Air Assessment – 559 Anambah Road Gosforth, NSW

Prepared for

Mid North Coast Projects

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Relationships Attention Professional Trust

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Air Assessment – 559 Anambah Road Gosforth, NSW

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1. Introduction

Background

RAPT Consulting has been engaged to undertake a qualitative screening level air assessment to inform DA/2025/52 - Concept Development Application for a Manufactured Home Estate. Stage 1 - 255 Dwelling Sites, Community Facilities and Open Space, Road Infrastructure, Services, Drainage Reserve, Landscaping and Caravan Storage Area 559 Anambah Road GOSFORTH NSW 2320 Lot 177 DP 874171 & Lot 55 DP 874170.

The Stage 1 plan is shown in Figure 1-1.

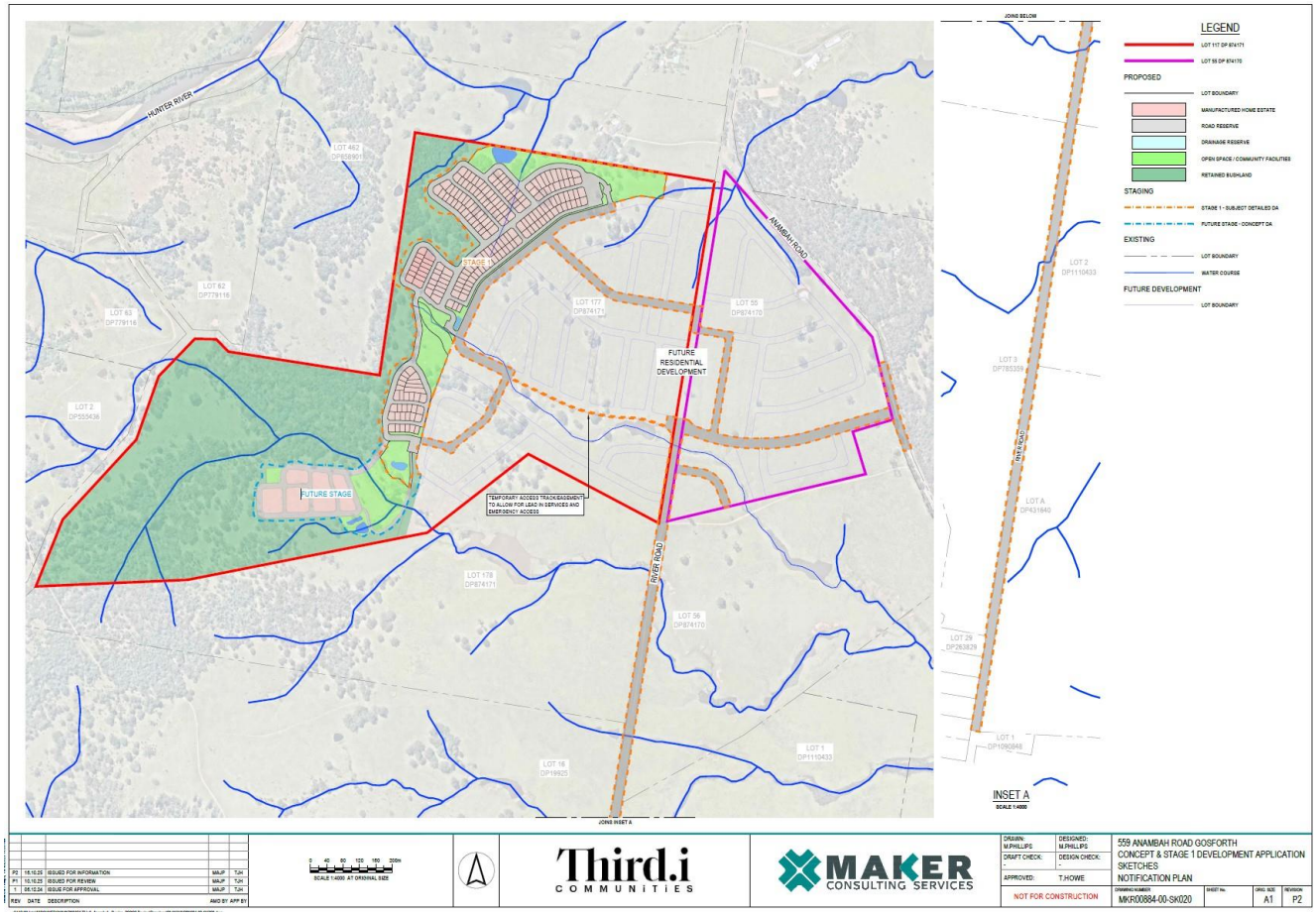

Figure 1-1 Stage 1 (Source: Third.i)

1.1 Assessment Objectives

The purpose of this assessment is to address Maitland Council Request for Additional Information (RFAI) DA/2025/52 dated 1 2025 relating to potential air quality concerns from surrounding industries particularly Gosforth Quarry to the north of the site at 75 Valley Street, Gosforth.

