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47 Skyring Terrace Newstead: Air Quality Assessment

Prepared for:

Castile Skyring Development Pty Ltd

October 2026

Final

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Glossary

Term	Definition
µg/m^3	micrograms per cubic metre
µm	microns
L/s	litres per second
m	Metres
m/s	metres per second
m^2	square metres
m^3	cubic metres
MW	megawatt
Nomenclature	**Definition**
CO	carbon monoxide
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
PM_{10}	particulate matter with a diameter less than 10 micrometres
$PM_{2.5}$	particulate matter with a diameter less than 2.5 micrometres
SO_2	sulfur dioxide
VOC	volatile organic compounds
Abbreviation	**Definition**
AHD	Australian Height Datum
Air EPP	*Environmental Protection (Air) Policy 2019* and *Environmental Protection (Air) Amendment Policy 2024*
Air NEPM	National Environmental Protection (Ambient Air Quality) Measure
AO	acceptable outcome
AQPC	air quality (planning) criteria
AQPSP	air quality planning scheme policy
BCC	Brisbane City Council
City Plan	Brisbane City Council Planning Scheme 2014
DETSI	Department of Environment, Tourism, Science and Innovation
NPI	National Pollutant Inventory database
PO	performance outcome
QLD	Queensland
VKT	vehicle kilometre travelled

EXECUTIVE SUMMARY

Katestone Environmental Australia Pty Ltd (Katestone) was commissioned by Castile Skyring Development Pty Ltd to prepare an air quality assessment for the proposed multi-residential development at 47 Skyring Terrace, Newstead (Lot 73 on SP238975). The proposed use being sought for the site is multiple dwelling (241 units), food and drink outlet, high impact industry.

This air quality assessment has been prepared to support the current change application for the site seeking approval to amend the most recent development approval issued by Council on 17 September 2026 (Council reference: A007052582) in accordance with section 82 of the Planning Act.

The assessment has considered the development approval conditions for air quality (Item 52, Item 53 and Item 54) for Change Application – s81 Minor Change (Council reference: A007052582) granted Brisbane City Council (Council) approval on 17 September 2026.

In relation to the proposed development:

- At all on-site sensitive receptors within the development (apartment level windows, balconies, and outdoor air intakes), no exhaust vent outlets of premises where food cooking odour is released are located within 6 m; therefore, the development **complies with Approval Condition 52** and **AO3.2 of the Centre or mixed use code**.
- At all on-site sensitive receptors within the development (apartment level windows, balconies, and outdoor air intakes), no bus station exhaust vent outlet is located within 15 m; therefore, the development **complies with this aspect of Approval Condition 53** and **with this aspect of AO3.3 of the Centre or mixed use code**.
- The exhaust vent outlet from the onsite car park cannot be separated from all onsite sensitive uses by the required minimum of 15 metres; therefore, the development does not comply with this aspect of Approval Condition 53 and with this aspect of AO3.3 of the Centre or mixed use code. Consequently, a screening level risk assessment was carried out to assess the potential risk of adverse air quality impacts at these sensitive uses due to operation of the car park.
- The proposed standby power generation and fire pumps for the development trigger a high impact industry use for fuel burning due to a combined installed capacity above 0.1 megawatts (MW). Consequently, a risk assessment was carried out to assess the potential risk of adverse air quality impacts at the onsite sensitive uses due to operation of the fuel burning equipment.

Assessment of car park emissions to air

A screening level air quality assessment was carried out to determine the minimum volumetric flow rate that is required for the car park exhaust vent to ensure that concentrations of key air pollutants at the point of release are below the relevant air quality criteria. The screening level risk assessment determined that the design capacity of the ventilation system of up to 27,450 L/s is adequate to ensure that the minimum volumetric flow rate required to avoid air quality impacts at sensitive uses can be achieved during operation of the car park. Consequently, the development can **comply with PO3 of the Centre or mixed use code** and this aspect of **Approval Condition 53 (relating to the required 15 m separation from the car park exhaust vent) need not apply**.

Assessment of fuel burning emissions to air

The risk assessment of potential impacts to air quality due to operation of the onsite fuel burning equipment determined that, while the development meets the definition of high impact industry based on the installed capacity of more than 0.1 MW, the risk of impacts to air quality at sensitive uses (on site and neighbouring

residential uses) due to the operation of fuel burning equipment is considered negligible to very low. It was determined that:

- There is no risk of air quality impacts on sensitive land uses for most hours (99.9%) of the year (outside testing periods).
- During operation of the fuel burning equipment (monthly testing or use for backup power supply):
    - Emissions to air will be localised and minimised as far as reasonably practicable in accordance with best practice measures.
    - The risk of adverse impacts to air quality at sensitive uses (onsite or neighbouring residential uses), is considered low and will be mitigated through appropriate ventilation.
- Consequently, no further assessment of fuel burning activities is required, and **Approval Condition 54 may be varied to provide for the fuel burning activities to the extent proposed under the current change application.**

1. INTRODUCTION

Katestone Environmental Australia Pty Ltd (Katestone) was commissioned by Castile Skyring Development Pty Ltd to prepare an air quality assessment for the proposed multi-residential development at 47 Skyring Terrace, Newstead (Lot 73 on SP238975) (the development). The proposed use being sought for the site is Multiple Dwelling (241 units), Food and Drink Outlet, and High Impact Industry.

