



Air Quality Assessment

Rezoning of 65-73 Mooringe Avenue

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Air Quality Assessment

Rezoning of 65-73 Mooringe Avenue

ERM

5 Peel St

Adelaide SA 5000

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1. INTRODUCTION

1.1 Background

Land at 65-73 Mooringe Avenue is proposed for rezoning from industrial to residential. The details of the proposed changes in land use are described in the Statement of Intent prepared by the West Torrens Council (West Torrens Council, 2018). The statement of intent (SOI) includes details on investigations required for the development plan amendment required for the change in zoning. In relation to air quality the following is listed:

“Investigate noise and air quality issues and identify an appropriate policy response for activities within the Industry Zone and in the context of proximity to the Adelaide Airport.”

EPA commentary (EPA, 2018) on the SOI included the following:

“Within the North Plympton Industry Zone, various activities are currently licensed to New Castalloy Pty Ltd by the EPA under the Environment Protection Act 1993, each of which have recommended evaluation distances. These activities include surface coating works – metal finishing, surface coating works – spray painting or powder coating, fuel burning, and ferrous and non-ferrous metal melting. The area proposed to be rezoned is located within the recommended evaluation distances for these activities.

The New Castalloy site has been the subject of numerous complaints over a number of years, but recent works undertaken to mitigate air and noise emissions have resulted in a decrease in complaints.

Notwithstanding the improvement in environmental management at the New Castalloy site, the EPA has concerns about the proposal to rezone the affected area from Industry Zone to Residential Zone. It is recommended that investigations into air and noise impacts be undertaken and the findings be carefully considered so that suitable policies can be prepared if it is determined that rezoning to allow residential development would be appropriate.

The EPA notes that the SOI proposes to investigate noise and air quality issues and identify appropriate policy responses. This is supported by the EPA.”

ERM was engaged to prepare the air quality assessment to support the rezoning.

1.2 Scope of Work

The scope of work for the air quality assessment was based on a desk top review of the following:

- Premises within the industrial zone to identify operations or activities that are known (generically) for producing odour and other air emissions.
- EPA evaluation distances for facilities in the industrial zone.
- Complaints from residential areas surrounding the North Plympton industrial area and the residential areas surrounding the land at 65-73 Mooringe Avenue.
- Wind data for the area looking at prevailing wind directions and potential for exposure.
- EPA Netley air quality monitoring data.
- Council development plan interface objectives and principles.

This report was prepared to summarise the assessment, provide discussion and report on conclusions regarding potential impacts and suitable mitigations.

1.3 Site Location and Description

The land proposed for rezoning is located at 65-73 Mooringe Avenue in Plympton and is separated from the larger industrial zone in North Plympton and Camden Park to the northwest and west. The location of the site with details on the surrounding zoning (industrial and residential) is shown in

Figure 1.1 and Figure 1.2. Adelaide Airport is located to the north of the North Plympton industrial area.

The size of the site is 12,170 m² and was most recently used by Boral as an operations centre between 1996 and 2017. It is understood that there have been no operations at the site since 2017 when Boral seized operations and the site was purchased by ACP Mooringe Pty Ltd. Site works including demolition are currently taking place. A building with commercial operations is located in the residential zone to the east of the site.

The intention for a future residential redevelopment is according to the concept plan understood to be a residential housing estate up to four storeys with associated servicing that may include a combination of smaller lots and detached housing. It is understood that there is no detailed plan proposed at this stage.



Figure 1.1: Site location

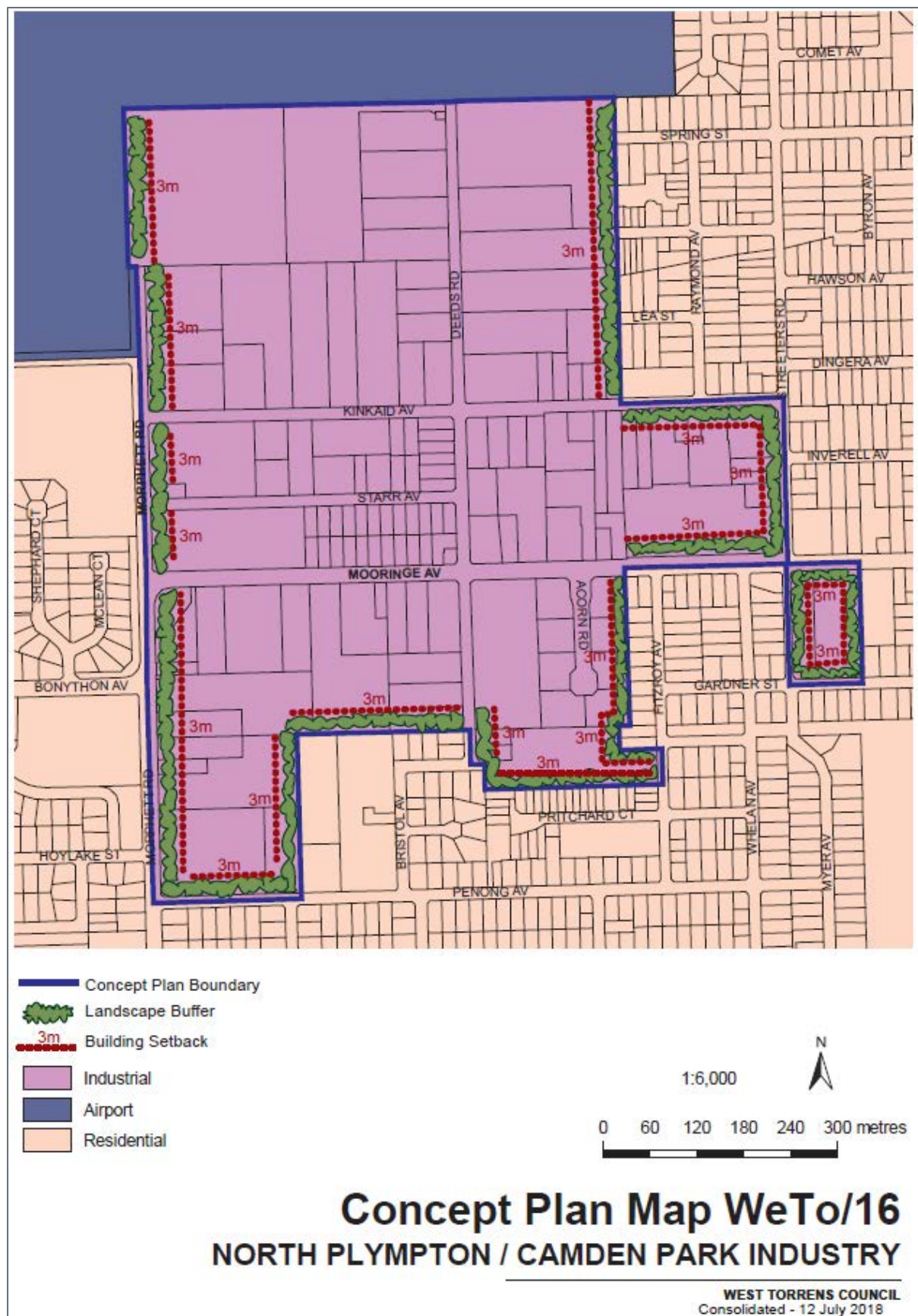


Figure 1.2: Site location showing current industrial and residential zonings (the land scape buffer was never established)

2. ASSESSMENT METHODOLOGY

The assessment of potential air quality impacts on the land proposed for rezoning from surrounding industrial land uses was based on review of available information and data. No dispersion modelling, testing or monitoring was included as part of the scope of work.

