



South Creek West Precinct 5

Air Quality Assessment

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Basis of Report

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1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Always Consultancy Pty Ltd to prepare an updated Air Quality Assessment (AQA) to support the Gateway submission for the Cobbitty Sub-Precinct 5 Planning Proposal within the South Creek West Land Release Area (the Project).

This updated assessment builds upon the previous *South West Precinct Air Quality Assessment (Stage 1)* completed by SLR in 2021 (hereafter, the 2021 AQA) (SLR 2021), which provided an evaluation of potential air quality and odour impacts associated with existing emission sources surrounding the Cobbitty Sub-Precinct 5. The current report revisits those findings to ensure they remain consistent with the latest project details, updated planning context, and current regulatory framework.

Overall, this report presents a current appraisal of potential air quality considerations relevant to the proposed rezoning of South Creek West Precinct 5, to support informed decision-making as part of the statutory planning process.



2.0 Project Overview

The Cobbitty Sub-Precinct 5 forms part of the South Creek West Land Release Area, within the broader South West Growth Area (SWGA) in Western Sydney. The project area occupies approximately 172.68 hectares of land located along The Northern Road within the suburb of Cobbitty in the Camden Local Government Area (LGA). It represents roughly 57% of Sub-Precinct 5, with the remaining land under separate ownership.

The Planning Proposal seeks to facilitate the transition of the site from its existing rural and agricultural uses to a well-planned, connected, and sustainable residential community. The proposed amendment to the State Environmental Planning Policy (Precincts – Western Parkland City) 2021 will enable a mix of land uses including low and medium-density residential, mixed-use, and environmental living zones, complemented by a primary school, active and passive open space, and supporting infrastructure.

At full development, the precinct is expected to accommodate approximately 2,650 dwellings and a future population of around 8,040 residents. The design framework promotes walkable neighbourhoods, accessible green corridors, and an integrated open space network that strengthens visual and ecological connections across the site.

Strategically positioned between the Lowes Creek Maryland and Oran Park precincts, the site benefits from proximity to major regional infrastructure, including the upgraded Northern Road and the future Oran Park Metro Station. These connections will enhance accessibility to employment centres such as the Western Sydney Aerotropolis, supporting the NSW Government's vision for a resilient and liveable Western Parkland City.

The updated urban design vision continues to build upon the earlier planning and design work for the precinct, embedding principles of sustainability, contextual design, and "Connecting with Country" to deliver a vibrant, inclusive, and enduring community within the evolving South West Growth Area.

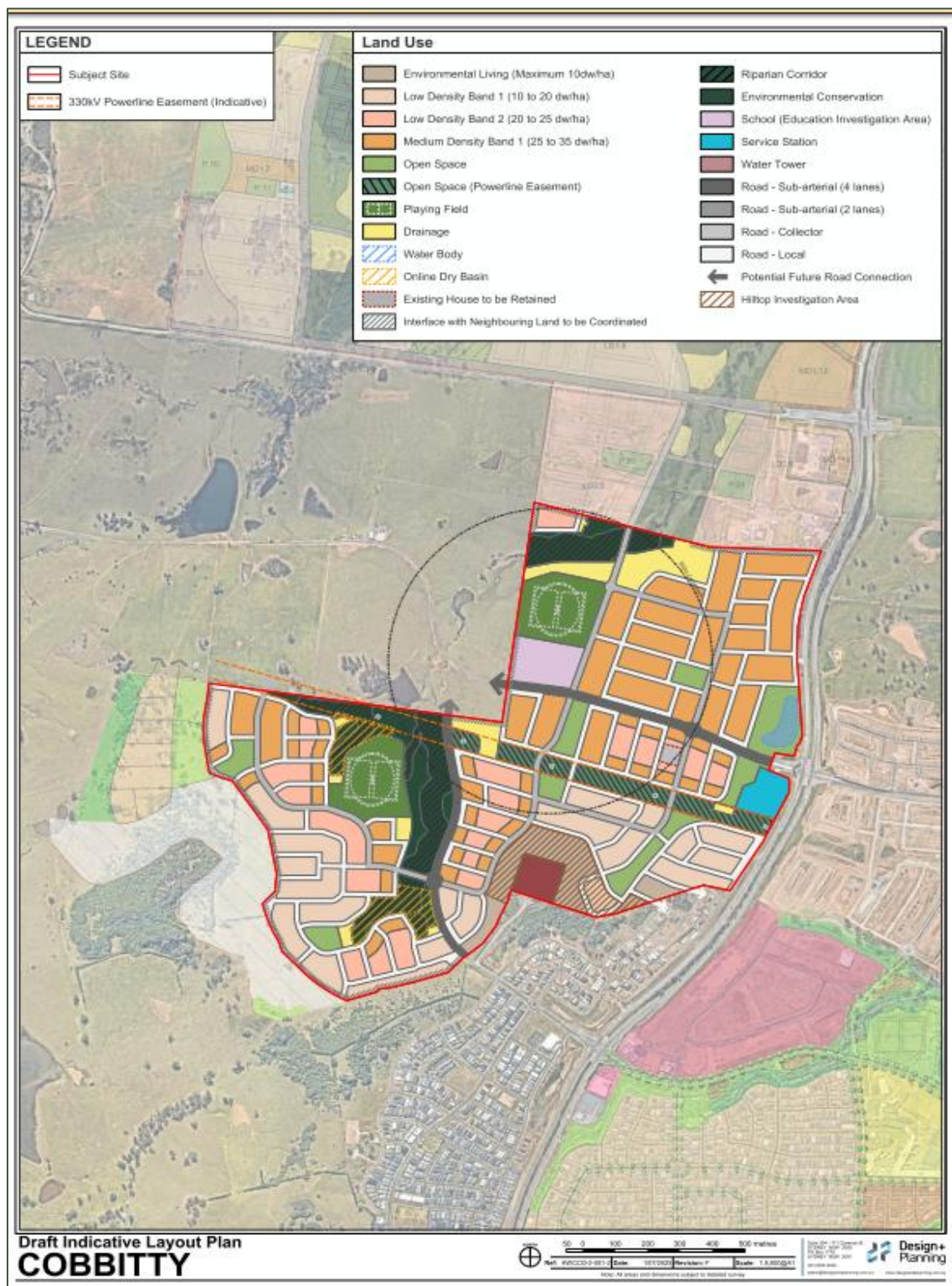
2.1 Indicative Layout Plan

Figure 2-1 presents the Indicative Layout Plan (ILP) for Cobbitty Sub-Precinct 5, illustrating the proposed spatial distribution of land uses and the overarching urban design framework for the precinct. The ILP establishes a legible and connected structure organised around a central riparian corridor, a comprehensive open-space network, and a hierarchy of roads linking key neighbourhoods and adjoining precincts.

The plan identifies the locations of residential neighbourhoods, the primary school, community and open spaces, and movement corridors that connect with Oran Park, Lowes Creek Maryland, and Pondicherry. The design responds sensitively to existing topography, hydrology, and vegetation patterns, reinforcing natural landscape features while achieving a cohesive and walkable urban form.



Figure 2-1 Indicative Layout Plan



Source: (Design + Planning 2025)



2.2 Review of Previously Identified Local Air Emission Sources

This section identifies existing local activities and facilities that have the potential to contribute to air emissions in the vicinity of Project. The review updates the findings of the 2021 AQA, confirming whether previously identified sources remain operational and noting any new sources relevant to the current planning proposal.

Source 1 – Greenlife Resource Recovery Facility

The Greenlife Resource Recovery Facility (RRF), located at 761 The Northern Road, Bringelly, was previously identified as a local emission source in the 2021 AQA. The facility remains active and continues to operate under Environment Protection Licence (EPL 11233).

The RRF undertakes composting and resource recovery of materials such as green waste, soils, timber, and other organics. Typical emissions associated with these activities include odorous compounds from composting processes and particulate matter generated during material handling and vehicle movement.

Given its proximity to the site and ongoing operations, this facility remains a relevant source for consideration in this updated assessment.

Sources 2 and 3 – Duck Sheds and Tomato Farm

The 2021 Air Quality Assessment identified two agricultural operations as potential local emission sources: a group of duck farming sheds located north of the Project, and a tomato farm situated to its northwest. These facilities were previously noted for potential odorous emissions associated with poultry rearing, waste handling, and horticultural activities.

A review of recent aerial imagery confirms that both the duck sheds and the tomato farm have been removed and are no longer operational. No active agricultural infrastructure or production activities are present at either location. Accordingly, these sources no longer contribute to the local air emission environment and have not been assessed further in this updated study.

Source 4 – W2R Compost Farm

The W2R Compost Farm, located approximately 850 m northwest of the Project, was identified in the 2021 AQA as a potential local source of odorous and particulate emissions. The facility remains operational and continues to undertake composting and related organic waste processing activities.

Emissions from the W2R Compost Farm are primarily associated with the composting of organic materials, material handling, and vehicle movements on unsealed surfaces. These activities can generate odorous compounds and particulate matter, particularly during active compost turning and material transport.

Given the facility's ongoing operation and its proximity to the Project, it remains a relevant source for consideration in this assessment.

Source 5 – Duck Farm (169 Cut Hill Road, Cobbitty)

The 2021 Air Quality Assessment identified a duck farming operation located at 169 Cut Hill Road, Cobbitty, approximately 4.5 km south-west of the Project. The facility was noted as a potential source of odorous emissions associated with poultry farming activities, including waste management, manure storage, and ventilation of enclosed sheds.

Duck farming operations typically produce odour from manure handling, litter management, and evaporation from ponds or moist surfaces. The extent of off-site impact depends on



factors such as shed design, cleaning frequency, waste storage practices, and prevailing meteorological conditions.

A review of available information confirms that the duck farm remains in operation. However, given the substantial distance between the facility and the Project, the potential for odour influence on the Project is expected to be very limited. The source is considered in **Section 5.0** using separation distance guidelines to confirm that adequate buffers exist between the facility and the Project.

Source 6 – Chicken Sheds (18 Coates Park Road, Cobbitty)

The 2021 AQA identified a poultry farming facility located at 18 Coates Park Road, Cobbitty, approximately 2.5 km west of the Project. The chicken sheds were recognised as a potential source of odorous emissions arising from poultry housing, litter handling, and associated waste management activities.