The air quality assessment has been prepared to support the current change application for the site, seeking approval to amend the most recent development approval issued by Council on 17 September 2026 (Council reference: A007052582) in accordance with section 82 of the Planning Act for:

- *Development Permit – Material Change of Use (MCU) for Multiple Dwelling (241 units), Food and Drink Outlet and High Impact Industry in the Flood Overlay.*
- *Development Permit – Carrying out Building Work for Multiple Dwelling (241 units), Food and Drink Outlet and High Impact Industry in the Flood Overlay.*
- *Early referral agency response for Building Work in a designated flood hazard area.*

The assessment has considered the development approval conditions for air quality (Item 52, Item 53 and Item 54) for Change Application – s81 Minor Change (Council reference: A007052582) granted Brisbane City Council (Council) approval on 17 September 2026.

The scope of the air quality assessment includes:

- An assessment against Item 52, Item 53 and Item 54 of Council's approval conditions for A006870288 (section 2).
- Key elements of the proposed development (section 3).
- A review of the relevant regulatory requirements and air quality criteria relevant to the development (section 4).
- A summary of existing air quality at the subject site (section 5).
- A screening level air quality assessment to determine whether the design capacity of the onsite car park ventilation system is adequate to ensure no adverse air quality impacts at sensitive uses that are located closer than the required minimum separation distance of 15 metres from the point of release (section 6).
- An assessment to consider the risk of adverse air quality impacts at sensitive uses occurring due to the operation of the onsite fuel burning equipment (generator and fire pumps) (section 7).
- Conclusions (section 8).

2. COUNCIL APPROVAL PACKAGE ITEMS

Council approval was provided on 17 September 2026 for DA Council reference: A007052582 in relation to the proposed Multiple Dwelling and Food and Drink Outlet. Items 52, 53 and 54 of Council's Approval Package relate to air quality. These items, and how they have been addressed in this report, are provided in Table 1.

Table 1 Council Approval Package items for air quality and how they have been addressed

Item and Approval Condition	**Katestone response and how/where addressed in this report**
52) Kitchen exhaust vents - (emitters) *Kitchen and food preparation area exhaust vent outlets are discharged vertically, directed away from any sensitive use and separated by a minimum of 6m from a sensitive use, including any outdoor air intake of a sensitive use.* ***Note**: This condition does not authorise environmental nuisance under the Environmental Protection Act 1994.* ***Timing**: At all times*	The applicant has advised that '*The proposed development involves a small-scale café at ground level with gross floor area of 96m^2. The café will not result in excessive food and cooking odour and is located such that any exhaust can be discharge away from any sensitive uses (including the proposed multiple dwelling component). The vent will be located towards the courtyard space, and is located more than 6m from Apartment 3B outdoor terrace and windows'*. Consequently, the development **complies with Condition 52**, and no further assessment is required.
53) Car park and bus station exhaust vents - (emitters) *Car park and bus station exhaust vent outlets are separated from any sensitive use by a minimum of 15m.* ***Note**: This condition does not authorise environmental nuisance under the Environmental Protection Act 1994.* ***Timing**: At all times*	**Bus station exhaust vents** At all on-site sensitive receptors within the development (apartment level windows, balconies, and outdoor air intakes), no bus station exhaust vent outlet is located within 15 m. Consequently, the development **complies with this aspect of Condition 53**.
	Car park exhaust vents The exhaust vent outlet from the onsite podium level car park **will not** be able to be separated from onsite sensitive uses by the required minimum of 15 m. Consequently, the development does **not comply with this aspect of Condition 53**; however, the screening level assessment of potential impacts to air quality at sensitive uses due to operation of the car park (section 6) demonstrates that the development **complies with PO3 of the Centre or mixed use code**, and that **the aspect of Approval Condition 53 relating to the required 15 m separation from the car park exhaust vent need not apply.**

Item and Approval Condition	**Katestone response and how/where addressed in this report**
54) Fuel Burning *This approval does not permit the installation of any fuel burning equipment (e.g. backup power generator, fire pumps, etc.), that in combination, triggers an industry use under Table SC1.1.3.A — Industry thresholds, City Plan 2014.* ***Note**: A Material Change of Use for Industry Use will be required if fuel burning is proposed, which should include lodgement of the prescribed technical reporting such as an Air Quality Report, Acoustic Report, Fuel Storage and Spill Delivery Assessment etc as per City Plan 2014requirements and associated Codes etc.).* ***Timing**: At all times*	The applicant has advised that combined fuel burning equipment currently proposed for the development (including generator and fire pumps) trigger an industrial use under Table SC1.1.3.A – Industry Thresholds, based on an anticipated 'installed capacity of more than 0.1 MW' (but less than 10 MW and not involving coal combustion). Consequently, the development does **not comply with Condition 54**. A risk assessment of potential impacts to air quality at sensitive uses due to operation of onsite fuel burning equipment (section 7) demonstrates that the risk of impacts to air quality at sensitive uses (on site and neighbouring residential uses) is considered negligible to very low, and that **Approval Condition 54 may be varied to provide for the proposed fuel burning activities to the extent proposed under the current Change Application**.