For any dispersion modelling to be performed and to be worthwhile detailed information on emissions data, source parameters and operations are required and have not been available for this project.

Air quality monitoring has not been performed for this assessment. Typically the need for any monitoring should first be identified (in an assessment like this report) before it is performed.

The data and information for the assessment included:

- Review of premises within the North Plympton industrial zone to identify operations or activities that are known (generically) for producing odour and other air emissions as well as licenced operations.
- Review of EPA evaluation distances for facilities in the industrial zone.
- Air quality related complaints data.
- Wind data for the area in relation to potential for exposure.
- Review of nearby background air quality conditions.
- Review of West Torrens Council development plan interface objectives.

Details on the review and assessment of the data and information listed above is provided in the sections below. Discussion on the findings and conclusions are also provided.

3. REVIEW OF INDUSTRIAL ACTIVITIES AND EVALUATION DISTANCES

Premises with activities with potential air emissions in the North Plympton and Camden Park industrial area to the northwest and west of the Mooringe Avenue site are listed in Table 3.1 and shown with locations and the EPA guideline evaluation distances¹ as identified for each site (largest show if more than one identified) in Figure 3.1.

This review showed that while there are many industrial and commercial facilities in the North Plympton industrial area, there are only two listed with evaluation distances extending across the Mooringe avenue site location. These are:

- New Castalloy – New Castalloy announced in January in 2018 that operations would shut in just over a year (ABC, 2018). This was confirmed with closure of operations on 15 February 2019 (The Advertiser, 2019), which was during the course of the preparation of this assessment. The closure of the New Castalloy operations is very significant for this assessment since New Castalloy was the largest industrial operation with the largest potential for community impacts located on the boundary of the North Plympton industrial area. With New Castalloy no longer operating it is expected that the local air quality situation with nuisance concerns will be improved.

At this stage it is not clear what will become of the site which is on land that is understood to be state owned. However, it is expected that any new facilities at the site or redevelopments of the site would be required to address interface issues towards surrounding residential areas and

¹ In the latest guideline issued by the EPA the terminology was changed from separation distances to evaluation distances to recognise that the distances given in the guideline are recommendations and not prescriptive buffer distances.

would also be required to demonstrate compliance with the Environment Protection Air Quality Policy 2016 (Air EPP) ground level concentration criteria in relation to air emissions.

- Ace Chemical – The relevance of the EPA evaluation distance as listed for chemical blending/mixing to the Ace Chemical operations is uncertain. It appears that the Ace Chemical operations are smaller scale and it is noted that there is a residential area between Ace Chemical and the Mooringe Avenue site proposed for rezoning (south of Mooringe Avenue between Fitzroy Avenue and Streeters Road) and that there have been no complaints dating back to at least 2008 from south of Mooringe Avenue around the North Plympton industrial area.
Based on this and also considering that with the introduction of the Air EPP it is a requirement that all operations with emissions to air comply with the Air EPP ground level concentration criteria, it is assumed that there are no significant chemical or odour emissions from the Ace Chemical operations that would have any potential to impact on the Mooringe Avenue land proposed for rezoning at ground level.

Considering the commentary above regarding the New Castalloy operations, which are now closed, and Ace Chemical which is not believed to have any potential for impacts it is concluded that there are no existing industrial operations with potential for any significant impacts (potential for exceedance of Air EPP ground level concentration criteria) at the Mooringe Avenue land proposed for rezoning.

Table 3.1: Operations with potential air emissions and relevant evaluation distances

| No | Company name | Location | Relevant activities | EPA Licence | Relevant separation/evaluation distances ^a |
|----|----------------------------------|---------------------------------------|---|-----------------------|--|
| 1 | New Castalloy Pty Ltd | 76-92 Mooringe Ave | Ferrous and non-ferrous metal melting works Surface coating works - metal finishing Surface coating works (spray painting or powder coating) Activities producing listed wastes Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities | Yes: 16747 | Sand casting: - more than 500 kg/cycle: 1,000 m - up to but not exceeding 500 kg/cycle: 500 m - Die casting (no resin sand): 100 m Surface coating up to or more than 100L/day: 100 m – 300 m |
| 2 | Graphic Web Pty Limited | 64 Kinkaid Avenue | Activities producing listed wastes Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities | Yes: 50182 | Potential individual assessment |
| 3 | S.T. & H.M. Investments Pty Ltd | 14 Kinkaid Avenue | Abrasive blasting Surface coating works (spray painting or powder coating) | Yes: 25582 | Abrasive blasting: Blast cleaning cabinets greater than 5 m ³ in volume: 100 m Blast cleaning cabinets up to but not exceeding 5 m ³ in volume or totally enclosed automatic blast cleaning units: 50 m Surface coating up to or more than 100L/day: 100 m – 300 m |
| 4 | City Of West Torrens | 181 Morphett Road 64-78 Deeds Road | Waste recycling depot (waste for resource recovery or transfer) | Yes: 242 Yes: 1887 | Waste transfer station: 300m |
| 5 | Kinkaid Pty Limited | 64-70 Kinkaid Avenue | Activities producing listed wastes Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities | Yes: 14472 | Potential individual assessment |
| 6 | Tarmac Pty. Ltd. | 51-57 Kinkaid Avenue | Wood preservation works Wood processing works Activities producing listed wastes | Yes: 966 | Manufacture and/or storage of logs using non-creosote preservative: 200m |
| 7 | A.S. Marshall Holdings Pty. Ltd. | 34 Starr Avenue | Surface coating works (spray painting or powder coating) Activities producing listed wastes | Yes: 18282 | Surface coating up to or more than 100L/day: 100 m – 300 m |
| 8 | Blue Bins Waste Pty Ltd | 15 Starr Avenue | Waste recycling depot (waste for resource recovery or transfer) | Yes: 14000 | Waste transfer station: 300m |