Odour emissions from such facilities are typically linked to the accumulation and breakdown of organic material, including manure and bedding, as well as cleaning and ventilation processes. The magnitude of off-site odour impacts depends on a range of factors such as the frequency of litter removal, waste management practices, and prevailing meteorological conditions.

A desktop review indicates that the poultry farm remains operational, and therefore it is included in the assessment chapter to confirm that the separation distance between the facility and the Project is sufficient to mitigate potential air quality and odour impacts.

Source 7 – Equestrian Centre (205 Coates Park Road, Cobbitty)

The 2021 AQA identified an equestrian centre located at 205 Coates Park Road, Cobbitty, approximately 4.5 km northwest of the Project. The facility involves horse stabling and training activities, which may generate minor odour and dust emissions associated with manure handling and vehicle movements.

Given the significant distance between the equestrian centre and the Project, and the limited scale of potential emissions, the facility is not expected to influence local air quality. This source has not been assessed further in this report.

Source 8 – Bringelly Brickworks (60 Greendale Road, Bringelly)

PGH Bricks & Pavers Pty Limited operates the Bringelly Brickworks (formerly owned by Boral) at 60 Greendale Road, Bringelly, approximately 3.5 km north of the Project. The facility includes a crushing and manufacturing plant, product stockpiling and storage areas, delivery operations, and an associated quarry with significant remaining clay reserves.

Emissions from the facility primarily consist of particulate matter and combustion-related pollutants such as nitrogen oxides (NO_x), sulfur dioxide (SO₂), and volatile organic compounds (VOCs) generated by kiln operations, material handling, and on-site vehicle movements.

Bringelly Brickworks operates under a development consent permitting annual production of up to 160,000 tonnes of bricks, with a proposal for increased capacity. Given its operational status, scale, and proximity to the project site, this facility has been included in the updated assessment. Separation distance guidelines are used in **Section 5.0** to inform a qualitative assessment of its potential influence on local air quality of the Project.

Source 9 – Hydroponic Lettuce Farming (Loftus Road, Bringelly)

The 2021 AQA identified a hydroponic lettuce farming operation located approximately 3.4 km north of the Project. The facility comprises enclosed greenhouses used for



hydroponic cultivation of lettuce and other leafy vegetables. These activities are considered to have minimal potential for off-site air quality impacts, given the enclosed nature of the growing system and the substantial distance from the Project.

Accordingly, this source has not been assessed further in this report.

Source 10 – Concrete Batching and Asphalt Plants

Two industrial facilities, previously identified as a concrete batching plant and an asphalt production plant located approximately 3.4 km northeast of the Project, were included in the 2021 Air Quality Assessment.

A review of the most recent aerial imagery indicates that both facilities are no longer operational. Accordingly, they have been excluded from further consideration in this updated assessment.

Source 11 – Former Strawberry Farm

A strawberry farm previously located along The Northern Road at Lowes Creek, about 1.5 km northeast of the Project, was identified in the 2021 Air Quality Assessment as a minor potential source of odour and dust. Recent aerial imagery confirms this site has been cleared. The farm no longer exists and has not been considered further in this assessment.

Source 12 –Turf Production Farm

The 2021 AQA identified a turf production farm along The Northern Road, Lowes Creek, approximately 800 m east of the Project. The facility previously stored large quantities of chicken manure and compost materials in open windrows, which were considered a potential source of odour.

Recent aerial imagery confirms that the turf farm no longer exists. As the activity has ceased, it has not been considered further in this assessment.

Source 13 – Poultry Farm

The poultry farm located at 313 Eastwood Road, Leppington, approximately 3.6 km north-east of the Project, comprises four naturally ventilated poultry sheds. Recent aerial imagery indicates that the facility remains in place and may operate intermittently. Accordingly, it is included in the updated assessment, with potential impacts considered using applicable separation distance guidelines.

Source 14 – Poultry Farm and Processing Facility

A poultry operation was identified at 108 Deepfields Road, Leppington, approximately 3.9 km east of the Project, comprising a chicken meat processing facility and retail outlet with four naturally ventilated poultry sheds.

As the facility remains a potential source of odour from processing and storage activities, it is considered in this assessment with respect to applicable separation distance guidelines.

Source 15 – Poultry Farm

A poultry farm located at 101 Deepfields Road, Leppington including three operational poultry sheds was identified approximately 3.9 km southeast of the Project.

Given its operational nature and potential to generate odorous emissions, this facility is assessed in this report using separation distance criteria to determine its potential influence on the Project.



2.3 Review of existing Sources

Table 2-1 summarises the existing local emission sources identified in the vicinity of the Project as requiring further assessment in this updated study, along with its approximate distance and direction from the Project.

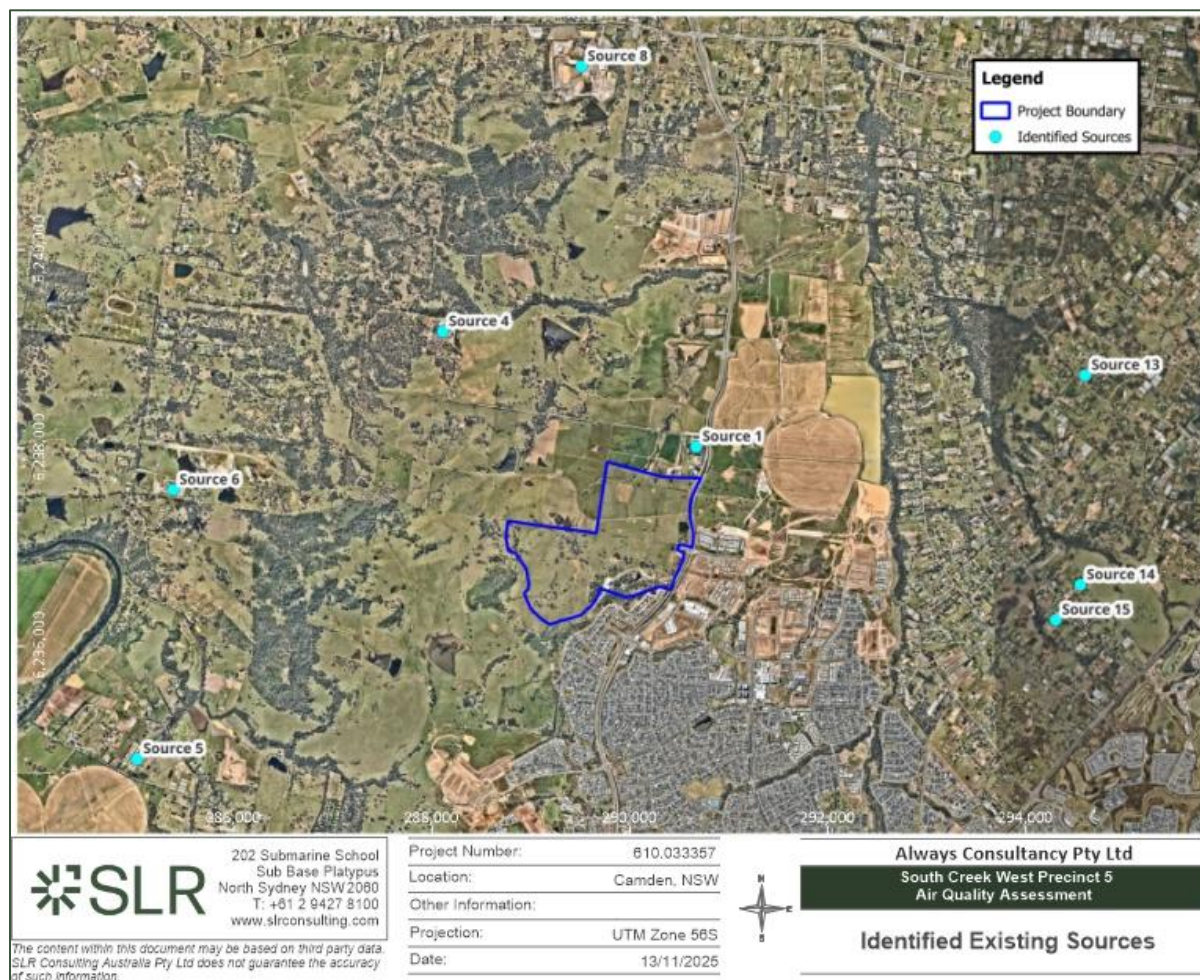
Table 2-1 Summary of Identified Existing Local Air Emission Sources

ID	Facility Name	Primary Activity	Key Pollutants	Distance to Site (m)
1	Greenlife Resource Recovery Facility	Composting and resource recovery of organic and construction materials	Odour Particulate Matter	400 Northeast
4	W2R Compost Farm	Composting of organic materials	Odour Particulate Matter	850 Northwest
5	Duck Farm	Poultry farming	Odour	4,500 Southwest
6	Chicken Sheds	Poultry farming	Odour	2,500 West
8	Bringelly Brickworks (PGH Bricks & Pavers)	Brick manufacturing and quarrying operations	Particulate Matter; NO _x ; SO ₂ ; VOCs	3,500 North
13	Poultry Farm	Poultry farming	Odour	3,600 Northeast
14	Poultry Farm and Processing Facility	Poultry farming and meat processing	Odour	3,900 East
15	Poultry Farm	Poultry farming	Odour	3,900 Southeast

The locations of identified air emission sources relative to the Project are shown in **Figure 2-2**.



Figure 2-2 Identified Existing Sources



2.4 Pollutants of Concern

As identified in **Section 2.3**, a number of existing facilities and activities within the vicinity of the Project have the potential to generate emissions to air. They include poultry farms, composting facilities and brick manufacturing operations. The emissions to air from these activities include odorous emissions, products of fossil fuel combustion, particulate matter and acid gases.

Accordingly, the following pollutants have been identified as relevant to the Project:

- Odour – primarily generated from poultry operations, composting facilities, and organic waste handling activities. Odour represents the key pollutant of concern due to its potential to adversely impact local amenity and result in community complaints.
- Particulate matter (PM₁₀ and PM_{2.5})¹ – produced from quarrying, material handling, and combustion processes. These fine particles can contribute to nuisance dust and have potential health implications.

¹ PM₁₀ refers to particulate matter with a diameter of 10 micrometres or less, while PM_{2.5} consists of even finer particles with a diameter of 2.5 micrometres or less. These particles can penetrate deep into the respiratory system, with PM_{2.5} reaching the lungs and even entering the bloodstream, leading to health issues such as respiratory diseases and cardiovascular problems.