3. DEVELOPMENT AND POTENTIAL EMISSIONS TO AIR

The development is a multiple dwelling (241 units) and food and drink outlet located at 47 Skyring Terrace in Newstead (Lot 73 on SP238975) (Figure 1). Key aspects of the development (Figure 2) include:

- 28 storeys (RL (reduced level) 95 metres AHD (above height datum)) and a gross floor area of 41,182 m².
- Residential unit mix of 40 two-bedroom units, 89 two-bedroom plus multi-purpose-room units, 100 three-bedroom units, and 12 four-bedroom units (total 241 units).
- Food and drink outlet on ground level.
- Communal open spaces including podium rooftop, river manor rooftop, and tower rooftop.
- Total car parking provision of 548 spaces across six levels, including:
    - Basement and lower ground – 87 car spaces and 110 bicycle spaces
    - Ground – 14 car spaces and 20 bicycle spaces
    - Level 1 mezzanine – 41 car spaces and 4 bicycle spaces
    - Level 2 – 127 car spaces and 36 bicycle spaces
    - Level 3 – 133 car spaces and 46 bicycle spaces
    - Level 4 – 136 car spaces and 46
- One diesel engine prime mover will be required for the purposes of standby power generation.
- Two standby diesel engines will be required for the fire pumps.

In relation to air quality, the proposed development is considered both a source of potential air pollutant emissions to air, and a sensitive land use or receptor. Specifically:

- Potential air pollutant emissions to air include the exhaust vent outlet of the onsite car park and the exhaust(s) of the onsite fuel burning equipment (generator and fire pumps).
- Sensitive land uses include potential exposure locations at the 241 residential units, including openable windows and doors, balconies, courtyard areas, and air intakes for any air conditioning or ventilation systems.



Figure 1 Proposed development site at 47 Skyring Terrace in Newstead



Figure 2 Proposed development

4. LEGISLATIVE FRAMEWORK

4.1 Brisbane City Plan 2014

Brisbane City Plan 2014 (City Plan) came into force in July 2014 and is a framework for managing development in Brisbane in a way that advances the purpose of the Sustainable Planning Act 2009. City Plan sets out the intention of Brisbane City Council (Council) for future development in the planning scheme area over the next 20 years and provides guidance on how land in Brisbane can be used and developed and the assessment criteria applicable to each development.

4.2 Applicable sections of the City Plan

4.2.1 Zone

The subject site is located within the Mixed use (inner city) zone that is designated for a variety of uses and activities including business, residential and retail. Within the zone, development:

- *Is designed, sited and constructed to minimise noise, odour and air-quality impacts on residents consistent with its location in the Mixed use zone, although residents cannot expect to enjoy the same level of noise, odour and air-quality amenity as low density suburban areas.*
- *Is sensitively designed and operated to avoid or mitigate any potential adverse impact on adjoining use.*
- *Responds to land constraints, mitigates any adverse impacts on environmental values and addresses other specific characteristics as identified by overlays affecting the site or in codes applicable to the development.*

4.2.2 Neighbourhood plan and precinct

The subject site is located within the Newstead and Teneriffe waterfront neighbourhood plan – Riverpark precinct – NPP-003. There are no relevant assessment benchmarks for air quality under the relevant neighbourhood plan code (Section 7.2 of City Plan).

4.2.3 Use code

The proposed development is subject to the assessment benchmarks (reproduced in Table 2) and the following overall outcomes of the Centre or mixed use code (Section 9.3.3 of City Plan):

- *Development provides safe, convenient and accessible on-site vehicle parking that does not adversely impact on the quality and amenity of an adjoining streetscape, public space or residents*
- *Development manages visual, air, odour and noise impacts through appropriate use mix, siting and building design, to achieve a level of amenity consistent with the zone, zone precinct and neighbourhood plan outcomes, and recognising that residential amenity in a centre and mixed use area will not be to the same level that might be expected in residential zones and areas*
- *Development for a sensitive use is compatible with nearby existing uses that have the potential for off-site air emissions, considers the health and wellbeing of occupants and does not adversely impact on the continued operation of those existing uses.*

The proposed development is also subject to the assessment benchmarks of the Industry code (Section 9.3.12 of the City Plan) with regards to fuel burning, reproduced in Table 2. Relevant air quality (planning) criteria in Table 9.3.3.3.I and Table 9.3.12.3.B of the City Plan are reproduced in Table 3.