| No | Company name | Location | Relevant activities | EPA Licence | Relevant separation/evaluation distances ^a |
|----|--|-------------------------|---|-------------|---|
| 9 | Plympton crash repairs | 89 Mooringe Ave | Repair: Smash repairs / Panel beating/ Spray painting/ Vehicle upgrades | No | Surface coating up to 100L/day: 100 m |
| 10 | Fisher Crash repairs | 123-125 Mooringe Avenue | Auto repairs Resprays and paint work Panel beating and dent repair | No | Surface coating up to 100L/day: 100 m |
| 11 | Treadwell Group Pty Ltd | 58 Deeds Road | Fibreglass reinforced plastic (FRP) solutions and anti-slip materials. | No | Fibre-reinforced plastic manufacturing: 300m |
| 12 | Ace Chemical Company | 119A Mooringe Ave | Chemical distributor, repackage most liquid and solid non-hazardous, hazardous and dangerous goods from intermediate bulk to small quantities, chemical stockist, Mixing and Blending to 1,000 Kilograms or Litres. | No | Chemical storage and warehousing facilities: Blending/mixing: 500 m Storage only: 100 m |
| 13 | Starr rubber and plastic SRP (Aust) Pty. Ltd | 54-58 Kinkaid Avenue | Footwear components and materials to the shoe manufacturing and shoe repair industry. Manufacturers of high quality compression moulded EVA soles for the athletic shoe industry and moulded rubber heels | No | Crushing grinding or milling of chemicals or rubber: Odorous: 500 m Non-odorous: 300 m |

^a EPA, Evaluation Distances for Effective Air Quality and Noise Management, August 2016

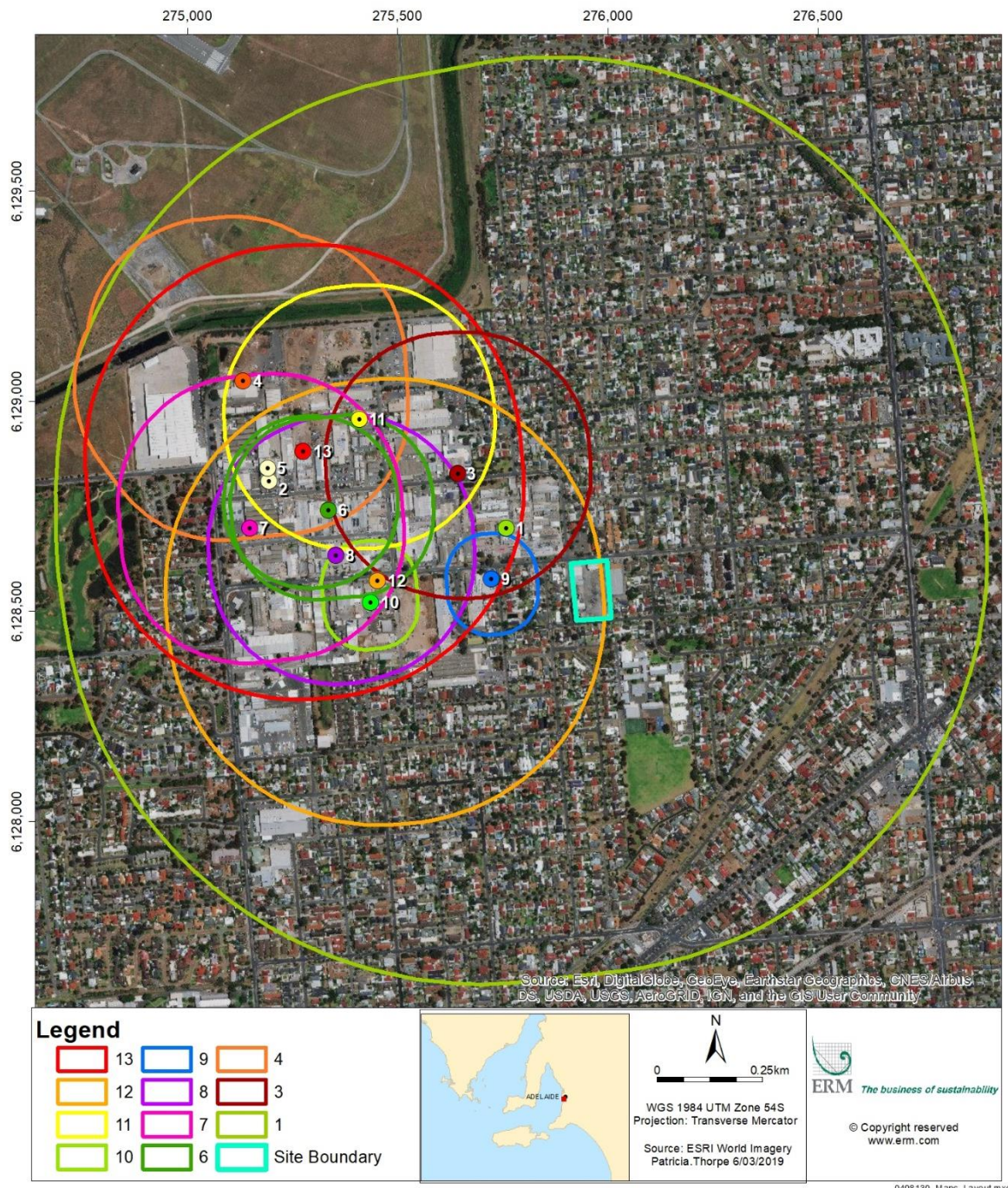


Figure 3.1: Separation distances of activities that impact the site

4. REVIEW OF COMPLAINTS DATA

Complaints data for the area was reviewed as part of this assessment to understand the current as well as longer term trend of the complaints situation in relation to air quality. Complaints data was requested from Council and EPA. City of West Torrens Council responded that they have no complaints data since the North Plympton industrial area complaints situation has been handled by the EPA. In previous years there were significant air quality and odour issues associated with the New Castalloy operations.

Complaints data was requested from the EPA for the North Plympton industrial area also covering the Camden Park suburb area of the industrial zone (south of Mooringe Avenue). Information on complaints dating back to 2008 were provided². Due to confidentiality reasons there were limitations around the detail in the data provided. Location of complaints or condition details at the time of the complaints pointing to the source of the complaints could not be provided. As such, the details provided were limited to the number of complaints per year for the area and are presented in Figure 4.1. It is understood that the complaints in the data provided are from the residential area of the North Plympton suburb and that there have been no complaints for Camden Park or Plympton, which is south of Mooringe Avenue (where the land proposed for rezoning is located), for the same period.