1.2 Limitations

The purpose of this report is to provide an independent air assessment for the proposal.

It is not the intention of the assessment to cover every element of the ambient environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the air assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for air were referred to. This work has been conducted in good faith with RAPT Consulting's understanding of the client's brief and the generally accepted consulting practice.

No other warranty, expressed or implied, is made as to the information and professional advice included in this report. It is not intended for other parties or other uses.

2. Existing Environment

The stage 1 site is zoned RU2 Rural Landscape. A map showing the land use zonings in the vicinity of the proposal are shown in Figure 2-1

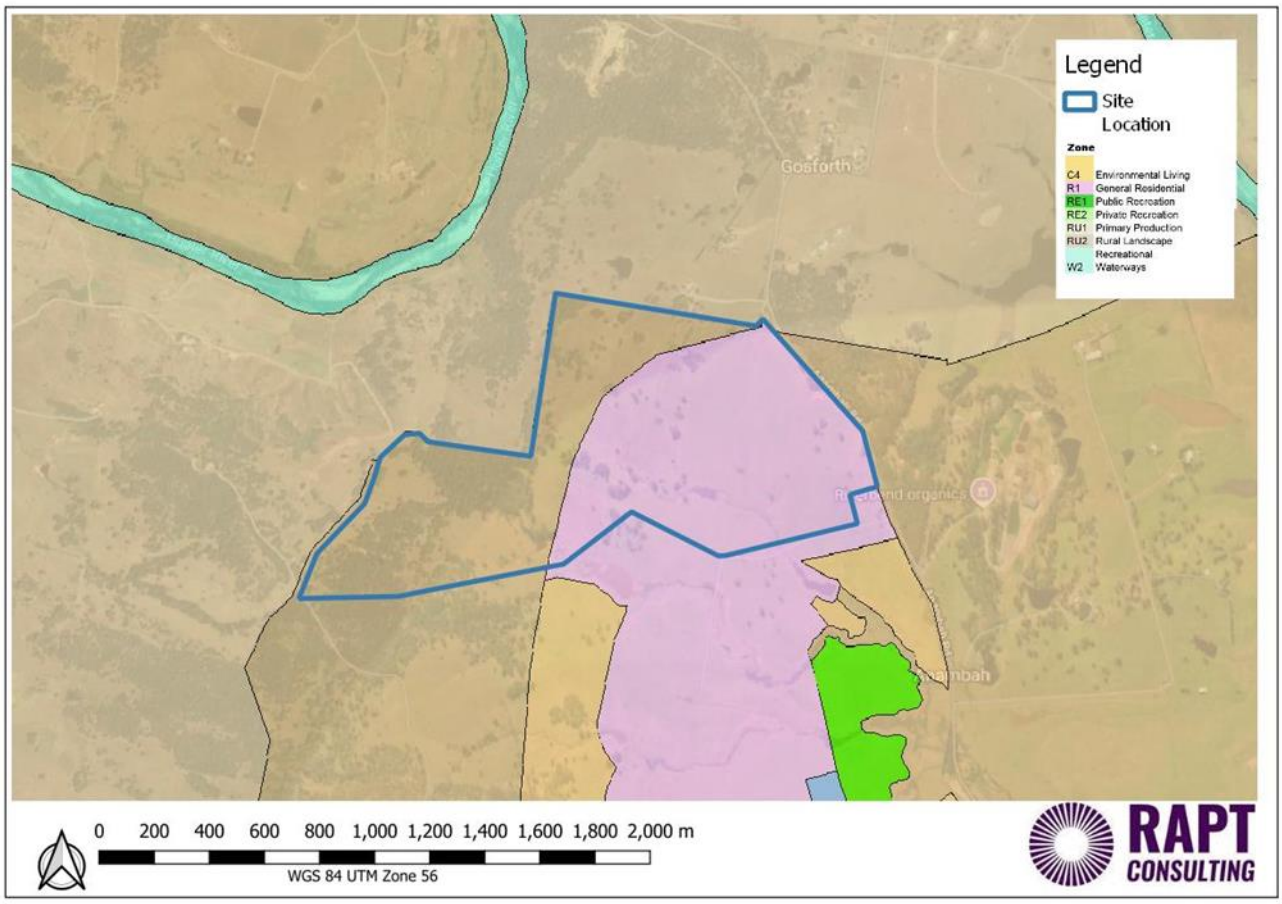

Figure 2-1 Landuse Zonings

2.1 Air Quality Criteria

Table 2-1 summarises the NSW EPA's environmental impact assessment criteria for the pollutants included in this assessment.