Table 2 Relevant assessment benchmarks of the City Plan

Performance Outcomes (PO)	*Acceptable Outcomes (AO)*	*Outcome*
Centre or mixed use code (Section 9.3.3 of City Plan)		
PO3 *Development:* *a. avoids or minimises air emissions;* *b. complies with the air quality (planning) criteria in Table 9.3.3.3.I and odour criteria in Table 9.3.3.3.J in a sensitive zone or sensitive use.* *Note—An air quality impact report prepared in accordance with the Air quality planning scheme policy can assist in demonstrating achievement of this performance outcome.*	***AO3.1*** *Development ensures that air pollutants, including odour, are not released external to the development except where complying with AO3.2 and AO3.3.*	Development **complies with AO3.1**. Assessment against AO3.2 and AO3.3 below. No other releases expected.
	AO3.2 *Development ensures that if food and cooking odour is released, exhaust vent outlets are discharged vertically and directed away from any sensitive use with the following constraints:* *a. separated by a minimum of 6m from a sensitive use, including any outdoor air intake of a sensitive use;* *b. does not cause an odour or air emission which is detectable and disturbing at a sensitive use.*	Development **complies with AO3.2**. Client confirms: *The proposed development involves a small-scale café at ground level with gross floor area of 96m^2. The café will not result in excessive food and cooking odour and is located such that any exhaust can be discharge away from any sensitive uses (including the proposed multiple dwelling component). The vent will be located towards the courtyard space and is located more than 6m from Apartment 3B outdoor terrace and windows.*
	AO3.3 *Development ensures that exhaust vents from any car park or bus station are separated from any sensitive use by a minimum of 15m.*	Development **complies with AO3.3 with regards to bus station exhaust vents**. Sensitive uses at the site are not located within 15m of bus station exhaust vents. Development does **not comply with AO3.3 with regards to car park exhaust vents**. Development **complies with PO3 with regards to car park exhaust vents**. Refer to assessment of car park exhaust vent in section 6 of this report for details.
PO4 *Development for a sensitive use is located to achieve the air quality planning criteria in Table 9.3.3.3.I and odour criteria in Table 9.3.3.3.J.* *Note—An air quality impact report prepared in accordance with the Air quality planning scheme policy can assist in demonstrating achievement of this performance outcome*	***AO4*** *Development for a sensitive use is located at least 150m from a spray painting workshop.* *Note—This distance is to be measured between the building containing the spray painting workshop and the property boundary of the sensitive use.*	Development **complies with AO4**. The site is not located within 150m of a spray painting workshop
PO20 *Development minimises the adverse impact of a use on building occupants and residents in or adjoining the site through appropriate land use mix.*	***AO20*** *Development provides:* *a. co-location of low impact commercial activities where air or noise impacts are not detectable*	Development **complies with PO20**. As per Code Compliance Statements report for development: *a. Not Applicable – the proposed development does not involve or adjoin low impact commercial activities.*

Performance Outcomes (PO)	*Acceptable Outcomes (AO)*	*Outcome*
Centre or mixed use code (Section 9.3.3 of City Plan)		
Note—Low impact commercial activities are shops, banks, offices and similar.	*and disturbing in a dwelling or other sensitive use;* *b. co-location of uses with potential air or noise impacts away from sensitive uses;* *c. mitigation of impacts resulting from co-location of food and drink outlet uses such as a restaurant with residential uses in the same building;* *d. that nightclub entertainment facilities are not co-located with residential or other sensitive development within the same building;* *e. that the location of exhaust or ventilation outlets from food outlets, drycleaners, salons, car parks and bus stations as far from a sensitive use as practicable;* *f. adequate separation distances between service stations and any sensitive use;* *g. dwelling balconies and windows do not overlook ventilation stacks and bulk waste bin storage areas.*	*b. Complies – the proposed development involves a ground level café. Given the small scale of the café it is not anticipated to create air or noise impacts to sensitive uses (residences). The proposed development does not otherwise adjoin uses with potential air or noise impacts.* *c. Complies – the proposed development includes a small-scale café at ground level with adequate separation between residential uses.* *d. Not Applicable – the proposed development does not involve or adjoin nightclub entertainment facilities.* e. Complies – refer to Table 2 and section 6 of this report *f. Not Applicable – the proposed development does not involve or adjoin a service station.* *g. Complies – refuse and mechanical plant are located and screened such that they are not visible from dwelling balconies and windows.*
Industry code (Section 9.3.12 of City Plan)		
PO1 *Development:* *a. avoids or minimises air emissions;* *b. complies with the following criteria in a sensitive zone, and at a sensitive use in a rural zone:* *i. air quality (planning) criteria in Table 9.3.12.3.B;* *ii. the odour criteria in Table 9.3.12.3.C;* *iii. the health risk assessment criteria in Table 9.3.12.3.D.* *Note—An air quality impact report prepared in accordance with the Air quality planning scheme policy can assist in demonstrating achievement of this performance outcome.*	***AO1.7*** *Development for a high impact industry where not a concrete batching plant, does not involve an activity which generates air emissions from the site.*	Development **complies with AO1.7 and PO1 with regards to fuel burning activities**. Refer to assessment of fuel burning sources in section 7 of this report for details.