Looking at the complaints data a downward trend over the years can be inferred. It is also understood that there were many more complaints before 2008. In New Castalloy's EPA Licence, which is a sustainability licence (one of the first such licences that were issued) it is mentioned that a reduction in community complaints of 95% was achieved over a two year period (as of August 2009) (EPA, 2010).

With the closure of the New Castalloy operations is expected that there will be less air quality related nuisance issues in North Plympton and as noted there is no record of complaints south of Mooringe Avenue in the area where the land proposed for rezoning is located.

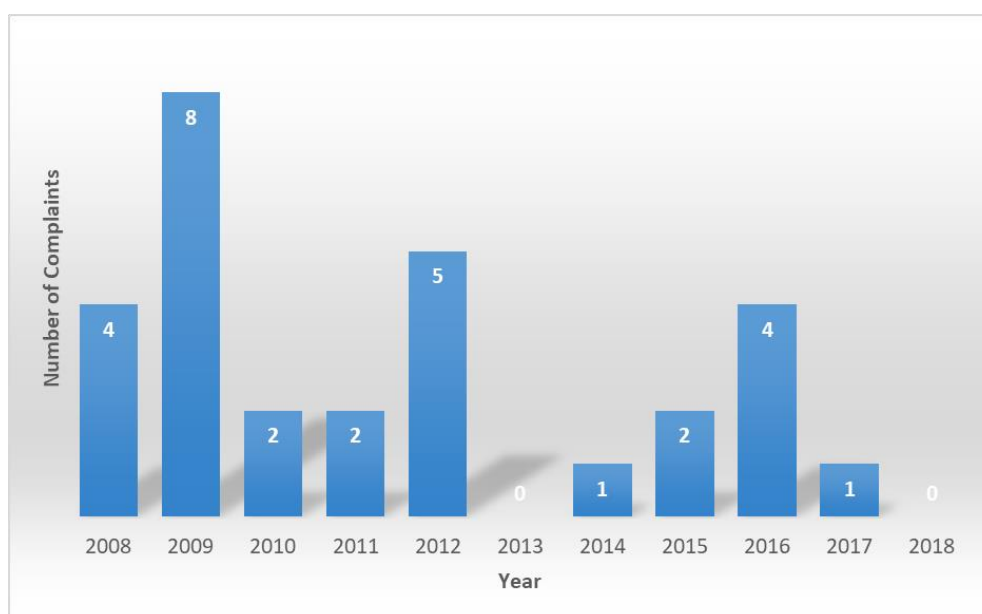


Figure 4.1: Complaints data North Plympton area

5. REVIEW OF WIND DATA

Potential exposure of a residential area next to an industrial area can be evaluated by consideration of wind data and specifically the frequency of occurrence of wind blowing from the industrial area in the direction towards the residential area.

For this assessment wind data from the Bureau of Meteorology weather station at Adelaide Airport approximately 2.5 km to the west northwest of the Mooringe Avenue site was reviewed. Wind roses for the period of 2011 to 2016 are presented below for the annual period, time of day and season in Figure 5.1 to Figure 5.3.

² Complaints data previous to 2008 is understood to not be available as digital information.

Wind roses show the frequency and occurrence of winds by direction and strength visualising how often winds of a certain direction and strength occur over any period of time. The bars correspond to the 16 compass points (north, north-north-east, north-east etc). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e. northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the colour of the bar sections correspond to wind speed categories, as per the legend.

The wind data shows prevailing southerly winds and very low frequency of north westerly winds (in the direction from the North Plympton industrial area towards the Mooringe Avenue land proposed for rezoning). The time of year that shows the highest frequency of north-westerly winds is the winter months (June to August). These winds are for higher wind speeds and are not reflective of poor dispersion conditions.

Overall, the wind data shows very little potential exposure of the Mooringe Avenue land proposed for rezoning from the North Plympton industrial area. Generally the winds from the industrial area (north-westerly direction) are for higher winds speeds and are not reflective of conditions contributing to poor dispersion conditions.