- Oxides of nitrogen (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), and volatile organic compounds (VOCs) – emitted from combustion activities associated with the brickworks.
- Hydrogen fluoride, fluorine, and hydrogen chloride (HCl) – released in minor quantities from brick kiln operations at the Bringelly Brickworks. These acidic/reactive gases are referred to as 'air toxics' due to their potential human health and ecological impacts.
- Fugitive dust emissions – arising from quarrying and material handling operations at the brickworks facility, as well as from unsealed road surfaces. These larger particles contribute to localised increases in total suspended particulate (TSP) and dust deposition rates, which can adversely affect amenity (i.e. nuisance dust).

The pollutants listed above represent the principal emissions of concern for the surrounding area and will be considered in this assessment. **Section 3.1** presents the relevant assessment criteria adopted from the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (hereafter 'the Approved Methods') (NSW EPA 2024) and the *Technical framework: assessment and management of odour from stationary sources in NSW* (hereafter the Odour Framework) (NSW DEC 2006).



3.0 Regulatory Framework

3.1 Air Quality Criteria

3.1.1 Particulate Matter and Products of Combustion

Section 7 of the *Approved Methods* (NSW EPA 2024) sets out the ground-level air quality impact assessment criteria for NSW to achieve acceptable environmental outcomes and to minimise risks to human health. These criteria represent the defining ambient air quality standards for NSW and are considered appropriate for use in this assessment.

The NSW EPA impact assessment criteria relevant to particulate matter and products of care summarised in **Table 3-1**.

Table 3-1 NSW EPA Impact Assessment Criteria

Pollutant	Averaging Period	Assessment Criteria	Units
Sulfur Dioxide (SO ₂)	1 hour	215	µg/m ³
	24 hours	57	µg/m ³
Nitrogen Dioxide (NO ₂)	1 hour	164	µg/m ³
	Annual	31	µg/m ³
Particulate Matter (PM _{2.5})	24 hours	25	µg/m ³
	Annual	8	µg/m ³
Particulate Matter (PM ₁₀)	24 hours	50	µg/m ³
	Annual	25	µg/m ³
Total Suspended Particulate (TSP)	Annual	90	µg/m ³
Deposited Dust	Annual	2 ^a	g/m ² /month
		4 ^b	g/m ² /month
Carbon Monoxide (CO)	1 hour	30	mg/m ³
	8 hours	10	mg/m ³
^a Maximum allowable increase in deposited dust level			
^b Maximum allowable total deposited dust level			

3.1.2 Individual Air Toxics

The impact assessment criteria for individual air toxics relevant to the brickworks are presented in **Table 3-2**.



Table 3-2 NSW EPA Impact Assessment Criteria for Relevant Air Toxics

Pollutant	Averaging Period	Concentration	
		($\mu\text{g}/\text{m}^3$)	(mg/m^3)
Hydrogen chloride (HCl)	1-hour	140	0.14
Hydrogen fluoride (HF) *	90 days	0.5	
	30 days	0.84	
	7 days	1.7	
	24 hours	2.9	
* Criteria presented for 'general land use', which excludes areas with vegetation sensitive to fluoride, such as grapevines and stone fruits.			

3.1.3 Odour

The method used by the NSW EPA to determine appropriate impact assessment criteria for complex mixtures of odorous air pollutants, as specified in the Odour Framework (NSW DEC 2006), is expressed as follows:

$$\text{Impact assessment criterion (ou)} = (\log_{10}(\text{population}) - 4.5) / -0.6$$

A summary of the impact assessment criteria given for various population densities, as drawn from the Odour Framework, is given in **Table 3-3**. Based on the proposed use of the Site for urban residential development, a criterion of 2 ou would be appropriate for this assessment.

Table 3-3 NSW EPA Impact Assessment Criteria for Odours

Population of Affected Community	Impact Assessment Criteria for Complex Mixtures of Odours (ou) (nose-response-time average, 99 th percentile)
Urban area (≥ 2000)	2.0
~300	3.0
~125	4.0
~30	5.0
~10	6.0
Single residence (≤ 2)	7.0

3.2 Separation Distance Guidelines

The application of minimum recommended separation distances (or 'buffer' distances) provides a valuable screening tool to judge whether a detailed assessment is required to evaluate the potential risk of conflicting land uses. Separation distances provide guidance on the appropriate level of separation between a source of noise and air pollutant emissions and sensitive land uses to mitigate the impacts of intended and unintended emissions on people. This approach relies on the knowledge that impacts on the environment generally decrease with increasing distance from the source of emissions. Separation distances are based on an understanding of the types of emissions associated with various industries and their potential impacts on people. These distances can vary based on the scale and size of the industry, location topography, prevailing winds and other factors.



Whilst there are no separation guidelines issued in NSW, this assessment refers to guidelines set by other regulatory agencies in Australia including:

- *Separation distance guidelines for air emissions* - ACT Government, 2018 (ACT Government 2018);
- *Recommended land use separation distances* - NT EPA, 2017 (NT EPA 2017);
- *Publication 1949 Separation distance guideline* - EPA Victoria, 2024 (EPA Victoria 2024);
- *Evaluation distances for effective air quality and noise management* – EPA SA, 2023 (EPA SA 2023); and
- *Recommended separation distances for industrial residual air emissions* - EPA WA, 2015 (EPA WA 2015).

3.2.1 Composting Works

Table 3-4 shows the recommended separation distances prescribed by various regulatory authorities for composting operations.

Table 3-4 Relevant Separation Distances for Composting Operations

Authority	Activity Definition		Separation Distance (m)
ACT Government	>200 tonnes/year		1,000
	> 20 & <200 tonnes/year		300
	< 20 tonnes/year		100
EPA South Australia	>200 tonnes/year		1,000
	20 & <200 tonnes/year		300
	< 20 tonnes/year		100
EPA Western Australia	Outdoor Uncovered	up to 2,000 tpa	400
		up to 5,000 tpa	800
		up to 12,000 tpa	1,300
		up to 20,000 tpa	1,800
		up to 35,000 tpa	2,500
		above 35,000 tpa	Case by case
	Outdoor uncovered, turned windrows	up to 2,000 tpa	400
		up to 5,000 tpa	650
		up to 12,000 tpa	1,100
		up to 20,000 tpa	1,500
		up to 35,000 tpa	1,900
		up to 50,000 tpa	2,500
		above 50,000 tpa	Case by case
	Outdoor covered windrows with	up to 2,000 tpa	400
		up to 5,000 tpa	550
		up to 12,000 tpa	700



Authority	Activity Definition		Separation Distance (m)
	continuous aeration	up to 20,000 tpa	800
		up to 35,000 tpa	900
		up to 50,000 tpa	1,000
		above 50,000 tpa	Case by case

3.2.2 Poultry Farms

The *Technical framework: Assessment and management of odour from stationary sources in NSW* (NSW DEC 2006) provides a procedure for the identification of recommended minimum separation distances from poultry farming activities. The Technical Notes (NSW DEC 2006) provides a detailed method for the calculation of site-specific separation distances depending on the number of standard broiler chicken shed units, shed design, receptor type, terrain, vegetation, and wind direction frequency.

An assessment of the recommended separation distances for the poultry farm operations identified in the vicinity of the Project is presented in **Section 5.2**, with additional details of the methodology used included in **Appendix A**.

3.2.3 Brickworks and Ceramic Manufacturing

Table 3-5 shows the recommended separation distances prescribed by various regulatory authorities for brickworks and ceramic manufacturing facilities.

Table 3-5 Recommended Separation Distances – Brickworks/Ceramic Manufacturing

Authority	Activity Definition		Separation Distance (m)
EPA Victoria	Brick, tile, pipe, and refractory manufacturing	Production of bricks, tiles, pipes, pottery goods or refractories, processed in dryers or kilns (>10,000 tonnes per year)	250
ACT Government	Ceramic works	Works for the production of ceramics or ceramic products such as bricks, tiles, pipes, pottery goods, refractories or glass that are manufactured or are capable or being manufactured in furnaces or kilns fired by any fuel with a total capacity for the production of products exceeding 100 tonnes per year	500
EPA South Australia	Ceramic works	Fluoride emissions from ceramic works may pose a risk of damage to vegetation and animal health at levels lower than those required to impact on human health. Due to the high temperatures used, odour can also be a potential concern. Fugitive dust may result from material handling operations.	750