Table 3 City Plan air quality (planning) criteria (Table 9.3.3.3.I from Centre or mixed use code)

Pollutant	Averaging time	Health outcome protected	Criterion including background (µg/m³)
Nitrogen dioxide	1 hour	Health and wellbeing	250 / 164 [a]
	Annual	Health and wellbeing	62 / 31 [a]
PM less than 10 µm (PM_{10})	24 hour	Health and wellbeing	50
	Annual	Health and wellbeing	25
PM less than 2.5 µm ($PM_{2.5}$)	24 hour	Health and wellbeing	25 / 20 [a]
	Annual	Health and wellbeing	8 / 7 [a]
Benzene	1 hour	Health and wellbeing	29
	Annual	Health and wellbeing	10
Carbon monoxide	8 hour	Health and wellbeing	11,000

Table note:

[a] More stringent criteria under Environmental Protection (Air) Policy 2019 and Environmental Protection (Air) Amendment Policy 2024

5. EXISTING AIR QUALITY

Located within land zoned mixed use (inner city), the development is surrounded by a mix of commercial, retail, residential, government, service, community and cultural activities. The site is bordered by the Brisbane River to the east, and the wider area is a mix of land zoned mixed use, residential (including low density, medium density, and low-medium density), character, district centre, low impact industry, and small interspersed areas of open space and sport and recreation.

There are no industrial or commercial activities in the immediate vicinity of the development that might affect the air quality at the site or the amenity of the future residents. Sources affecting air quality at the development site are likely to be limited to road traffic emissions; however, these are not likely to be significant and existing air quality around the site is likely to be acceptable in terms of road traffic emissions.

The Department of Environment, Tourism, Science and Innovation (DETSI) is responsible for undertaking ambient air quality monitoring in Queensland. DETSI conducts monitoring at several monitoring stations in the Brisbane area. Each monitoring station is located for a specific purpose such as measuring air quality near industry, measuring air quality at roadside, or to demonstrate compliance with the requirements of the Air NEPM (National Environmental Protection (Ambient Air Quality) Measure).

Air pollutants that are relevant to the air quality assessment include oxides of nitrogen (NO_X) (as nitrogen dioxide (NO_2)), carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$) and benzene. A summary of the background air quality levels used in the assessment are presented in Table 4. Five years of available monitoring data from nearby representative monitoring stations that monitor the air pollutants of interest have been analysed for 1-hour, 8-hour and 24-hour averaging periods. Analysis of five years of monitoring data is in accordance with the City Plan 2014 Air Quality Planning Scheme Policy (AQPSP). The 70th percentile value has been presented in the table. The highest 70th percentile concentration for each air pollutant over the five years (relevant to each averaging period) has been used as the background value in the assessment (unless otherwise stated).

Table 4 Background air quality measured at DETSI monitoring stations

Pollutant	Ave. period [a]	Mon. station	Concentrations (µg/m³) [b]										
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Background
NO_2	1-hour	South Brisbane	-	-	-	-	-	30.8	32.8	30.8	30.8	**32.8**	**32.8**
CO	8 hour	South Brisbane	-	-	-	-	-	250	**265**	225	262	189	**265**
PM_{10}	24-hour	South Brisbane	-	-	-	-	-	20.3	18.6	19.4	18.0	18.7	**20.3**
$PM_{2.5}$	24-hour	South Brisbane	-	-	-	-	-	7.4	7.0	**7.7**	7.3	6.6	**7.7**
Benzene	1-hour	Spring-wood	3.8	6.6	3.8	4.2	3.8	NA	NA	NA	NA	NA	**4.2[c]**

Table note:

[a] 1-hour, 8-hour and 24-hour concentrations are presented as the 70th percentile concentration.

[b] Five most recent years of monitoring in accordance with AQPSP, benzene data at Springwood ceased 2020.

[c] Monitoring data for 2017 shows elevated benzene levels which is unusual compared to long term trends. Therefore, the year with the next highest 1-hour average was used in this assessment, consistent with advice from Council.

6. ASSESSMENT OF CAR PARK EMISSIONS TO AIR

6.1 Overview

Vehicle activity within the car park has the potential to generate combustion emissions, primarily (NO_X) (as NO_2), CO, PM_{10}, $PM_{2.5}$ and benzene. The onsite car park will be ventilated in accordance with the requirements of Australian Standard AS1668.2 to ensure the level of these air pollutants remain at an acceptable level within the car park.

The ground level car park areas will have a separate loading dock exhaust system that will discharge locally. The other car park levels (basement and lower ground and level 1 to level 4) will be ventilated and exhausted through a vent that is located on level 5 of the development. A minimum separation distance of 15 m between the exhaust vent and any sensitive use is required under AO3.3 of the Centre or mixed use code of the City Plan (Table 2).

As shown in Figure 3, a sensitive use of the development (exposure location at residential unit) is required to be located closer than 15 m to the exhaust vent of the onsite car park. Consequently, this section provides a screening level assessment to determine whether the operation of the car park will result in adverse air quality impacts at the nearest sensitive use.