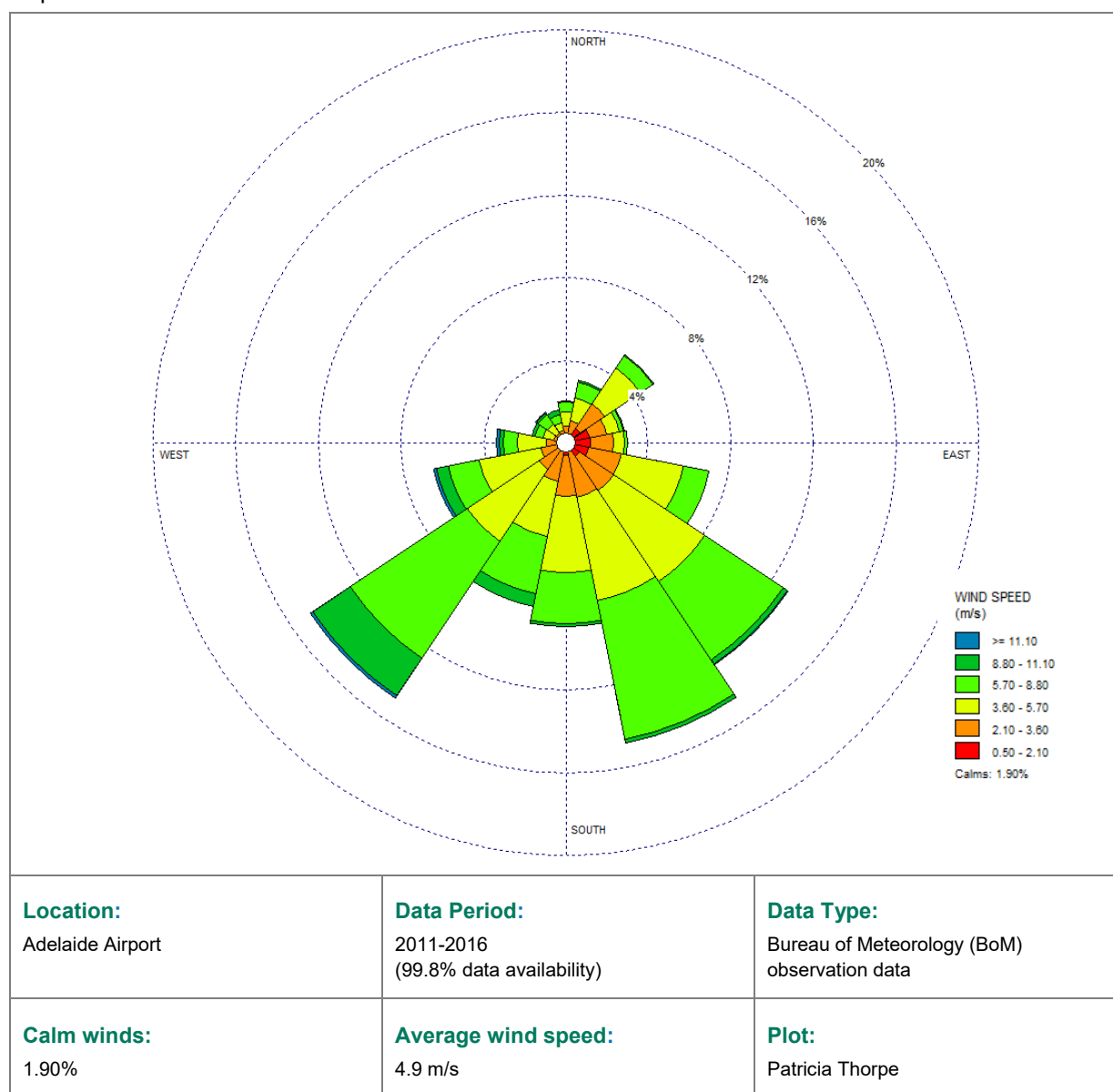


Figure 5.1: Wind rose Adelaide Airport data 2011 to 2016

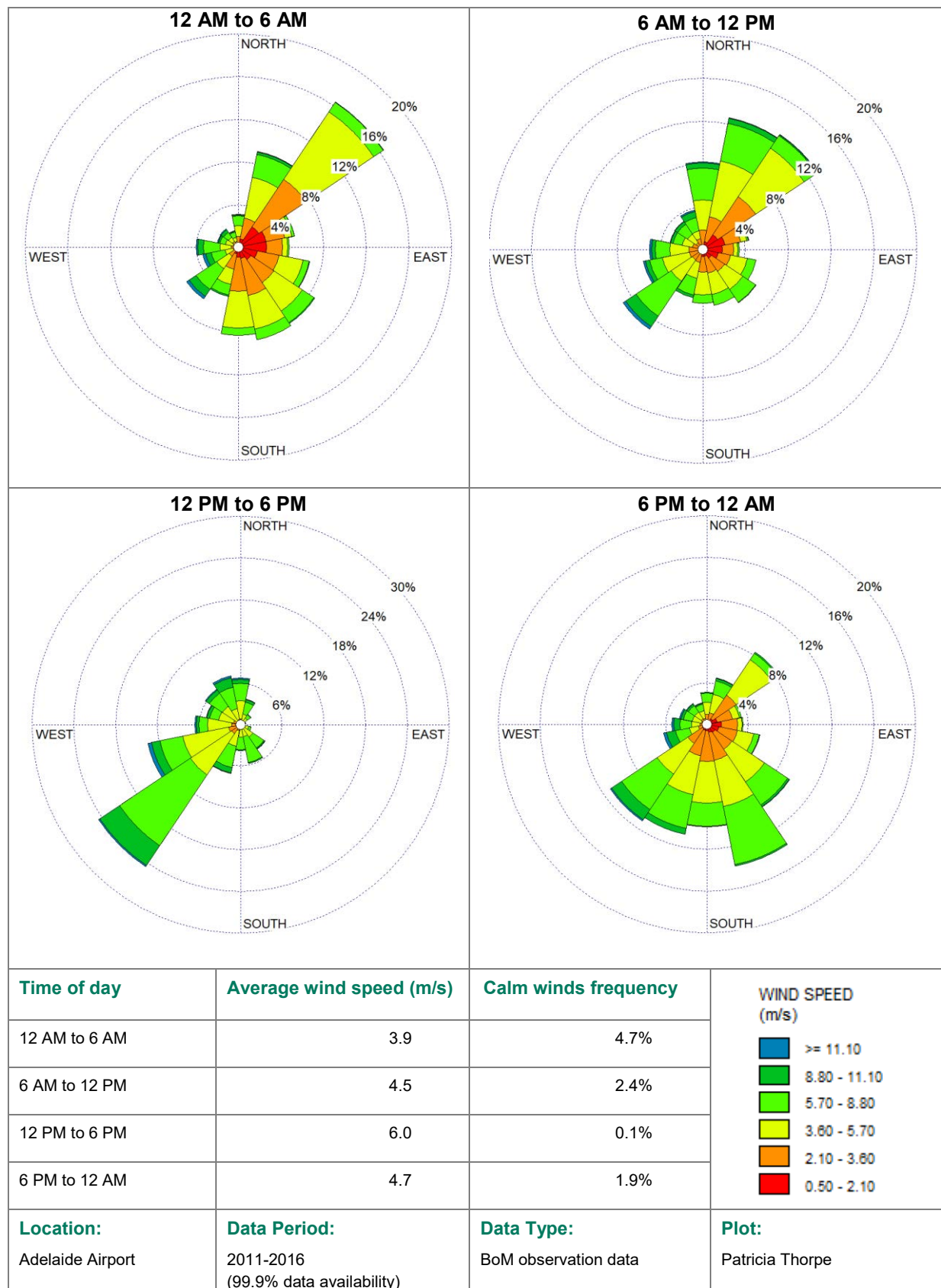


Figure 5.2: Wind rose Adelaide Airport data 2011 to 2016 (time of day)