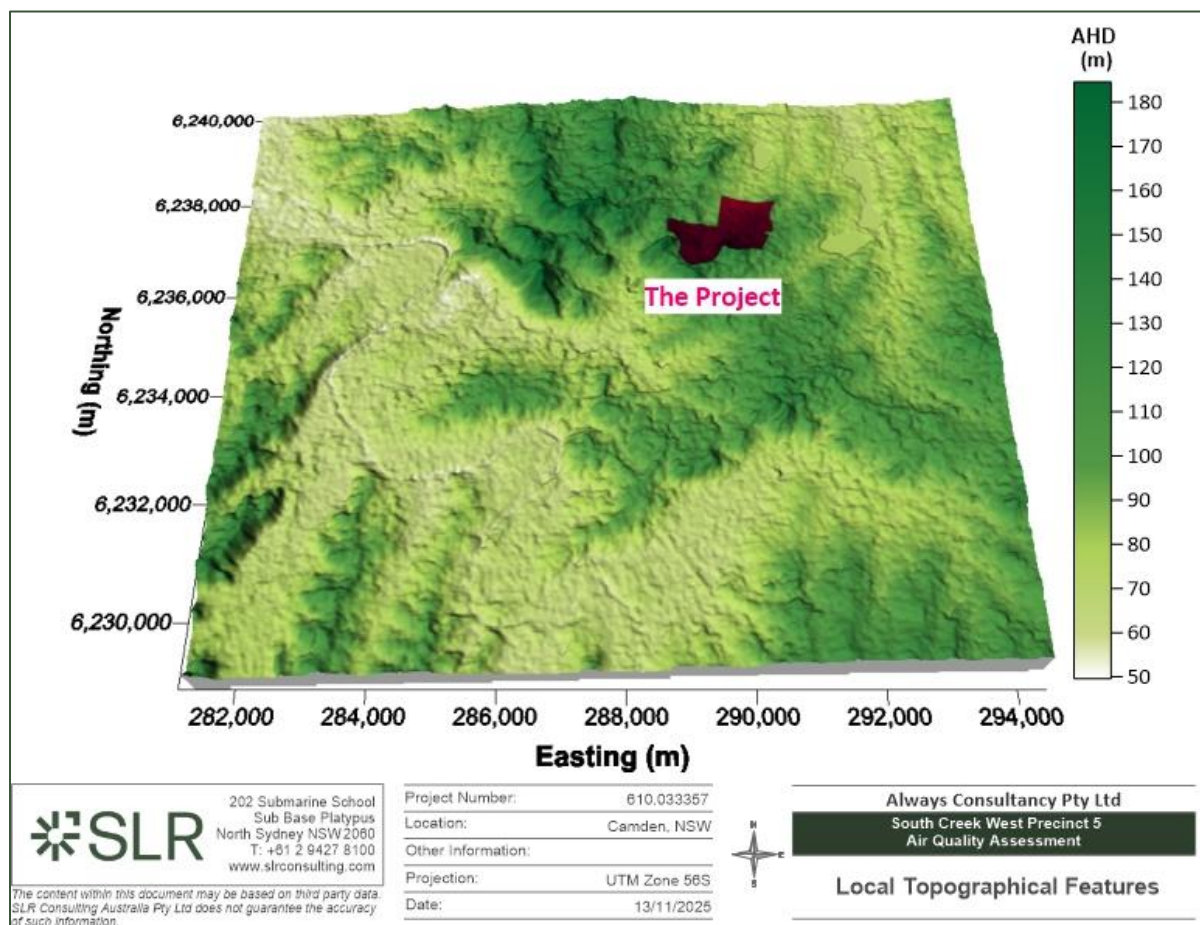


4.0 Local Environmental Setting

4.1 Local Topographical Features

Local topography plays an important role in air quality assessments, as terrain features can influence atmospheric dispersion through mechanisms such as nocturnal katabatic (downslope) drainage flows and wind channelling within valleys or gullies. As shown in **Figure 4-1**, ground elevations across the Project range from approximately 60 metres to 80 metres Australian Height Datum (AHD). The Project sits at a relatively higher elevation than the surrounding areas, which would limit the potential for drainage flows to direct plumes onto the Site.

Figure 4-1 Local Topographical Features



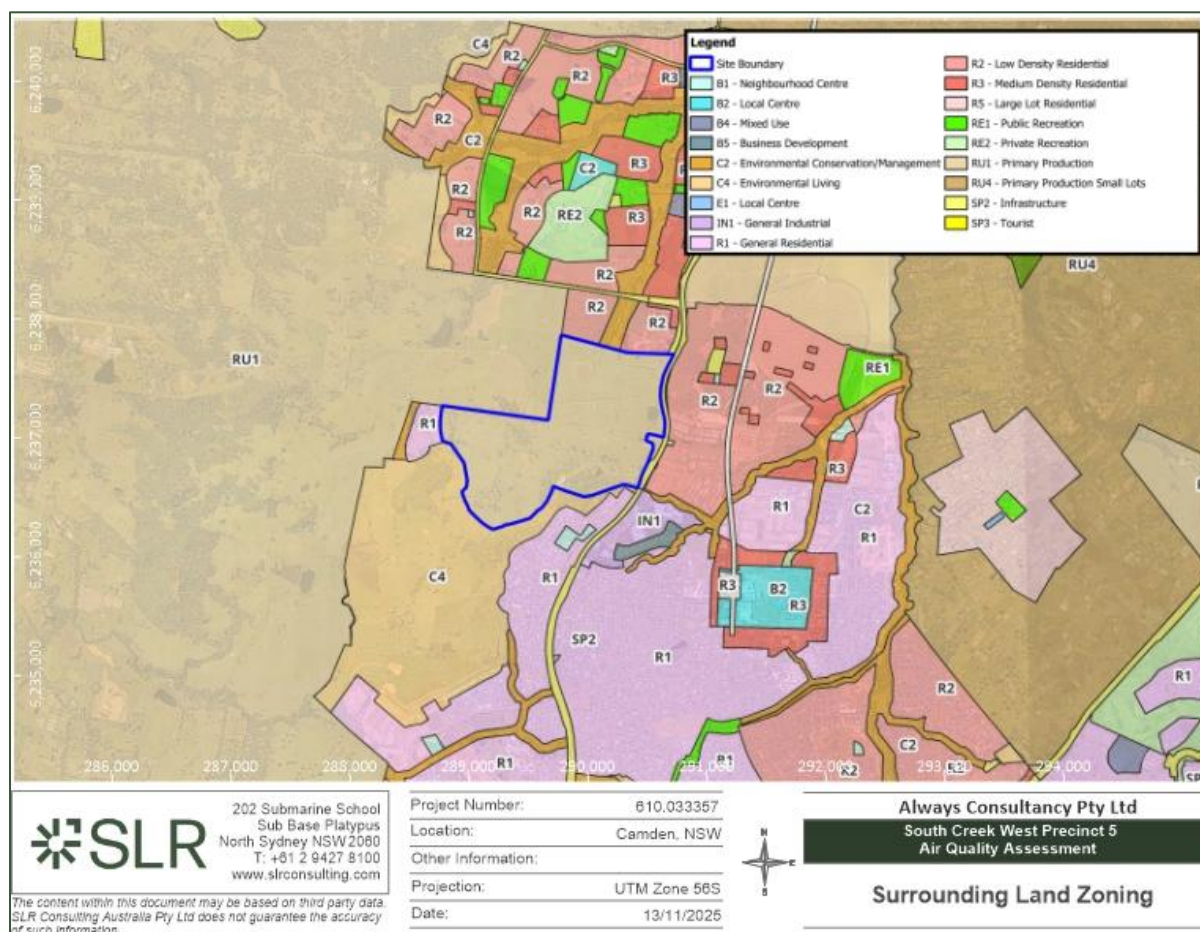
4.2 Surrounding Land Zoning

As shown in **Figure 4-2**, the Site is surrounded by a range of land use zones, reflecting the transition from rural to urban development within the South Creek West growth area.

The northern and eastern portion of the Project adjoins areas zoned R2 Low Density Residential, while the southern and western parts border areas zoned C4 Environmental Living and R1 General Residential, with small sections adjacent to SP2 Infrastructure.



Figure 4-2 Surrounding Land Zoning



4.3 Local Meteorological Conditions

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness, characterised by features such as the topography of the land and the presence of buildings, structures and trees, also influences dispersion.

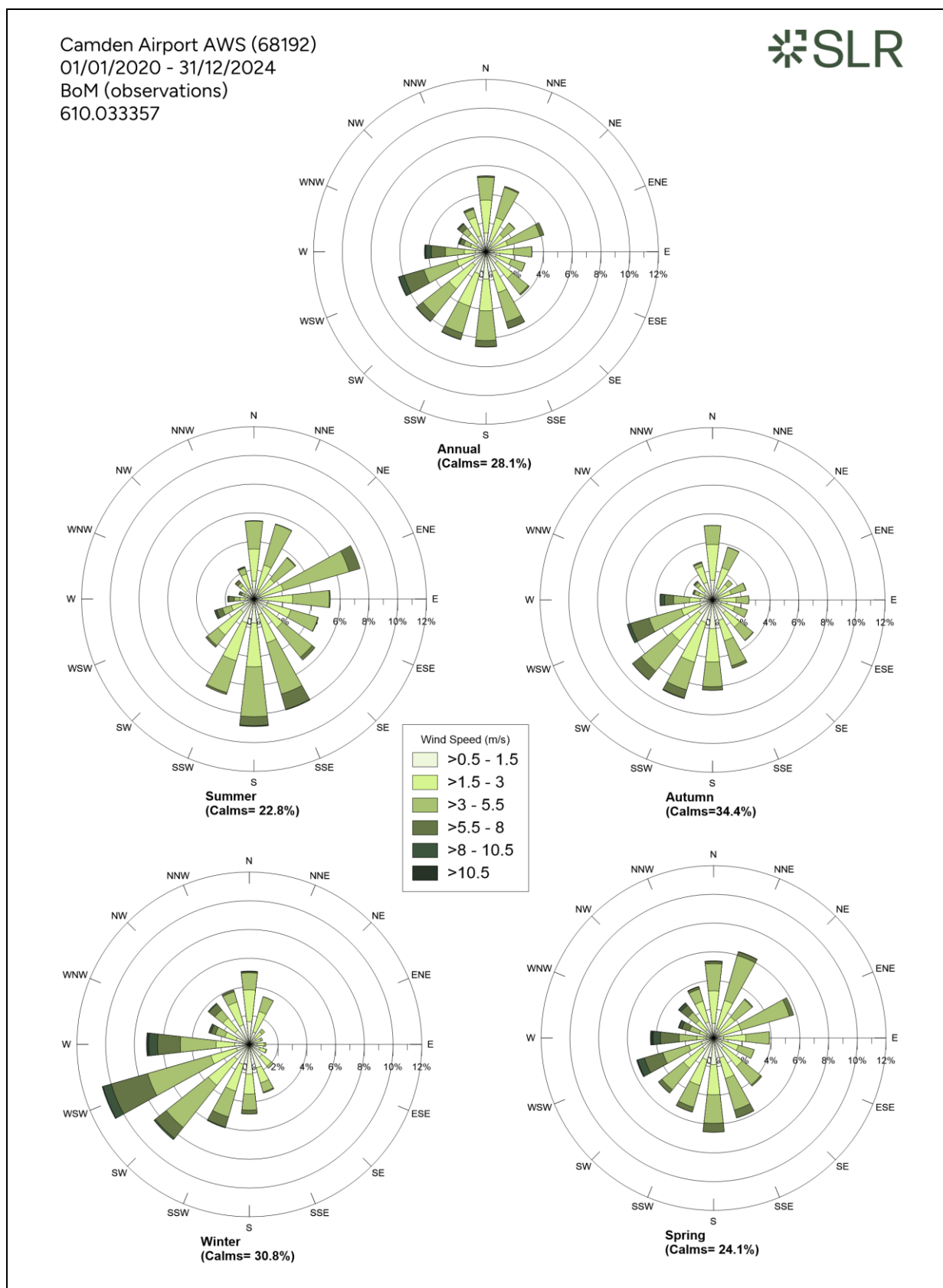
The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest station recording wind speed and wind direction data is the Camden Airport AWS (Station ID 68192), located approximately 7 km south of the Project. Considering the relatively flat terrain between the Project and Camden Airport AWS, it is considered reasonable to assume that the wind conditions recorded at the Camden Airport AWS are representative of the wind conditions experienced at the Project.