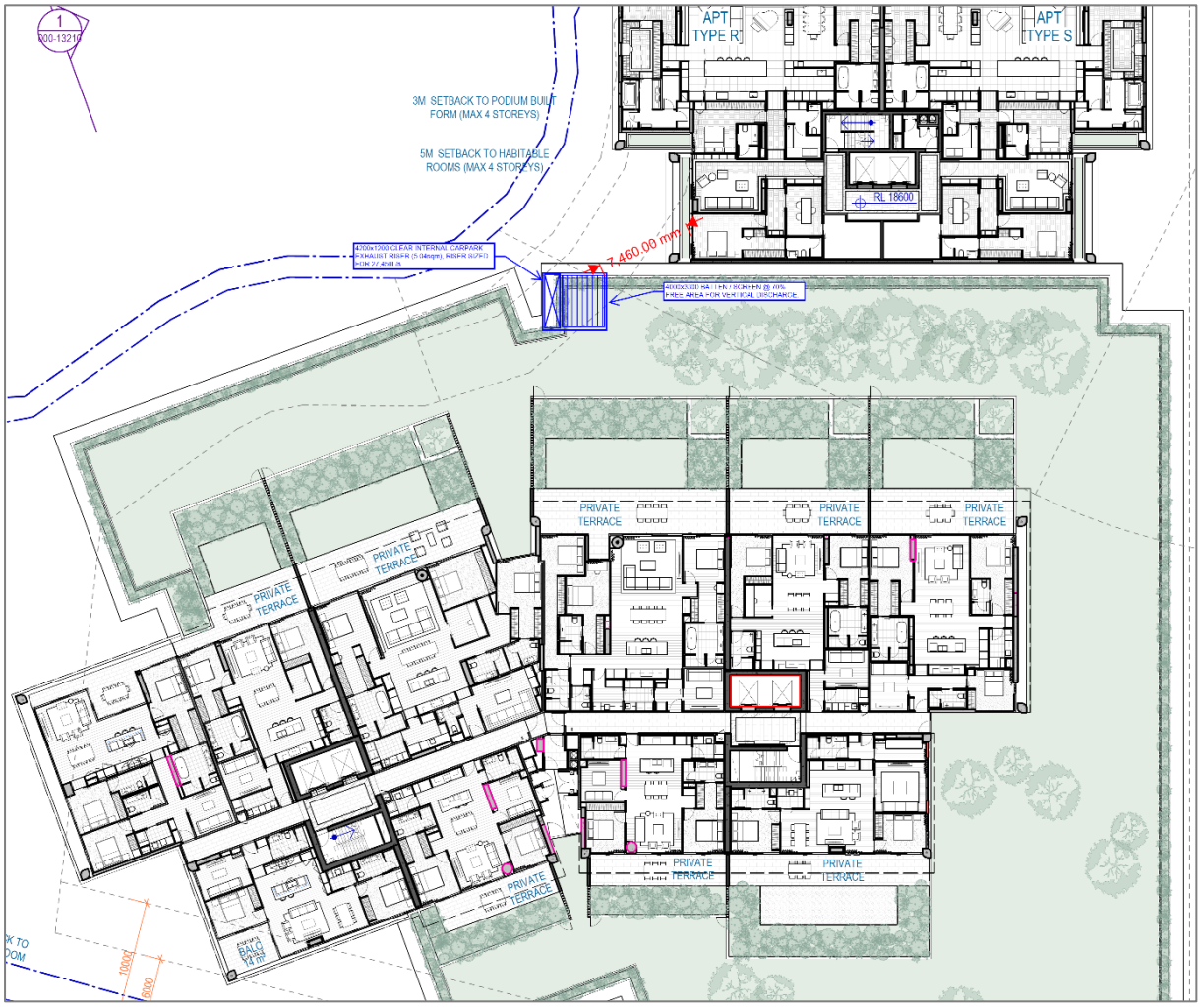

Figure 3 Location of onsite car park exhaust vent on level 5 of the development

6.2 Car park operating conditions

The car park will have a ventilation system that operates in accordance with the requirements of Australian Standard AS1688.2. Inherent CO sensors will be located throughout the car park and variable speed driver ventilation fans will operate intermittently based on the CO levels. Operation of the car park can be summarised as follows, based on AS1688.2:

- CO levels of between 0 parts per million (ppm) and 9 ppm, fans are turned off but will be manually operated intermittently to achieve the required 1 air change per 24-hour period (will be achieved by operating fans at minimum fan speed (approximately 30% of the maximum flow rate) for a 10-minute period, multiple times a day).
- CO levels of between 9 ppm and 30 ppm, fans are operated at 25% of the maximum flow rate.
- CO levels of greater than 30 ppm detected, fans will ramp linear from 25% up to 100% of the maximum flow rate at 60 ppm CO (the maximum flow rate required for the car park has been calculated to be 27,450 litres per second (L/s)).