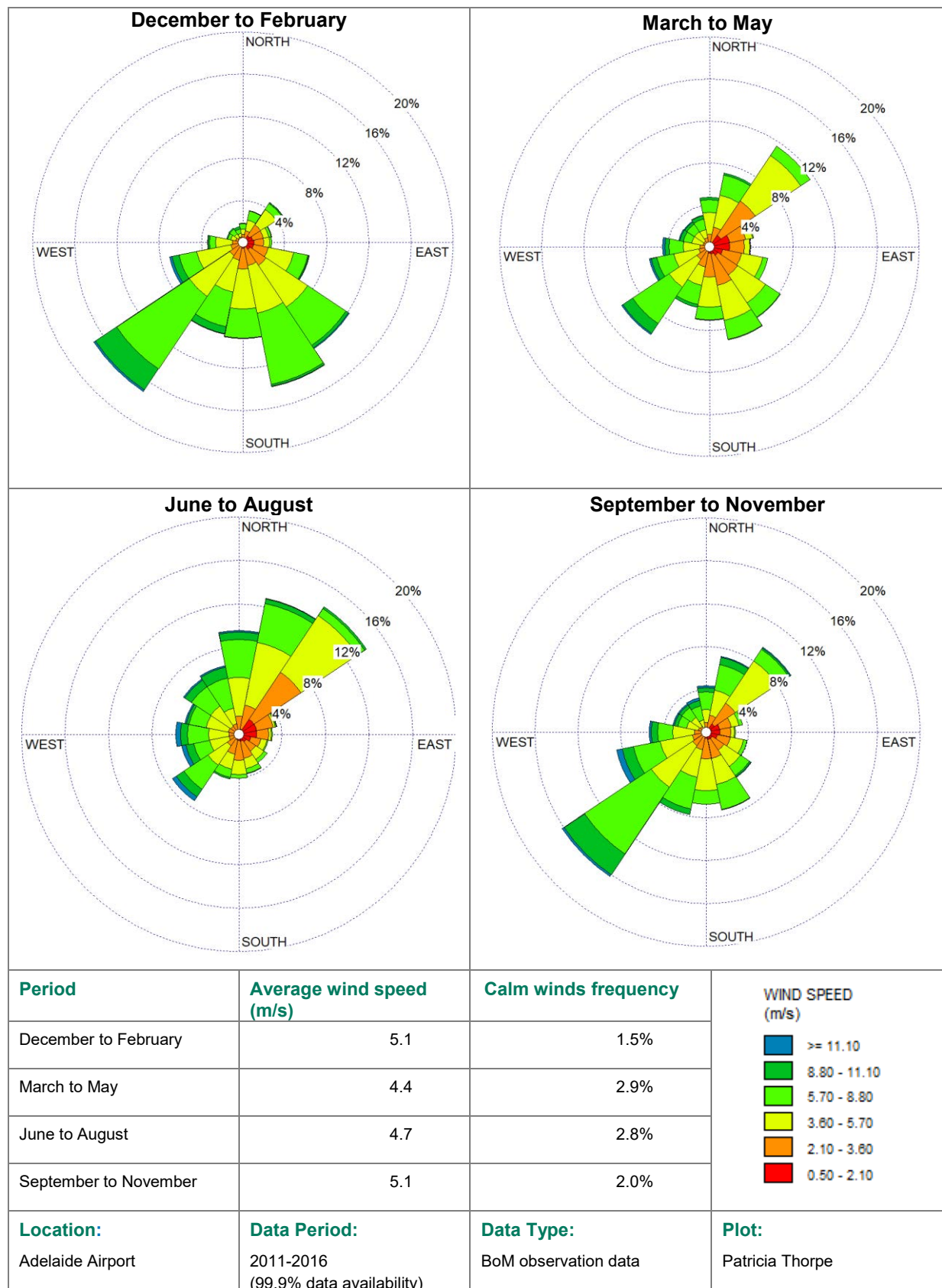


Figure 5.3: Wind rose Adelaide Airport data 2011 to 2016 (seasonal)

6. REVIEW OF AIR QUALITY DATA

Air quality data from the EPA Netley air quality monitoring station located approximately 1.8 km to the north northeast from the Mooringe Avenue site (see Figure 6.1) was reviewed to assess background air quality conditions at the Mooringe Avenue site. The air quality data at Netley can be considered to be generally representative of background air quality conditions in western Adelaide suburbs. Overall, the data is consistent with regional trends and local levels. This includes the maximum value exceedances of the Air EPP ground level concentration criteria for PM₁₀ and PM_{2.5}.

There is nothing in the background air quality data that points to any particular concern about the air quality situation at the Mooringe Avenue site. As seen in the review of the wind data there is little exposure of the Mooringe Avenue land proposed for rezoning from the North Plympton industrial area and the review of evaluation distances did not show location of any operations within distances that was cause for concern (noting once again that New Castalloy has just closed operations).

The air quality and wind data also shows that there is no concern about emissions from Adelaide Airport at the Mooringe Avenue site proposed for rezoning. The Netley air quality monitoring location is located much closer to Adelaide Airport than the Mooringe Avenue site.