Table 2-1 NSW EPA Air Quality Criteria (EPA 2022)

Pollutant	Averaging Period	Criteria
Particulate Matter (PM_{10})	Maximum 24-hour average	50 ug/m3
	Annual Average	25 ug/m3
Particulate Matter ($PM_{2.5}$)	Maximum 24-hour	25 ug/m3
	Annual Average	8 ug/m3

Pollutant	Averaging Period	Criteria
Carbon Monoxide (CO)	Maximum 1-hour average	30 mg/m3
	Maximum 8-hour average	10 mg/m3
Sulphur Dioxide (SO_2)	Maximum 1-hour average	215 ug/m3
	Maximum 24-hour average	57 ug/m3
Nitrogen Dioxide (NO_2)	Maximum 1-hour average	164 ug/m3
	Annual Average	31 ug/m3
Ozone	Maximum 8-hour average	139 ug/m3

Note 1 Impact assessment criteria for complex mixtures of odorous air pollutants (nose-response-time average, 99th percentile) (EPA 2001)

2.2 Odour Criteria

The current odour performance criteria provided in the 'Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales' by EPA (2022) and Assessment and Management of Odour from Stationary Sources in NSW Technical Framework by DEC (2006) are based on a sliding scale relating to the population density of an area, as the response to an odour impact can vary significantly over a given population. The criteria assume that within a densely populated area there will be a greater potential for individuals within the community to be 'annoyed' by a given odour event. Table 2-2 provides odour impact assessment criteria.

Table 2-2 Odour Performance Criteria for the Assessment of Odour

Population of Affected Community	Impact Assessment Criteria (OU)
Urban (>2000 People) and/or schools and hospitals	2
~500 People	3
~125 People	4
~30 People	5
~10 People	6
Single Rural Residence (<2 People)	7

2.3 Potential Environmental and Health Issues

Particulate Matter (PM10 and PM2.5)

The relationship between particle mass (as PM10 and PM2.5) and health outcomes such as decreased lung function, increased respiratory symptoms, increased chronic obstructive pulmonary disease, increased cardiovascular and cardiopulmonary disease, and increased mortality is well established. However, health effects are difficult to quantify given the wide range of metrics associated with particulate matter. Particles can span 4 orders of magnitude in size between 1 nm to 10s of mm. Particles can be present in vast numbers; surface areas; be different shapes (such as spherical, angular); be wholly liquid based or feature some crystalline elements; and span a wide range of chemical complexity, according to source regions and transport.

Amenity impacts from dust are usually associated with coarse particles and particles larger than PM10. The impact of dust from a nearby industry on local amenity depends on the distance from the site and climatic conditions such as wind speed and direction. Concern about amenity from dust often relate to “visibility” of dust plumes and dust sources. Visible dust is usually due to short-term episodes of high emissions or dry and windy atmospheric conditions.

Particulate matter also can cause significant environmental problems including reduced visibility and the pollution of air and water. This pollution can result in the acidification of nearby water bodies; changes in nutrient concentrations in coastal waters and large river basins; the depletion of nutrients in soil and can affect the diversity of ecosystems.

Particle pollution can also cause aesthetic damage, staining and damaging stone and other building materials, spoiling property and other belongings.

Dust can become airborne during construction, demolition or when soil and building materials such as aggregates are exposed or left uncovered. Wind then picks up dust particles and carries it off-site. Depending on the size these dust particles can be transported over great distances.

Carbon Monoxide

Carbon monoxide can enter the body by inhalation and be rapidly absorbed by the bloodstream from the lungs. Typical levels in urban and rural settings are unlikely to cause adverse effects, however exposure to extremely high levels of CO can have many adverse consequences including death. Environmental Impacts through atmospheric chemical reactions, can affect the amount of other greenhouse gases, which are linked to climate change.

Sulphur Dioxide

SO2 is a common pollutant to which we are exposed at very low levels regularly by breathing air in cities and some industrial environments. When exposed to elevated levels health effects can include headache, general discomfort and anxiety. Sulphur dioxide in the atmosphere is absorbed by soils and plants. It is also captured within and below clouds and in certain circumstances may raise the acidity of rain.

Nitrogen Dioxide

People living in areas of high motor vehicle usage may be exposed to higher levels of nitrogen oxides. Acute exposure to low levels of NO2 can irritate eyes, nose, throat and lungs, possibly leading to coughing, shortness of breath, tiredness and nausea. Excessive levels can increase the acidity of rain and consequently lower the pH of surface and ground waters and soil.

Ozone

Ground level ozone is the main component of smog and is the product of the interaction between sunlight and emissions from sources such as motor vehicles and industry. Ground level ozone is more readily formed during the summer months and reaches its highest concentrations in the afternoon or early evening. Potential health effects from exposure to ozone include irritation and inflammation of eyes, nose, throat and lower airways: coughing, sore and scratchy throat or uncomfortable feeling in chest.

3. Existing Environment

3.1 Meteorology

The ambient air environment surrounding the project site is complex and influenced by a variety of traffic and commercial uses. Meteorology in the area is influenced by several factors such as terrain and land use. Wind speed and direction are largely affected by topography at the local scale, while factors such as synoptic scale winds affect wind speed and direction on the larger scale. Wind speed and direction are important variables in assessing potential air quality impacts, as they determine the direction and distance air pollutants travel.