Annual and seasonal wind roses for the years 2020 to 2024 compiled from data recorded by the Camden Airport AWS are presented in **Figure 4-3**. Wind roses show the frequency of occurrence of winds by direction and strength. The bars correspond to the 16 compass points. 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 widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus, it is possible to



visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for particular periods during the day.

Figure 4-3 Annual and Seasonal Wind Roses for Camden Airport AWS (2020 – 2024)



The annual wind rose indicates that there are winds present from each direction. Calm wind conditions (wind speed less than 0.5 m/s) were recorded 28.1% of the time throughout the five-year period reviewed.

The seasonal wind roses for the years 2020-2024 (**Figure 4-3**) indicate that:

- In summer, wind speeds ranged from calm to strong winds (between 0.5 m/s and 11 m/s). The majority of winds originated from north, east and southern quadrants, with fewer winds from the west. Calm wind conditions were recorded approximately 22.8% of the time during summer.
- In autumn, wind speeds ranged from calm to strong winds (between 0.5 m/s and 11.1 m/s). The majority of winds originated from the south-western quadrant. Calm wind conditions were observed to occur approximately 34.4% of the time during autumn.
- In winter, wind speeds ranged from calm to strong winds (between 0.5 m/s and 15.8 m/s). The majority of winds originated from west-south-western quadrants. Calm wind conditions were observed to occur approximately 30.8% of the time during winter.
- In spring, wind speeds ranged from calm to strong winds (between 0.5 m/s and 16.3 m/s) and were generally evenly spread from each direction. Calm wind conditions were observed to occur approximately 24.1% of the time during spring.

Winds that would direct air emissions from the nearest sources (sources 1 and 4 located to the north and northwest of the Project) towards the Project occur less than 6% of the time.

4.4 Background Air Quality

Ambient air quality monitoring is performed by the NSW Department of Planning, Housing and Infrastructure (DPHI) at a number of monitoring stations across NSW. The nearest such station is located at Camden, approximately 7 km south of the Project, which monitors the following air pollutants:

- NO₂
- CO
- PM_{2.5}
- PM₁₀

A summary of the monitored pollutant concentrations for the last five years (2020-2024) is presented in **Table 4-1** and the data are presented graphically in **Figure 4-4** to **Figure 4-7**.

Exceedances of the 24-hour average PM₁₀ and PM_{2.5} criteria were recorded in years 2020, 2021, and 2023. A review of the available compliance monitoring reports indicates that these exceedances were primarily due to exceptional events such as bushfires, dust storms or hazard reduction burns. Very elevated PM₁₀ and PM_{2.5} concentrations were recorded along the east coast of Australia in early 2020 during the 'Black Summer' bushfire event.

Ambient concentrations of the gaseous pollutants CO and NO₂ were all well below the relevant criteria for all years investigated.



Table 4-1 Summary of Air Quality Monitoring Data at Camden AQMS (2020-2024)

Year	PM ₁₀		PM _{2.5}		NO ₂		CO
	Maximum 24-hour	Annual	Maximum 24-hour	Annual	Maximum 1-hour	Annual	Maximum 1-hour
	µg/m ³						
2020	268.6 (9)	16.6	149.3 (11)	7.7	69.6	7.5	5.6
2021	66.2 (1)	13.0	66.7 (3)	6.1	48.9	6.7	3.1
2022	24.2	10.1	16.1	4.4	41.4	5.6	1.6
2023	89.9 (2)	13.7	90.9 (2)	5.8	77.1	6.7	2.2
2024	35.9	13.8	14.2	5.5	43.2	6.9	2.1
Criteria	50	25	25	8	164	31	215

Numbers in brackets represent the number of exceedances of the relevant criterion recorded each year

Figure 4-4 24-Hour Average PM₁₀ Concentrations – Camden AQMS (2020-2024)

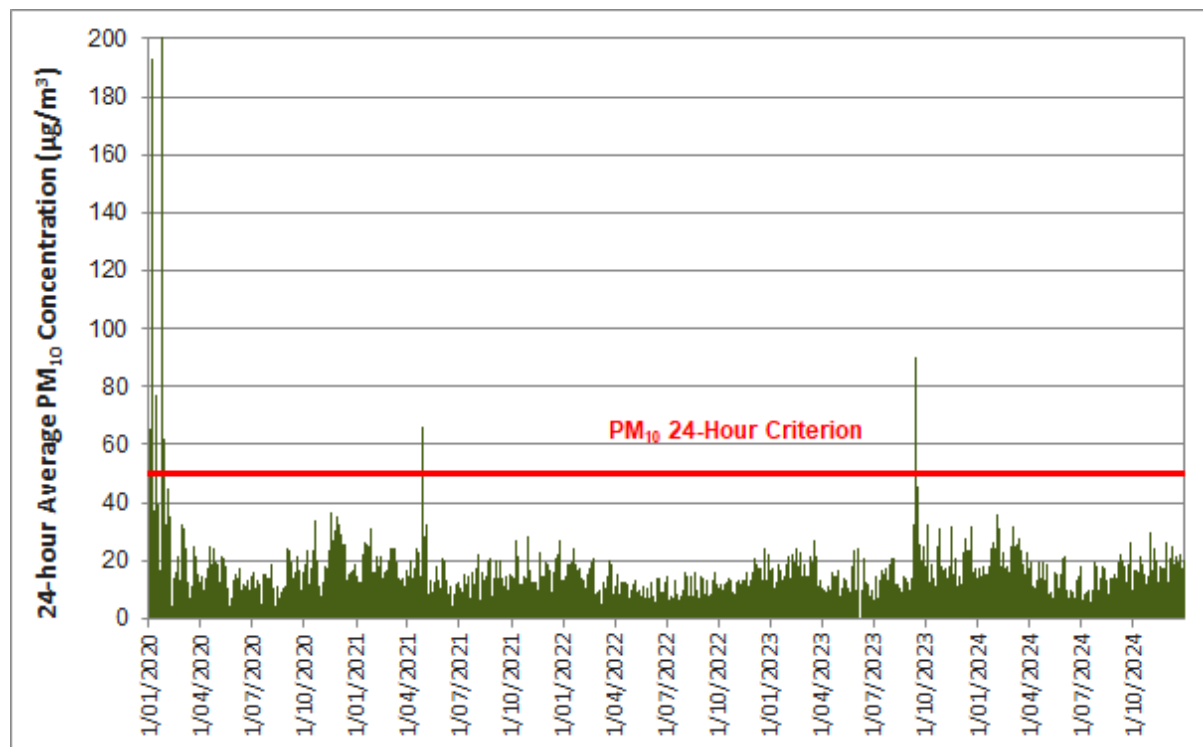


Figure 4-5 24-Hour Average PM_{2.5} Concentrations – Camden AQMS (2020-2024)

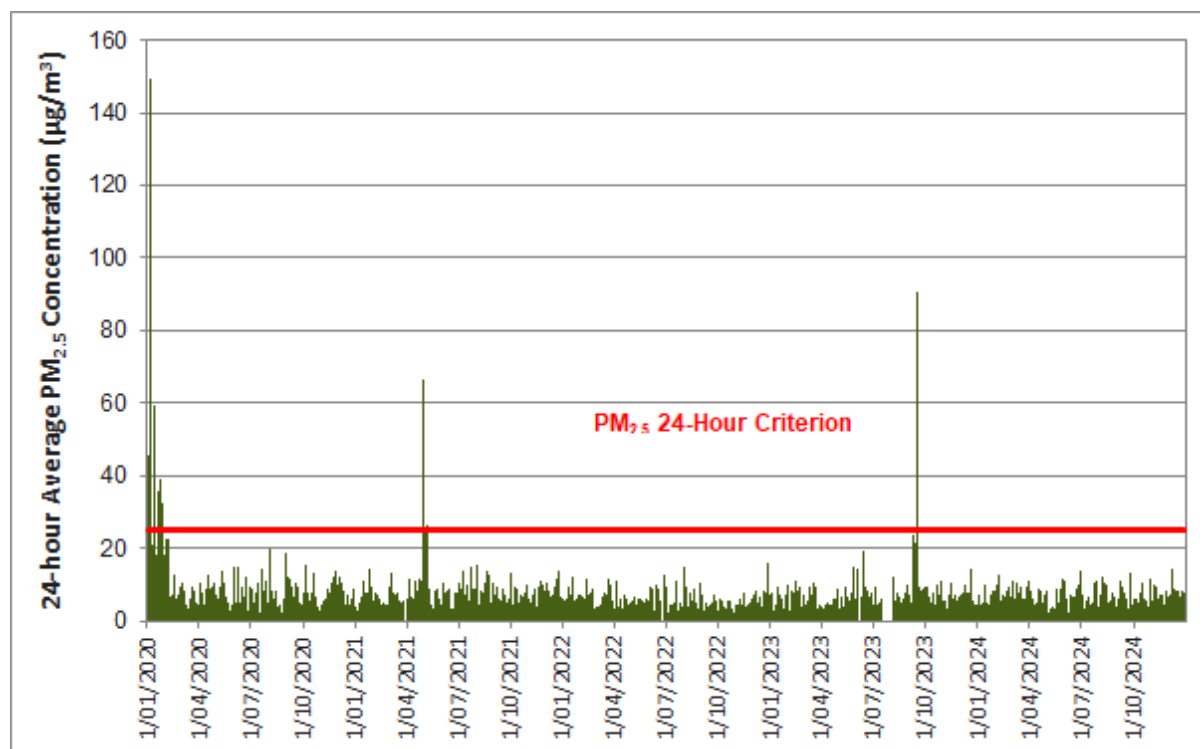


Figure 4-6 Maximum 1-Hour Average NO₂ Concentrations – Camden AQMS (2020-2024)