Figure 6.1: Location of Netley air quality monitoring station

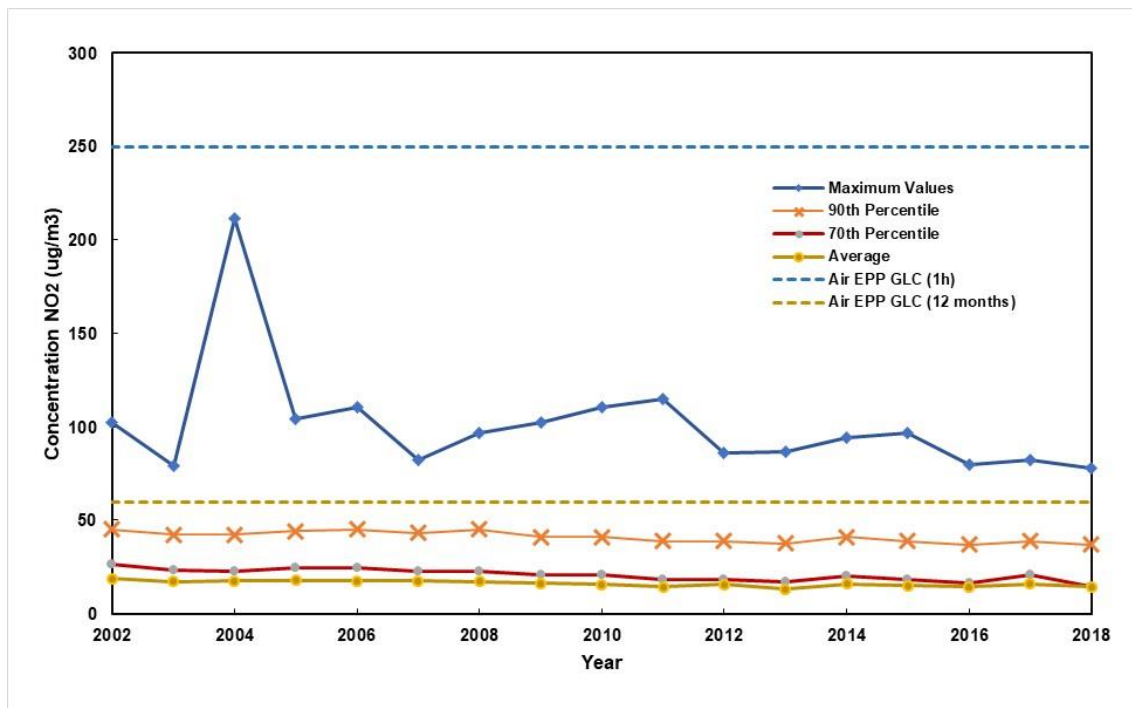


Figure 6.2: Netley NO₂ annual statistics

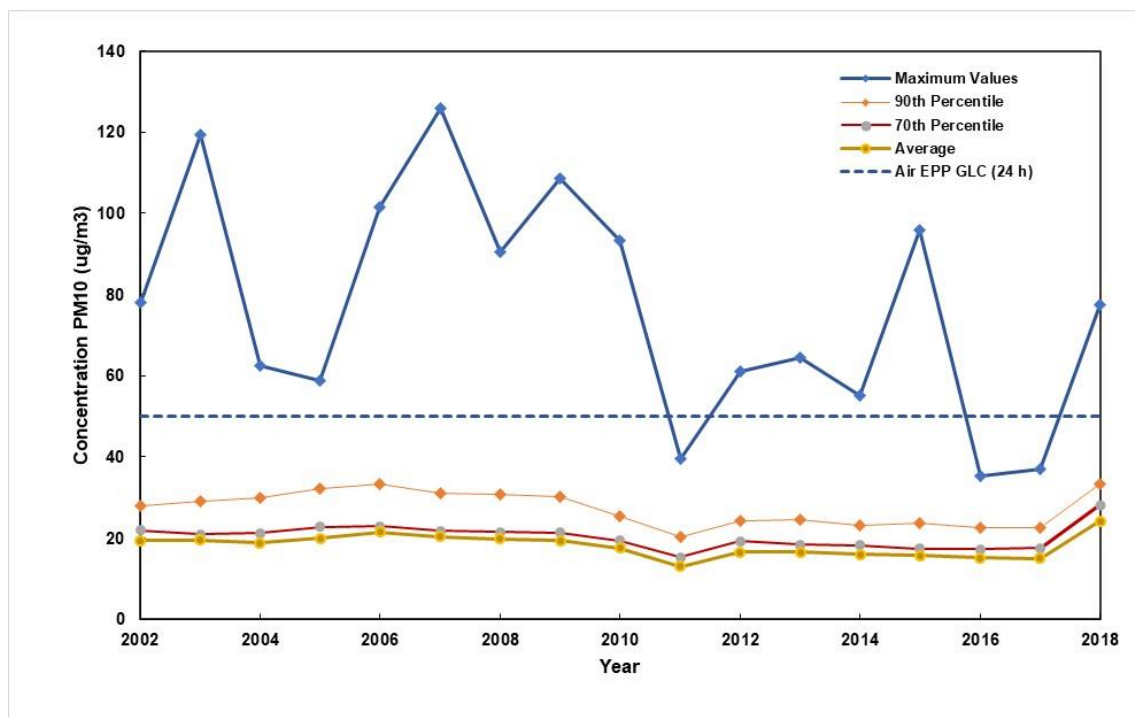


Figure 6.3: Netley PM₁₀ annual statistics

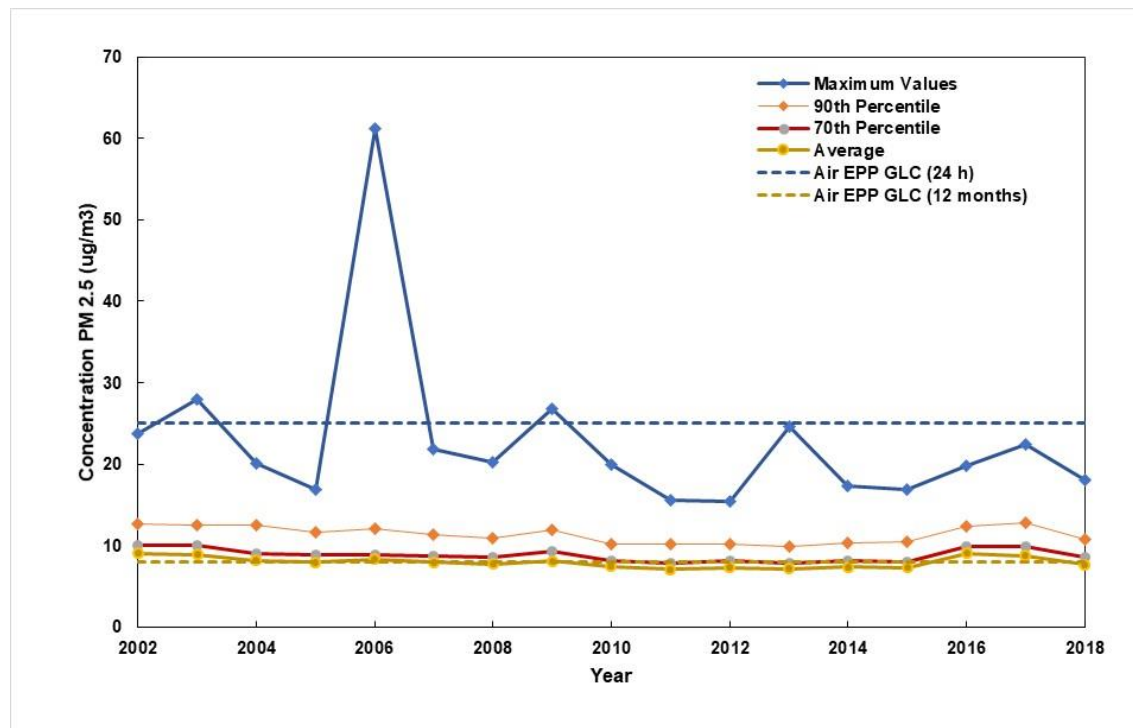


Figure 6.4: Netley PM_{2.5} annual statistics

7. REVIEW OF COUNCIL INTERFACE BETWEEN LAND USES OBJECTIVES AND PRINCIPLES OF DEVELOPMENT CONTROL

The West Torrens Council Development Plan general section on interface between land uses lists the following objectives (West Torrens Council, 2018a):

1. *Development located and designed to minimise adverse impact and conflict between land uses.*
2. *Protect community health and amenity from adverse impacts of development.*
3. *Protect desired land uses from the encroachment of incompatible development.*

The Development Plan also includes principles of development control, which address general amenity and air quality issues specifically:

1. *Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:*
 - (a) *the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants*
 - (b) *noise*
 - (c) *vibration*
 - (d) *electrical interference*
 - (e) *light spill*
 - (f) *glare*
 - (g) *hours of operation*
 - (h) *traffic impacts.*

2. *Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.*
3. *Development adjacent to a Residential Zone should be designed to minimise overlooking and overshadowing of nearby residential properties.*
4. *Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.*
5. *Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.*
6. *Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.*
7. *Non-residential buildings and structures in zones other than the Urban Corridor Zone should be set back from boundaries of the site where it abuts the Residential Zone:*
 - (a) *a minimum of 5 metres from the front property boundary*
 - (b) *a minimum of 3 metres from side or rear property boundaries where the vertical wall height (from natural ground level) is 4 metres or less, plus an additional 0.6 metres for every metre that the vertical wall height (from natural ground level) exceeds 4 metres.*

Development principles 8 to 11 concern noise generating activities.