The operation of the car park ventilation system in accordance with the requirements of AS1688.2 means that:

- Air pollutants that are generated by vehicles using the car park will be effectively removed from the car park prior to accumulation to unsafe levels.
- During most hours of the day concentrations of CO will remain below the relevant air quality criteria (9 ppm) across most areas of the car park.
- CO sensors will be located at locations where elevated concentration will occur (i.e. nearer to vehicles and in more frequently traversed areas of the car park), so that any elevated concentrations are detected early to trigger increased operation of the ventilation fans and prevent accumulation to unsafe levels.
- The detection of CO levels above 9 ppm at any of the sensors over a 15-minute sample period will trigger increased operation of the ventilation fans; however, concentrations in most areas of the car park will still be well below this value.
- Any further increase in detected CO levels (due to increased vehicle activity in the car park), triggers a further increase in the operation of the ventilation fans.
- During periods of low vehicle activity in the car park, intermittent use of the fans to achieve one air change every 24 hours will ensure that pollutants are not able to accumulate.
- Consequently, the concentration of all CO will not reach unsafe levels at any location within the car park, including at the point of release from the vent outlet on level 5 of the development.
- Managing CO, the key air pollutant for air quality, means that all other air pollutants (including NO_X, PM_{10}, $PM_{2.5}$, and benzene) are also managed.

In addition, vehicle usage rates for the car park, and consequently the rate of pollutant generation within the car park, are anticipated to be very low due to the nature of the proposed use. In particular (Colliers, October 2026):

- While vehicle ownership rates at this type of development may be relatively high, daily vehicle utilisation rates are comparatively low.
- Inner-city areas are characterised by high levels of walkability to amenity and work, public transport, and on-site bicycle parking provisions.
- Newstead residents exhibit significantly lower car dependency than those in the broader Brisbane Local Government Area.
- Tandem car parks (118 of the total 548) are anticipated to be used for storage and/or second vehicles that are used less frequently.

- The anticipated resident profile comprises retired downsizers whose travel demand characteristics differ significantly from the working population, with the trip generation occurring more evenly throughout the day and minimal reliance on the commuter peak periods.

6.3 Assessment of potential impacts at sensitive uses

6.3.1 Overview of assessment

A screening level air quality assessment has been carried out to determine the minimum volumetric flow rate that is required for the car park exhaust vent to ensure that concentrations of key air pollutants at the point of release are below the relevant air quality criteria. The assessment has been carried out for several traffic generation rates for the car park, up to the maximum traffic generation rate of 30% (i.e. vehicles corresponding to 30% of available car spaces arriving or leaving the car park over a 1-hour period) that has been used to calculate the maximum flow rate of 27,450 L/s in accordance with AS1668.2.

Where the volumetric flow rate of the exhaust air is adequate to ensure that concentrations of key air pollutants at the point of release are below the relevant air quality criteria (Table 3 in section 4.2.3), concentrations at any location further from the point of release, including at any openable windows and doors, balconies, courtyard areas, and air intakes for any air conditioning or ventilation systems of any onsite residential units, will also be below the relevant air quality criteria.

6.3.2 Assessment methodology and inputs

The assessment approach considers that the concentration of an air pollutant at the point of discharge (i.e. the vent on level 5 of the development) at any time is directly related to:

- The rate at which that pollutant is generated by the cars using the car park, which is based on the number of cars using the car park at that time and the distance that each vehicle travels, and
- The volumetric flow rate of the exhaust air from the car park, which is based on the speed at which the ventilation system fans are operating.

The following formula has been used to calculate the maximum (incremental and cumulative) concentration of air pollutants in the exhaust vent air for the range of operational scenarios assessed:

$$C_x = C_b + \frac{Q_{AP}}{V_x}$$

Where:

C_x is the concentration of the air pollutant in the car park exhaust vent.

C_b is the background concentration of the air pollutant.

Q_{AP} is the generation rate of the air pollutant within the car park.

V_x is the volumetric flow rate of exhaust air through the car park exhaust vent.

The minimum volumetric flow rates that are required for various traffic generation rates have been calculated to ensure that the maximum concentration of key air pollutants at the point of release are below the relevant short-term air quality criteria.

Detailed methodology and input parameters used in the assessment are provided in Table 5. Results of the assessment are presented in section 6.3.3.