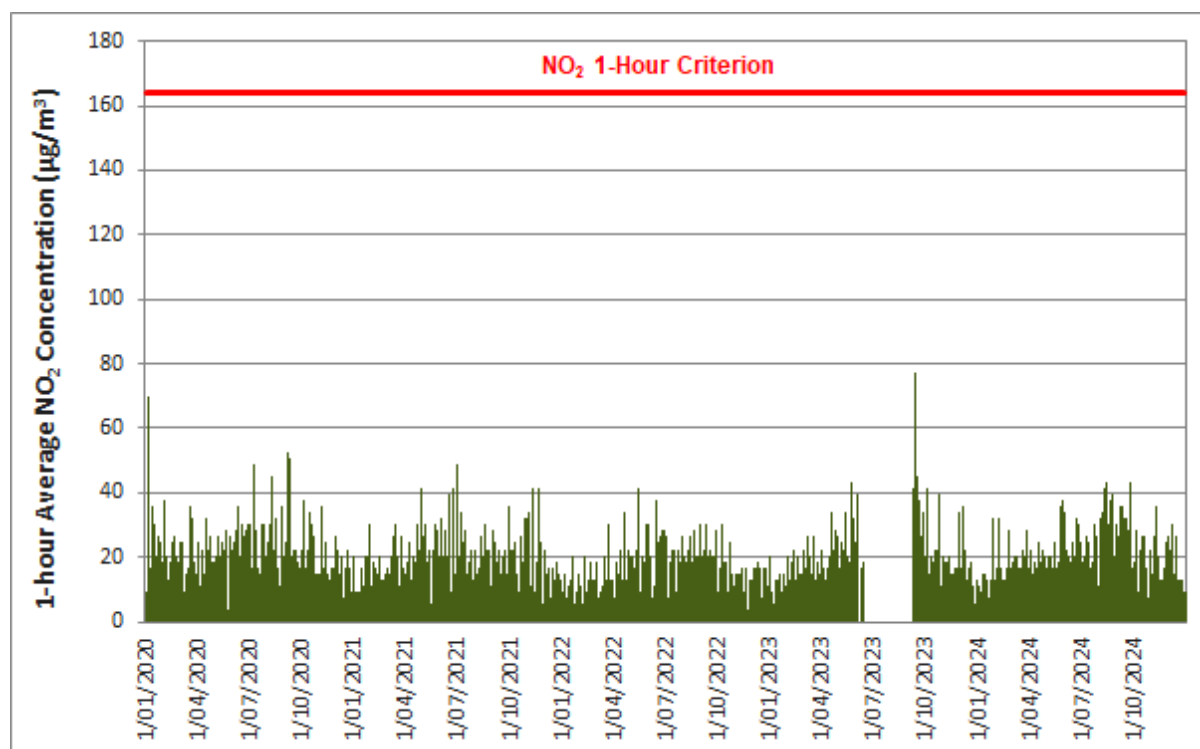
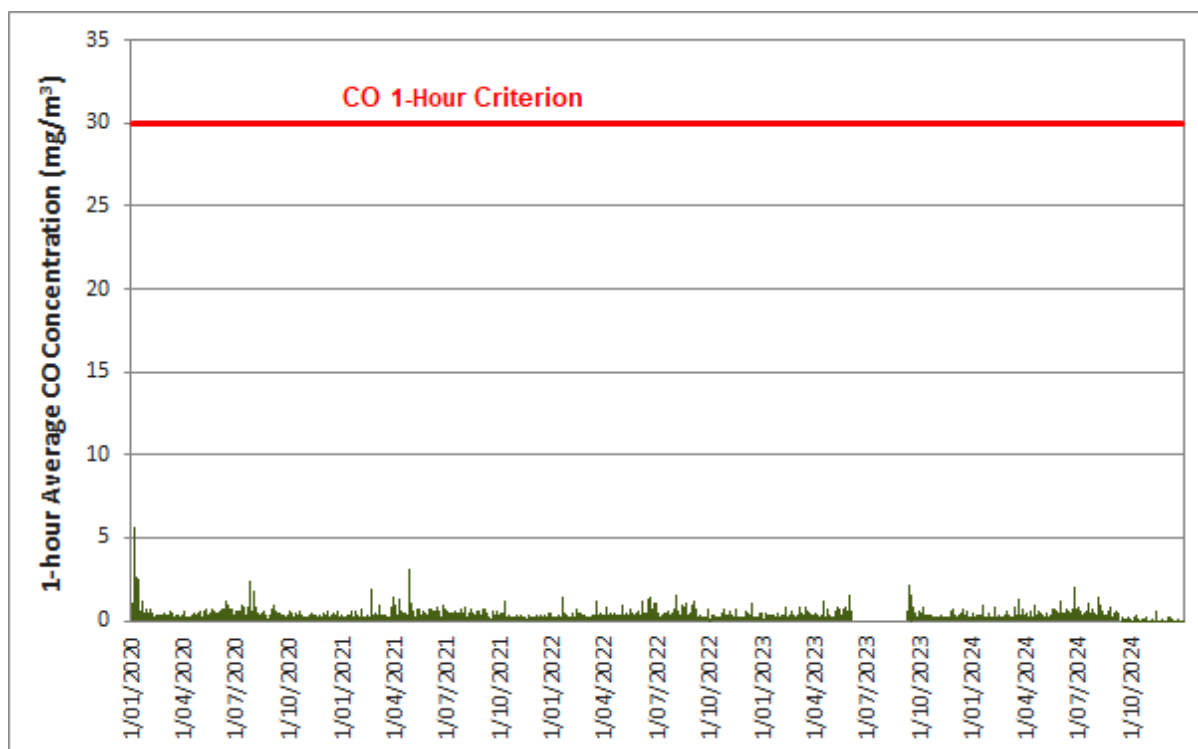


Figure 4-7 Maximum 1-Hour Average CO Concentrations – Camden AQMS (2020-2024)



5.0 Air Quality Assessment

5.1 Composting Works

5.1.1 Greenlife Resource Recovery Facility

The Greenlife Resource Recovery Facility is located approximately 400 m northeast of the Project and undertakes large-scale outdoor composting of organic and construction materials. Emissions from the facility are primarily associated with odorous compounds released during the decomposition of organic matter and the handling and turning of composting windrows.

For composting facilities of this type, recommended separation distances published by Australian regulatory authorities typically range between 1,000 and 2,500 m (refer **Section 3.2.1**), depending on throughput, feedstock type, and control measures. Based on its operating scale and open-air processing configuration, the Greenlife facility corresponds to the upper end of this range. Given that the Project lies approximately 400 m from the Greenlife facility boundary, the potential for odour impacts cannot be ruled out, and the risk of adverse odour effects on the Project is considered to be of **slight to moderate** magnitude.

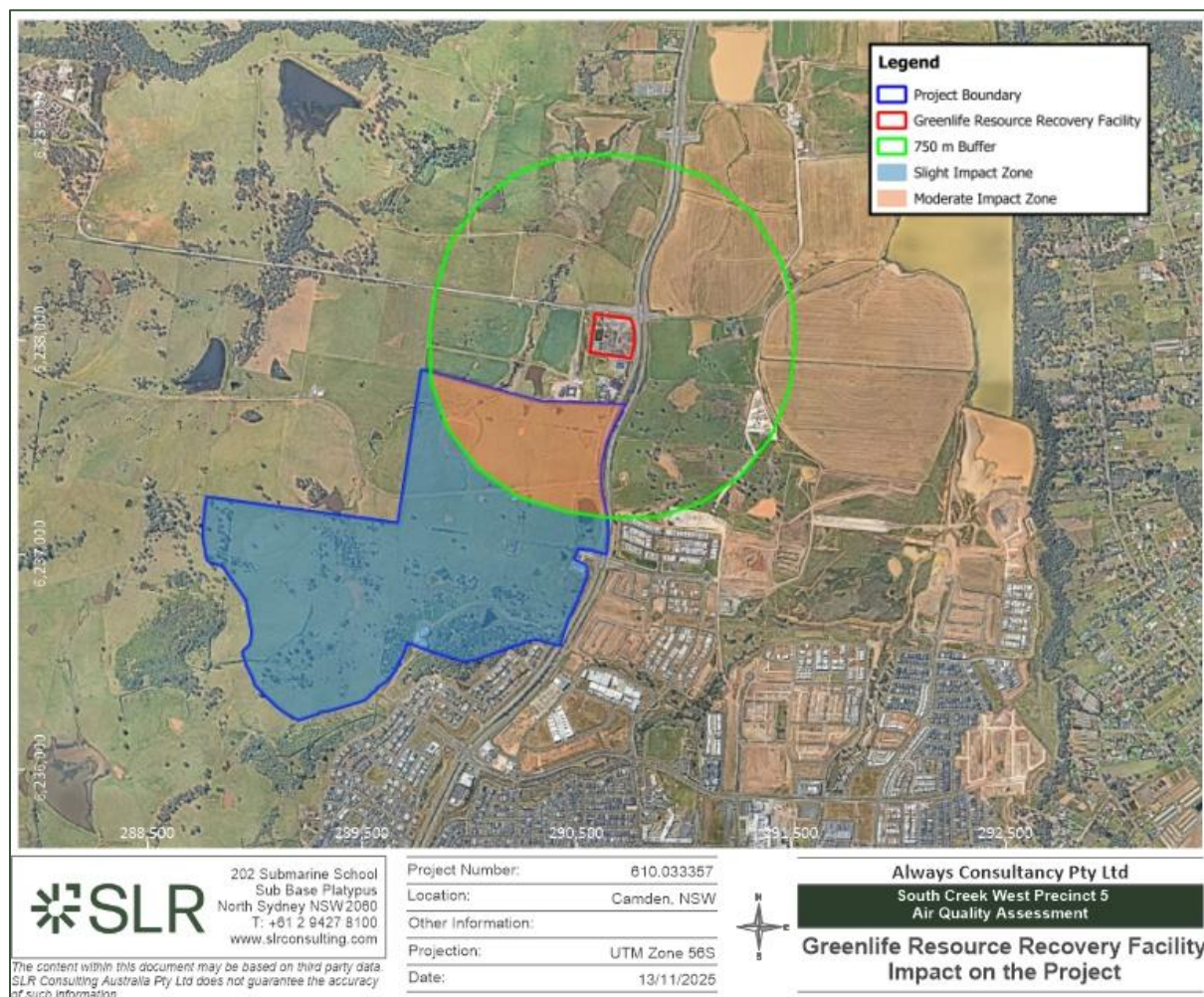
There are existing residential dwellings located approximately 750 m southeast of the composting facility. The continued operation of the facility in compliance with its environmental licence requirements, and the absence of verified odour complaints from these nearby residences, indicate that the facility is generally operating within its environmental obligations and that odour impacts are unlikely to extend significantly beyond this distance. This suggests that receptors located further than 750 m from the facility are unlikely to experience frequent or severe odour exposure.