The closest long-term meteorological data particularly for wind roses for the surrounding area is available from the Bureau of Meteorology (BoM) operated Automatic Weather Station (AWS) at Paterson (Tocal).

Windrose plots showing the distribution of wind speed and direction at the Paterson (Tocal) BoM AWS are shown in Figure 3-1. As can be seen from the wind roses, windspeeds and directions fluctuate however generally have a westerly / north westerly pattern annually, autumn winter and spring with summer having south and south easterly patterns.

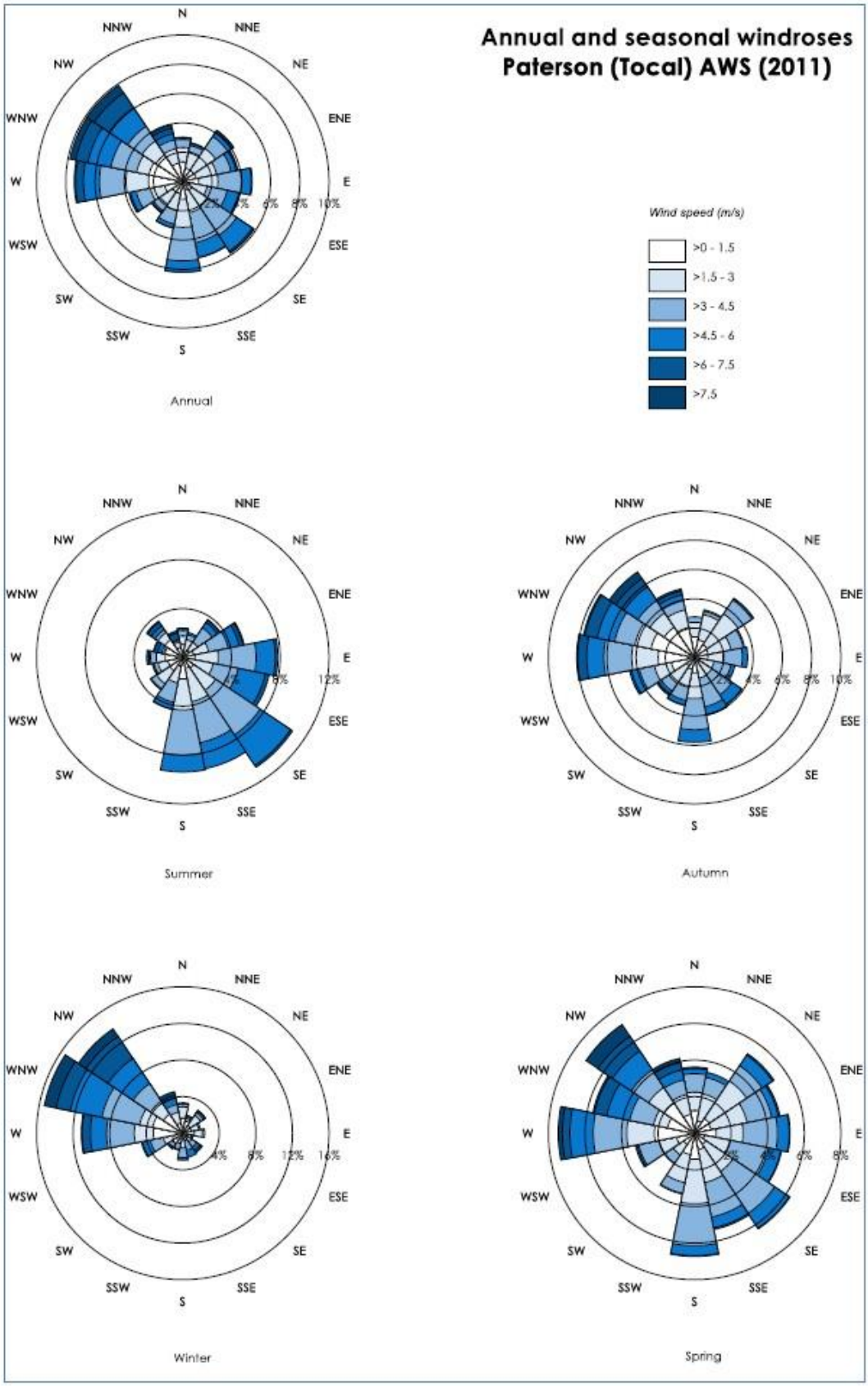

Figure 3-1 Paterson (Tocal) Annual and Seasonal Windroses

3.2 Existing Air Quality

The Department of Planning Industry and Environment (DPIE) maintains an air quality monitoring network across NSW. Air quality data from 2020 through 2024 has been sourced from their Singleton and Beresfield station and annual exceedance in air quality objectives are provided in Figure 3-2 and Figure 3-3.