Development principles 12 and 13 concern air quality:

12. *Development with the potential to emit harmful or nuisance-generating air pollution (including gaseous odours) should incorporate air pollution control measures to prevent harm to human health or unreasonable interference with the amenity of sensitive uses within the locality.*
13. *Chimneys or exhaust flues associated with commercial development (including cafes, restaurants and fast food outlets) should be designed to ensure they do not cause a nuisance or health concerns to nearby sensitive land uses by:*
 - (a) *incorporating appropriate treatment technology before exhaust emissions are released to the atmosphere*
 - (b) *ensuring that the location and design of chimneys or exhaust flues maximises dispersion and takes into account the location of nearby sensitive uses.*

The Air EPP requires industry to not exceed ground level concentrations for air emissions. The development plan objectives and principles for interface between land uses provides details for planning purposes addressing this and other amenity issues.

The proposal for rezoning of the Mooringe Avenue site from industrial to residential in the proximity of the North Plympton industrial zone and surrounding residential areas, is simplified by the fact that New Castalloy has closed operations. Regarding future use, it is understood there is currently no clear plan and for the purpose of this assessment it has to be assumed that the site will remain industrial and that any future industrial operations will have to demonstrate compliance with Air EPP criteria.

In regard to the proposed rezoning of the Mooringe Avenue site, it is not expected that any future operations at the New Castalloy site would pose any particular risk of air quality impacts at the Mooringe Avenue site if the residential development would be of a similar nature to surrounding residential areas (single and two storey) since compliance over the existing residential areas would already be required and interface issues with the existing residential area would have to be addressed as part of any industrial redevelopment.

However, development of taller³ than surrounding residential housing around the land proposed for rezoning has the potential if located closer to the industrial area to place receptors at an elevation where there is a higher risk of exposure of stack emissions from future industrial operations at the New Castalloy site⁴. Considering this from an interface point of view development of residential housing taller than what is currently in place around the industrial zone (closer to the boundary between the industrial and residential zone) could be viewed as encroachment on the industrial zone operations compared to the current situation and also place limitations on future industrial uses at the New Castalloy site. To address this it would be suitable with a specific setback or separation distance between potential future industrial activities on the New Castalloy site and any residential buildings taller than two storey on the land proposed for rezoning.

The details of what would be required for such a separation distance or setback rezoning is difficult to determine considering that future industrial developments at the New Castalloy site are unknown. The distance should be considered from where a stack source may be located, also considering that a setback to address interface issues with existing residential receptors would likely have to be introduced as part of any industrial redevelopment.

There is no specific guidance to refer to regarding what may be a suitable setback or separation distance for this situation. One way to look at it would be to refer to a 100 m distance, as based on generic smaller scale industrial activities in the evaluation distances guideline (SA EPA, 2016a). However, this application is not ideal and given the specifics of the situation it is recommended that this is discussed with the EPA. A better defined distance could be assessed with dispersion modelling, but there are some challenges with this approach since the assessment would need to be based on generic/worst case modelling (considering unknown activities) to determine what would be suitable.

In relation to building specific mitigation measures to address potential air quality impacts for residential developments on the land proposed for rezoning to residential, this may not be relevant and is typically not as straight forward as noise impacts to mitigate against. Any building specific mitigations to reduce exposure to air emissions would typically be specifically be tailored to the relevant situation and would typically be based on reduction of exposure locating ventilation air intakes, opening windows, doors and balconies away from the direction of the source of exposure. This could also include orientating buildings so that they face or open up away from the source of exposure.

Something else that also should be noted on the proposed rezoning of 65-73 Mooringe Avenue is that the rezoning offers the potential for improvement in local air quality for the residential areas that currently surround the smaller isolated industrial zoning area. This is a benefit.

³ It is understood that development of three or four storey residential housing may be considered.

⁴ If a taller building is located closer to a stack source, there is a higher likelihood that the emission from that source would intercept or cause the concentration from the plume to be higher (closer to plume centreline) compared to a lower building closer to ground level.

8. CONCLUSIONS

This air quality assessment was prepared to review the potential for air quality impacts at 65-73 Mooringe Avenue, which is proposed to be rezoned from industrial to residential.

The assessment considered:

- Review of activities in the North Plympton industrial area and relevant air quality related evaluation distances as identified.
- Exposure potential from industrial activities considering wind conditions.
- Complaints data from the area.
- Background air quality data.
- Council land use interface objectives and principles.

During the time that this assessment was being prepared New Castalloy closed operations. This is very significant, since the New Castalloy operations was the largest industrial site in North Plympton industrial area and located immediately to the northwest of the land proposed for rezoning.

The closure of the New Castalloy operations means the New Castalloy site, which is understood to be located on state owned land, will be redeveloped at some stage. As part of any redevelopment it would be expected that the site would require remediation and that any new industrial developments would have to address interface issues with existing residential areas.

The review of wind data showed that there is very little wind blowing from the industrial area towards the Mooringe Avenue land proposed for rezoning. This means that there is little exposure potential from the North Plympton industrial area.

The complaints data showed a declining trend since 2008 with no complaints in 2018. It is expected that the complaints situation for the area will be improved with New Castalloy having closed operations.

Background air quality data shows consistency with regional trends and local levels and does not highlight any specific concerns. Adelaide Airport is not an air quality concern at the land proposed for rezoning.

The closure of New Castalloy means that there is no existing industry that the rezoning of the Mooringe Avenue site will provide encroachment on. Any future industrial developments at the New Castalloy site would need to demonstrate compliance over the nearby residential areas. Considering that the Mooringe Avenue land proposed for rezoning is surrounded with residential areas both to the north and to the west (these areas are to the east and south of the New Castalloy site) it is reasonable to expect that the additional residential presence from the rezoning would not be limiting if of similar character to surrounding residential areas.

Should however taller than surrounding residential housing (more than two stories) be proposed this can be considered a potential encroachment issue on the industrial zone and former New Castalloy site since there could be plume interception issues if tall residential buildings are located too close to stack sources in the industrial zone. To account for this it is suggested that a setback be considered for any three storey residential buildings (or taller) from the industrial area. The setback should apply from where a stack source may be located (and should also include any future setback at the industrial site to accommodate interface issues with existing residential receptors).

It is recommended a suitable setback or separation distance to specifically address taller buildings is discussed with the EPA. Dispersion modelling could be performed to assess the situation but would need to be based on generic/worst case assumptions to address uncertainty regarding potential future industrial developments.

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5 Peel Street
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SA

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