Based on the above, the Project has been divided into two indicative odour exposure zones, as shown in **Figure 5-1**:

- areas located within approximately 750 m of the Greenlife facility boundary (orange shaded area) are expected to be subject to **moderate** odour impacts; and
- areas located beyond 750 m from the Greenlife facility boundary (blue shaded area) are expected to experience only **slight** odour impacts.



Figure 5-1 Greenlife Resource Recovery Facility Impact on the Project



While the overall site remains suitable for the intended urban development, SLR recommends that a detailed odour assessment, either through updated dispersion modelling or a targeted field odour survey, be undertaken prior to subdivision design or dwelling construction, particularly for lots located within the 'moderate' impact zone.

These conclusions are based on continuing operation of the Greenlife Resource Recovery Facility. Should the facility cease operation or materially reduce throughput, the potential for odour impacts on the project site would be negligible, and no further assessment would be required.

5.1.2 W2R Compost Farm

The W2R Compost Farm is located approximately 850 m northwest of the Project and is a potential source of odour and particulate emissions associated with the handling and composting of organic materials. The facility undertakes open-windrow composting, with emissions primarily generated during windrow turning, aeration, and from on-site vehicle movements.

In the 2021 AQA, the W2R Compost Farm was qualitatively assessed based on existing odour studies and dispersion modelling available at that time. The 2021 AQA concluded that, while odour emissions were possible during active composting operations, the predicted odour concentrations at the Project boundary were below the 2-odour unit (ou) criterion, indicating a low potential for off-site impacts.



For this updated assessment, it is assumed that the scale, configuration, and operational practices at the W2R Compost Farm have remained unchanged since the 2021 AQA. On this basis, and given the results of the previous odour modelling, the facility is not expected to result in measurable air quality or odour impacts on the Project.

Accordingly, the findings of the 2021 AQA are retained in this updated report.

5.2 Poultry Farms

As discussed in **Section 2.2**, several poultry farms are located within the broader vicinity of the Project, as summarised in **Table 2-1**.

Odour from poultry farms is primarily generated through the biodegradation of accumulated manure and bedding material within the sheds, releasing compounds such as ammonia and sulphur-based gases. The strength and dispersion of odour emissions depend on factors such as shed ventilation, litter management, and prevailing meteorological conditions.

For the purpose of this assessment, the scale, configuration, and operational status of the identified poultry farms have been assumed to remain unchanged from those documented in the 2021 AQA. Accordingly, the outcomes and conclusions from the previous assessment have been adopted in this updated report.

The 2021 AQA assessed the surrounding poultry farms using the methodology outlined in the Odour Framework (NSW DEC 2006) to determine minimum recommended separation distances. The calculated distances (reproduced in **Table 5-1**) were then compared with actual separations between each facility and the project site.

The results indicate that all existing farms, with the exception of Source 6 (18 Coates Park Road, Cobbitty), comply with the recommended separation distances.

Table 5-1 Calculated Minimum Separation Distances for Surrounding Poultry Farms

Source ID	Address	Separation Distance (m)	
		Calculated	Actual
5	169 Cut Hill Road, Cobbitty	3,150	4,500
6	18 Coates Park Road, Cobbitty	3,265	2,500
13	313 Eastwood Road, Leppington	1,422	3,600
14	108 Deepfields Road, Leppington	1,522	3,900
15	101 Deepfields Road, Leppington	1,422	3,850
Source: (SLR 2021)			

For Source 6, while the actual distance to the Project is less than the recommended minimum separation distance, the 2021 AQA referenced a Level 3 odour assessment previously undertaken for the Lowes Creek Maryland Precinct (SLR 2017). That detailed study, incorporating site-specific meteorology and dispersion modelling, indicated compliance with the 2 ou criterion at the Project, confirming that odour impacts from the Coates Park Road facility were negligible. On this basis, the 2021 AQA – and consequently this updated assessment – concluded that Source 6 does not pose a material risk of odour impacts for the Project.

Given these findings, and assuming that operational conditions at these existing farms have remained unchanged since the 2021 AQA, odour impacts from surrounding poultry farms are considered unlikely to exceed relevant criteria or adversely affect the Project.



5.3 Bringelly Brickworks

The Bringelly Brickworks (PGH Bricks & Pavers) is located approximately 3.5 km north of the Project and has been identified as a potential source of particulate matter, combustion products and gaseous emissions. The facility includes brick kilns, raw material stockpiles and quarrying operations associated with clay extraction and handling.

The 2021 AQA noted that the brickworks was operating under existing environmental management controls, including dust suppression measures and kiln emission abatement systems, and that potential impacts at the Project were minimal due to the substantial separation distance.

A review of the facility's National Pollutant Inventory reports for FY24, FY23 and FY21 indicates that emissions from the facility have increased over the intervening time period, particularly in relation to NO_x (2.8 times higher) and PM_{2.5} (2.1 times higher).

However, with reference to the recommended separation distances outlined in **Section 3.2** and consistent with the methodology adopted in the 2021 AQA, the actual distance between the brickworks and the Project (3.5 km) is significantly larger than the minimum recommended buffer requirements for such industries (typically in the order of 1–1.5 km). As such, air quality impacts from the Bringelly Brickworks are expected to remain negligible. The results and conclusions of the 2021 AQA are therefore considered valid for this updated assessment.



6.0 Conclusion

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Always Consultancy Pty Ltd to undertake an updated Air Quality Assessment (AQA) to support the Gateway submission for the Cobbitty Sub-Precinct 5 Planning Proposal within the South Creek West Land Release Area. The purpose of this study was to review and update the findings of the 2021 Air Quality Assessment, confirm the current status of local air emission sources identified in that study, and determine whether existing or potential future air quality and odour impacts could influence the suitability of the site for urban development.

This assessment identified several existing facilities with potential to emit air pollutants or odour in the surrounding region, including the Greenlife Resource Recovery Facility, W2R Compost Farm, a number of poultry farms and the Bringelly Brickworks. All other previously identified sources (including a range of agricultural activities as well as the asphalt plant and concrete batching plant on Northern Road) are no longer operational and have been excluded from further consideration.

The updated review indicates that, apart from the Greenlife Resource Recovery Facility, all surrounding sources are sufficiently distant from the project site and therefore unlikely to have measurable air quality or odour impacts at the Site. The Greenlife facility, located approximately 400 m from the north-eastern boundary of the Project, presents a slight to moderate risk of odour impacts within the northern portion of the project area. However, given the absence of verified odour complaints from nearby existing residences located around 750 m from the facility, the potential for impacts on more distant receptors across most of the project site are expected to be low.

Overall, the findings of this updated assessment confirm that the site remains suitable for the intended urban rezoning and development. To ensure robust planning outcomes, SLR recommends that a detailed odour assessment, such as a dispersion modelling or a field odour survey, be undertaken prior to final lot subdivision or dwelling construction, particularly for areas within approximately 750 m of the Greenlife facility boundary.

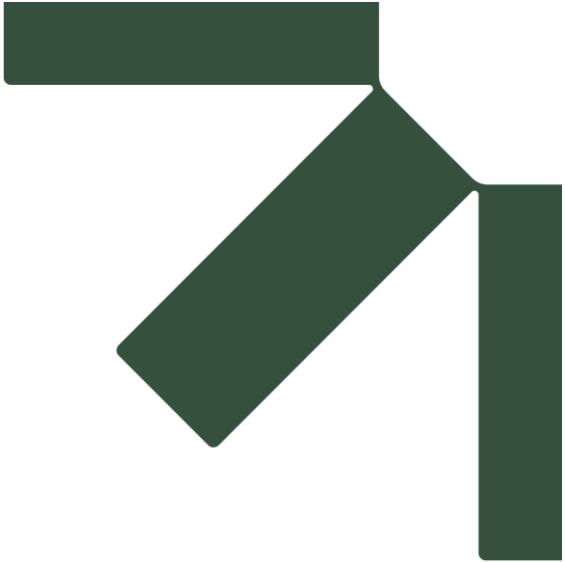
It is noted that these conclusions are based on the current operating conditions of the surrounding facilities. Should the composting operation or other nearby industrial activities cease or significantly reduce throughput in future, any residual risk of air quality or odour impacts on the project site would become negligible.



7.0 References

- ACT Government. 2018. "Separation distance guidelines for air emissions ."
- Design + Planning. 2025. "Urban Design Report Cobbitty Sub-Precinct 5 South Creek West (Part)."
- EPA SA. 2023. *Evaluation distances for effective air quality and noise management*. Adelaide: Environment Protection Authority South Australia.
- EPA Victoria. 2024. "Recommended separation distances for industrial residual air emissions."
- EPA WA. 2015. *Recommended separation distances for industrial residual air emissions*.
- NSW DEC. 2006. *Technical Notes - Assessment and management of odour from stationary sources in NSW*. Sydney: NSW Department of Environment and Conservation.
- NSW EPA. 2024. *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. New South Wales Environment Protection Authority.
- NT EPA. 2017. "Recommended land use separation distances."
- SLR. 2017. "Odour Impact Assessment, Lowes Creek Maryland Precinct, Report number 610.16684 R03 v1.1."
- SLR. 2021. "South West Precinct Air Quality Assessment Stage 1."





Appendix A Separation Distance Calculation Methodology

South Creek West Precinct 5

Air Quality Assessment

Always Consultancy Pty Ltd

SLR Project No.: 610.033357.00001

20 May 2026

A.1 Isolated Poultry Farms

Variable separation distances are measured from the closest point of the poultry farm to the closest point of a receptor. Variable separation distances are based on the dispersion of odours from their source. They are used to determine the allowable numbers of poultry sheds and the management practices necessary to satisfy air quality objectives. A weighting factor allows for different types of premises.

Equation 1 below is specified for calculating separation distance for a given number of poultry sheds, as derived from Equation 5.2 of the Odour Technical Notes.

Equation 1 - Separation distance, given the number of poultry sheds:

$$D = N^{0.71} \times S$$

Where:

- D* is the separation distance in metres between the closest points of the poultry sheds and the most sensitive receptor or impact location
- N* is the number of poultry sheds
- S* Composite site factor = *S*₁ x *S*₂ x *S*₃ x *S*₄ x *S*₅. Site factors *S*₁, *S*₂, *S*₃, *S*₄ *S*₅ relate to shed design, receptor, terrain, vegetation and wind frequency.