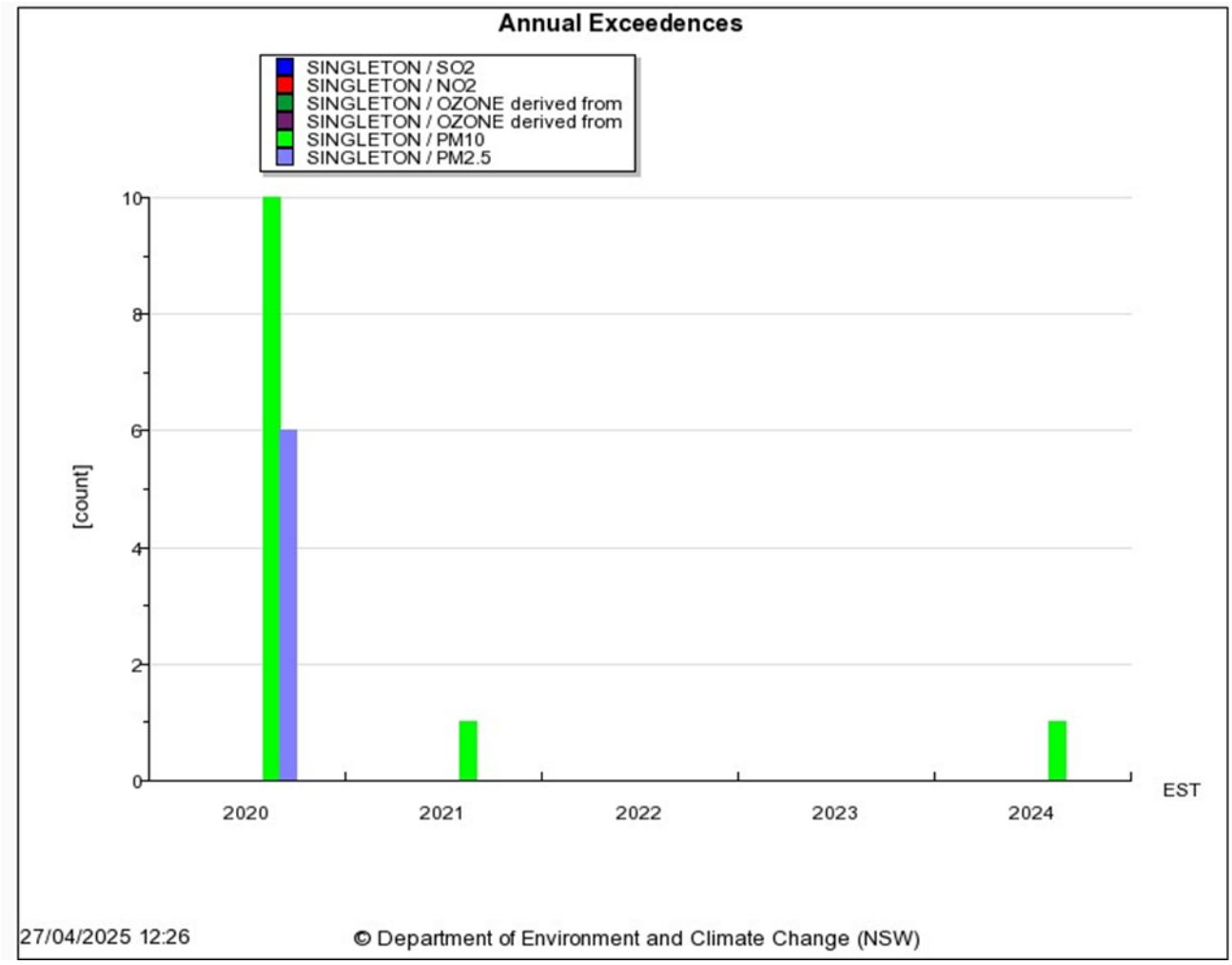

Figure 3-2 Singleton Annual Exceedances

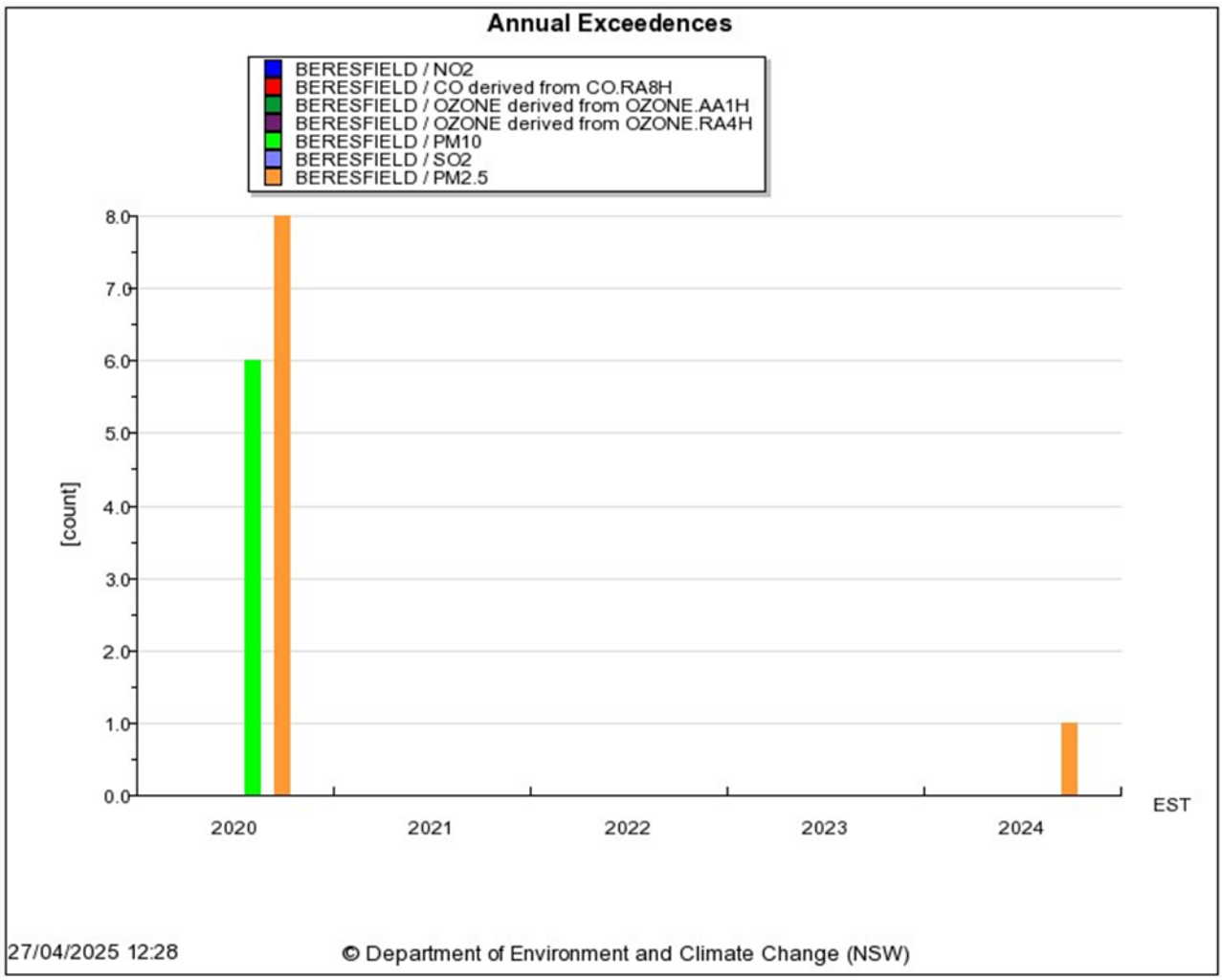

Figure 3-3 Beresfield Annual Exceedances

At the beginning of 2020, there were extensive bush fires throughout Australia particularly in NSW which can be attributed to the limited annual 2020 exceedances of PM10 and PM 2.5 at both the Singleton and Beresfield locations. All other criteria were complied with at both locations with the exception of one PM10 exceedance in 2021 and 2024 at Singleton and one PM2.5 exceedance in 2024 at Beresfield.

4. Air Assessment

The site is located in proximity to the Gosforth Rhyolite Quarry and the Riverbend Compost Facility as shown in Figure 4-1.

