation and management measures have been identified in response to the impact assessment findings. The emission control systems described throughout should be kept operational and regularly maintained. Should any unit become faulty, production on those affected lines should halt immediately and not resume until emission control systems are fully operational again.

9. References

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