Composite Site Factor (*S*)

The value of *S* to apply in **Equation 1** depends on site-specific information pertaining to the proposed shed type, receptor, terrain, vegetation and wind frequency, as set out in the following tables. Site factors shown in bold have been adopted for the purpose of this assessment.

Shed Factor (*S*₁)

The shed factor, *S*₁, depends on the method of shed ventilation. Details of the ventilation system design are not available for the sheds identified in the vicinity of the Site, however based on the fact that they are all existing sheds and relatively small operations (up to ten sheds only), it has been assumed they are all naturally ventilated.

Table A1 Shed Factor (*S*₁)

Shed Type	Value
Controlled fan ventilation without barriers*	980
Controlled fan ventilation with barriers	690
Natural ventilation	690
* Barriers – e.g. walls or hedges designed to mitigate dust and odour emissions from controlled fan ventilated sheds.	

Receptor Factor (*S*₂)

The receptor factor, *S*₂, varies depending on the likely impact area and is determined from **Table A2** (e.g. for a town, the distance is measured from the closest point of the proclaimed town boundary).

An *S*₂ factor corresponding to medium towns (500- 2,000 persons) is chosen for this assessment. This is considered appropriate as the Site is located within a semi-rural region, with residences located sporadically.



Table A2 Receptor Factor (S2)

Receptor Type	Value
Large towns, greater than 2000 persons	1.05
Medium towns, 500—2000 persons	0.75
Medium towns, 125—500 persons	0.55
Small towns, 30—125 persons	0.45
Small towns, 10—30 persons	0.35
Rural residence	0.30
Public area (occasional use)	0.05*
* The value for a public area would apply to areas subject to occasional use. Higher values may be appropriate for public areas used frequently or sensitive in nature, such as frequently-used halls and recreation areas. These should be assessed individually.	

Terrain Factor (S3)

The terrain factor, S3, varies according to topography and its ability to disperse odours and is determined from **Table A3**.

- High relief is regarded as up-slope terrain or a hill that projects above the 10% rising slope from the poultry sheds. Thus, the receptor location will be either uphill from the poultry sheds, behind a significant obstruction or have significant hills and valleys between the sheds and the receptor.
- Low relief is regarded as terrain, which is generally below the 2% falling slope from the poultry sheds. Thus, the receptor will be downhill from the poultry sheds.
- Undulating hills is regarded as terrain where the topography consists of continuous rolling, general low level hills and valleys with minimal vegetation, but without sharply defined ranges, ridges or escarpments.
- A valley drainage zone has topography at low relief (as above) with significant confining sidewalls.

Topographical features at the selected site may adversely affect the odour impact under certain circumstances. During the early evening or night time, under low wind speed conditions, population centres located in a valley at a lower elevation than a poultry farm may be subject to higher odour concentrations as a result of down-valley wind or the occurrence of low-level inversions. Unless site-specific information has been gathered under conditions dominated by low wind speeds, the value for the factor S3 should apply.

Based on the topographical data review in **Section 4.1**, a terrain factor of 1.0 (corresponding to terrain with less than 10% upslope, 2% downslope and not in valley drainage zone) has been selected for all farms other than sources 5, 6a and 6b. For these sources, a terrain factor of 0.9 was used as there is undulating terrain between these sources and the Precinct boundary.



Table A3 Terrain Factor (S3)

Terrain	Value ¹
Valley drainage zone	2.0
Low relief (greater than 2% downslope from site)	1.2
Flat (less than 10% upslope, 2% downslope and not in valley drainage zone)	1.0
Undulating country between poultry farm and receptor	0.9
High relief (greater than 10% upslope from site) or significant hills and valleys between poultry farm and receptor	0.7

Vegetation Factor (S4)

The vegetation factor, S4, varies according to vegetation density and is determined from **Table A4**. The vegetation density is assessed by the effectiveness with which the vegetation stand will reduce odour by dispersion.

Table A4 Vegetation Factor (S4)

Vegetation	Value
Crops only, no tree cover	1.0
Few trees, long grass	0.9
Wooded country	0.7
Heavy timber	0.6
Heavy forest (both upper and lower storey)	0.5

Based on the available aerial imagery, a vegetation factor of 0.9 (corresponding to 'few trees, long grass') has been selected for this assessment.

Wind Frequency Factor (S5)

The wind frequency factor, S5 is determined from **Table A5**. The wind speed and direction vary annually and diurnally (that is by the season and by the hour of the day). Although there is generally one direction that is the most frequently observed (prevailing wind), the wind direction usually blows from all directions at some time.

The wind can be classed as high frequency towards the receptor if the wind is blowing towards the receptor (± 40 degrees) with a frequency of at least 60 % of the time for all hours over a whole year. The wind can be classed as low frequency towards the receptor if the wind is blowing towards the receptor (± 40 degrees) with a frequency of less than 5 % of the time for all hours over a whole year.

The poultry farms are located in a range of wind directions relative to the Site. Based on the wind roses shown in **Section 4.3**, a wind factor of 1.0 (between 5% – 60%) was used in this assessment for all farms.



Table A5 Wind Factor (S5)

Wind Frequency	Value
High frequency towards receptor (greater than 60%)	1.5
Normal wind conditions (between 5% and 60%)	1.0
Low frequency towards receptor (less than 5%)	0.7

Summary of Site Factors (S1 to S5)

Based on the discussion presented above, the site factors chosen for the current assessment are summarised in **Table A6**.

Table A6 Summary of Level 1 Odour Impact Assessment Site Factors

Site Factor	Value	
Shed Factor, S1	690	690
Receptor Factor, S2	0.75	0.75
Terrain Factor, S3	1.0	0.9
Vegetation Factor, S4	0.9	0.9
Wind Frequency Factor, S5	1.0	1.0
Composite Site Factor, S (S1 x S2 x S3 x S4 x S5)	466	419

A.2 Separation Distance Calculation Methodology – Two Poultry Farms in Close Proximity

Two poultry farms may be considered as one single odour source if they are closer than half the shortest separation distance from each poultry farm to the receptor.

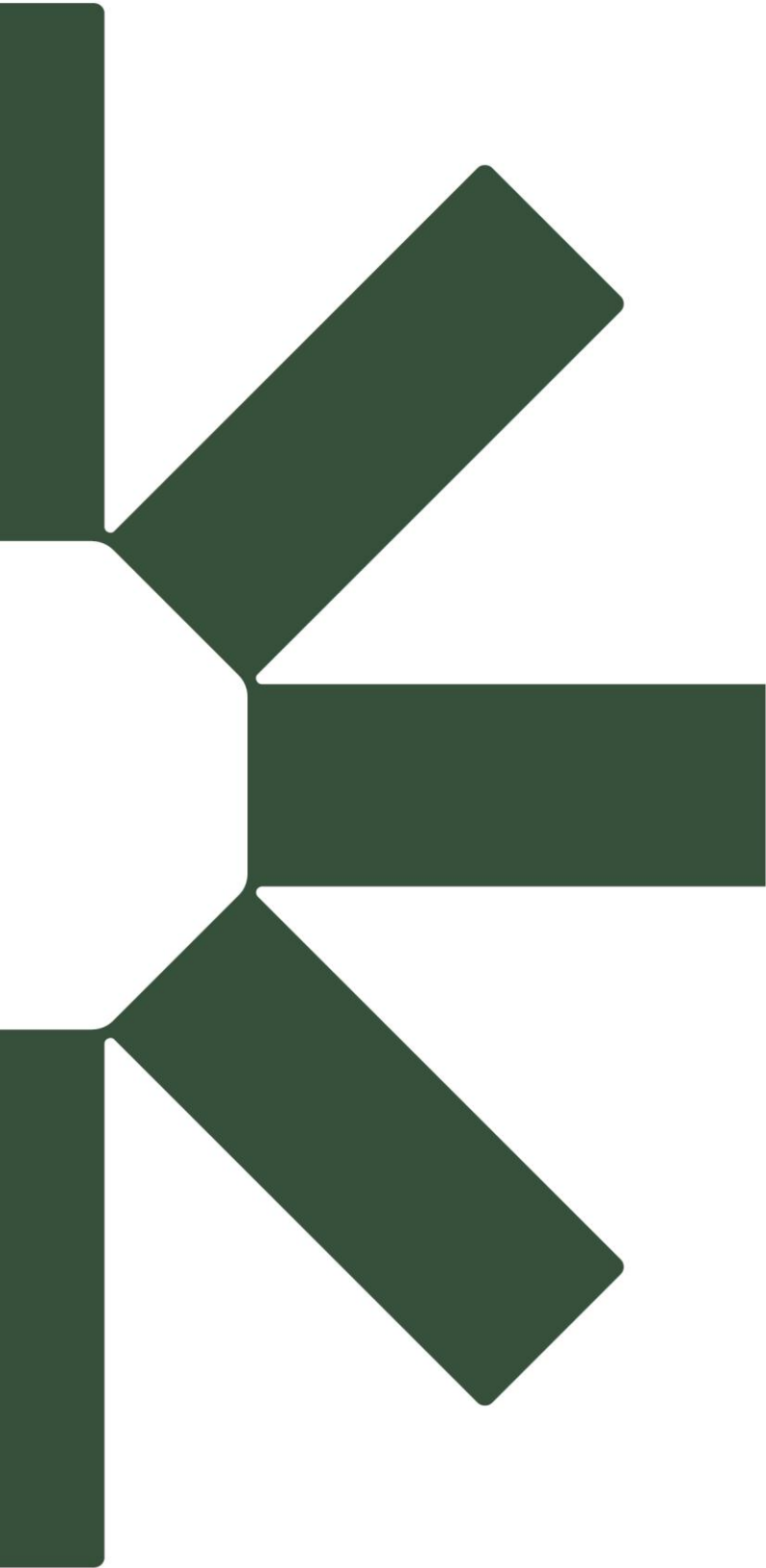
For poultry farms considered as separate entities, a 20% increase in separation distance may apply.

A.3 Number of Poultry Sheds, N

For the purposes of **Equation 1**, the number of poultry sheds (N) assumes that a standard shed is 100 m x 13 m (area of 1,300 m²) and contains 22,000 chickens. Alternatively, the value of N may be derived as the total number of chickens at the farm divided by 22,000.

As the number of birds at each farm identified in the area surrounding the Site is unknown, this assessment has estimated the area of each shed at each farm using aerial photography, and the total shed area for each farm was divided by 1,300 m² to calculate a value for N for use in the calculations.





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