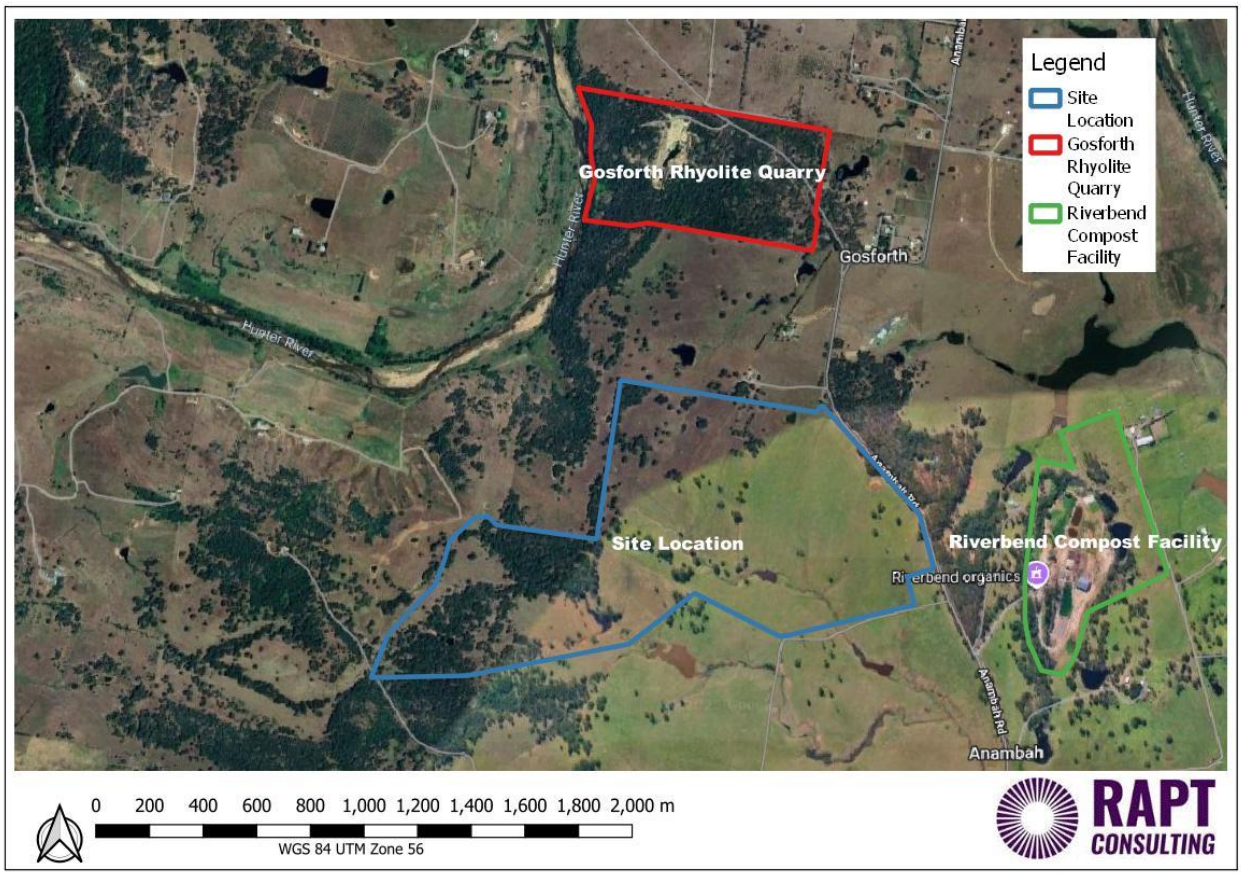

Figure 4-1 Site and Surrounding Area

4.1 Gosforth Rhyolite Quarry

The Gosforth Rhyolite Quarry (The Quarry) is located at 75 Valley Street Gosforth Lot 3 DP 883399.

The development consent permits the following activities at the quarry:

- The extraction of a total of 770,000 tonnes of rhyolite material from the site over four (4) stages. Operation of the Quarry is permitted under the Development Consent until the total resource has been extracted
- Extraction operations including drilling, blasting, crushing, screening and stockpiling material using mobile equipment
- Maximum annual throughput of 30,000 tonnes per annum to be undertaken during two (2) campaigns annually as follows:

- Extraction operations to occur during two (2) periods of up to seven (7) working days, and
- The removal of crushed rock to occur during two (2) periods of up to fourteen (14) working days (the first seven being inclusive of extraction operations).

- Operating hours associated with each campaign are limited to 7.00am to 4.00pm Monday to Friday (excluding public holidays)
- Material to be hauled from the site via an internal access road to Valley Street and then to Anambah Road to reach the New England Highway and the state road network. Daily truck movements are limited to a maximum of 14 per hour (laden and/or unladen). Maximum daily truck movements are 126 in total (laden and/or unladen).

4.1.1 Air Assessment

RAPT Consulting has undertaken a literature review of the Environmental Resources Management (ERM) report Gosforth Quarry, Quarry Plan and Additional Environmental Issues Report February 2000 No 599091F1 (The Report). The report included a desktop air quality assessment.

The report concluded with the implementation of dust controls outlined in the report and progressive rehabilitation, the continued development of the quarry was not expected to affect local air quality.

4.2 Riverbend Compost Facility

RAPT Consulting has undertaken a literature review of the Todoroski Air Sciences Riverbend Compost Facility Modification Air Quality Impact Assessment 19 May 2022 No 12110145D (The Report).

The report undertook odour modelling of the of the compost facility. Figure 6-1 and Figure 6-2 from The Report show the results of the modelling and are reproduced in Figure 4-2 and Figure 4-3.

Figure 6-1: Predicted 99th percentile nose-response average ground level odour concentrations – incremental impact

Figure 4-2 Predicted 99th percentile nose-response average ground level odour concentrations - incremental impact

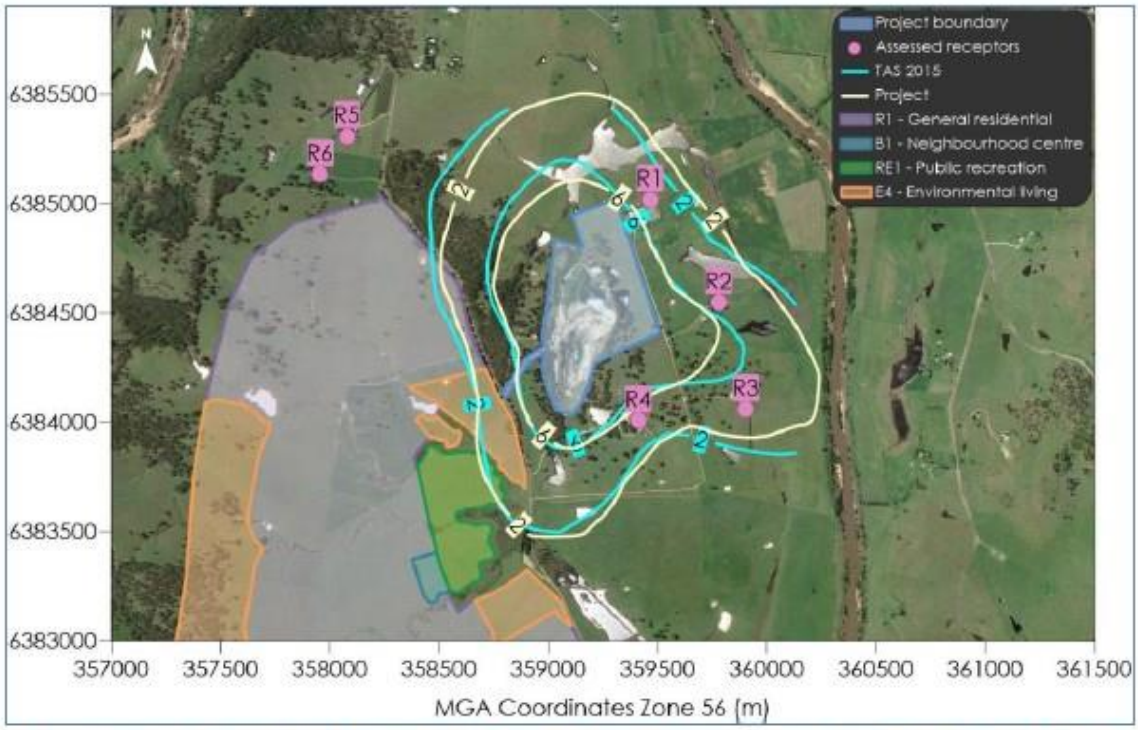

Figure 6-2: Comparison of predicted 99th percentile nose-response average ground level odour concentrations for the Project and approved operations

Figure 4-3 Comparison of predicted 99th percentile nose - response average ground level odour concentrations for the Project and approved operations

Discussion

The Report acknowledges a slight impedance of the adopted 2 OU assessment criteria for the Anambah Urban Release Area (AURU) and the extent of impact on AURA on the AURA area is relatively comparable to the previous modelling for the approved operations, with similar predicted impacts on the E4 (environmental living) and RE1 (public recreation) areas. However, these slight impedances are not predicted in this current stage 1 application. Also that the revised modelling indicates a slight a reduction in the predicted impacts in the north-western section of the R1 (residential) area of AURA. It is RAPT Consulting's opinion if an exceedance of adopted criteria was modelled, then management measures should have been developed and implemented to demonstrate compliance with adopted criteria.

The report also specifies, *Air Quality and Noise Management Plan Anambah In-Vessel Composting Facility, incorporates odour mitigation measures to minimise the potential generation of adverse odour emissions. The mitigation measures and the choice of composting technology used for the Project minimise the potential for air quality impacts in the surrounding area. The air emission controls applied at the site are regularly assessed to ensure they are working effectively and any required modification or adjustments to the air emission control measures would be revised on a regular basis and documented in the AQMP.*

It is understood the Project has not received any odour complaints to date. This suggests the current mitigation and management measures are effective. Nevertheless, the site would continue to apply appropriate odour management measures to ensure it minimises the potential occurrence of excessive odour emissions from the site.

Additionally The Report concludes, *Overall, the assessment demonstrates that even using conservative assumptions, the Project can operate without causing any significant air quality impact at residential receptors in the surrounding environment.*

The results of the assessment indicate air quality criteria can be met for all future residences in proposed development area. Therefore, conflicting land use is not expected as a result of the proposal.

5. Conclusion

This air quality assessment has been undertaken to inform DA/2025/52 - Concept Development Application for a Manufactured Home Estate. Stage 1 - 255 Dwelling Sites, Community Facilities and Open Space, Road Infrastructure, Services, Drainage Reserve, Landscaping and Caravan Storage Area 559 Anambah Road GOSFORTH NSW 2320 Lot 177 DP 874171 & Lot 55 DP 874170.

The results of the assessment indicate compliance with all established air quality goals is expected at the site. Therefore, from an air quality perspective the findings suggest the proposal is acceptable and there is no air quality related constraint that would prevent the project area being approved.