Table 5 Detailed methodology and input parameters for screening level assessment of car park ventilation exhaust emissions

Aspect	Details of methodology	Justification
Air pollutants considered	NO_X (as NO_2), CO, PM_{10}, $PM_{2.5}$ and benzene	Key air pollutants associated with combustion of fuel in vehicles.
Averaging periods	Short-term averaging periods of 1-hour, 8-hour, and 24-hour	While usage rates of the car park are anticipated to be low across most hours of the day (section 6.2), peak operation hours of the car park are likely to be between 6am and 8am, and between 4pm and 6pm, Monday to Friday. Outside these hours, and therefore for most hours of the year (approximately 88%), the use is anticipated to be minimal. On this basis, the assessment focussed on short-term averaging periods of 1-hour, 8-hour, and 24-hour. In circumstances where the worst-case use of the car park complies with the short-term criteria, compliance will also be achieved with the longer-term criteria.
NO_X conversion to NO_2	27%	The assessment has applied the recommended direct NO_2 percentage of 27% for light duty vehicles from Council's composite vehicle emission factors for Brisbane.
Range of operational scenarios	Range from 5% to 30% traffic generation rate	Traffic generation rates (i.e. vehicles corresponding to the percentage of available spaces with cars entering and/or exiting during a 1-hour period ranging from 5% to 30% (30% based on peak traffic generation anticipated for the car park used to calculate maximum flow rate of 27,450 in accordance with AS1668.2). A constant exhaust vent flow rate has been assumed for the full hour.
Background concentrations	Ambient backgrounds: NO_2 – 32.8 µg/m³ (1-hour) PM_{10} – 20.3 µg/m³ (24-hour) $PM_{2.5}$ – 7.7 µg/m³ (24-hour) Benzene – 4.2 µg/m³ (1-hour) CO – 265 µg/m³ (8-hour)	The background concentrations of air pollutants used in the assessment are those based on the analysis of five years of DETSI monitoring data, presented in Table 4.
Generation rate of the air pollutant within the car park	Emission factors: NO_X – 0.4 g/VKT PM_{10} – 47.2 mg/VKT $PM_{2.5}$ – 28.5 mg/VKT Benzene – 9.8 mg/VKT CO – 3.9 g/VKT	The rate of generation of air pollutants within the car park have been estimated using Council's compositive vehicle emission factors database (Version 1) to derive emission factors for the key pollutants of relevance to vehicle emissions. Emission factors have assumed 100% light duty vehicles, congested, +6% road gradient, and winter conditions. As Council's database does not provide an emission factor for CO, the value of 3.9 grams of CO per VKT (vehicle kilometre travelled) published by the National Pollutant Inventory (Smit, 2014) has been used.
	-	The rate of generation of air pollutants within the car park has also been based on a travel distance for each car using the car park (VKT) based on the architectural plan for the development, and a number of vehicles entering and/or exiting the car park during a 1-hour period (varies for each scenario detailed above).

Aspect	Details of methodology	Justification
Limitations and uncertainty	-	This assessment relies on the accuracy of several input datasets that form the assessment, including air quality monitoring observations from the DETSI, information provided by the Applicant including anticipated exhaust vent flow rates, and Council's Composite Vehicle Emission Factors for Brisbane, all of which will have several uncertainties associated with them. Council's Composite Vehicle Emission Factors for Brisbane is a tool that has been designed to provide conservative vehicle emission factors to be used for local air quality impact assessment studies. Where possible, the assessment has also used conservative assumptions and is therefore likely to overpredict potential impacts from the exhaust vent.

6.3.3 Results of the screening level assessment

The screening level risk assessment determined that:

- For the traffic generation rate of 5% up to the anticipated maximum of 30%, the minimum car park exhaust vent volumetric flow that is required to ensure adequate ventilation of the car park, and no adverse impacts to air quality (i.e. compliance with relevant short-term air quality criteria for key air pollutants) at sensitive uses near the point of release, ranges between 4,000 L/s and 26,000 L/s.
- The design capacity of the ventilation system of up to 27,450 L/s is adequate to ensure that air quality impacts at sensitive uses can be avoided during operation of the car park.
- Following release, pollutant emissions will disperse rapidly in the atmosphere, and concentrations at nearest sensitive uses will be lower than the concentration at the point of release.
- As compliance with relevant air quality criteria is achieved with short-term periods of 1-hour, compliance will also be achieved with for longer averaging periods of 8-hour (CO air quality criteria) and 24-hour (PM_{10} and $PM_{2.5}$ air quality criteria).
- Consequently, the development **complies with PO3 of the Centre or mixed use code** and this aspect of **Approval Condition 53 (relating to the required 15 m separation from the car park exhaust vent) need not apply**.

7. ASSESSMENT OF FUEL BURNING EMISSIONS TO AIR

7.1 Proposed fuel burning equipment

The development triggers a high impact industry use for fuel burning and power generation from a standby generator and fire pumps. These are essential development infrastructure and services required to support the operation of the proposed residences.

One diesel engine prime mover will be required for the purposes of standby power generation. The particulars of the generator will include:

- Expected maximum fuel burning capacity of approximately 15 litres per hour (pending finalisation of stormwater pump sizing).
- Typical testing operation is 30 minutes per month with a minimum of 30% load.
- Total run time for testing is 360 minutes (6 hours) per year.
- Total projected annual fuel consumption of 90 litres of diesel fuel.

The installed capacity of the standby generator has not yet been confirmed but is likely to be above the 0.1 MW threshold for high impact industry under the City Plan, but below 10 MW and not involving coal combustion.

Two standby diesel engines will be required for the fire pumps. The particulars of the engines will include:

- Two engines at 171 kW each (total installed capacity of 0.342 MW).
- Total fuel storage of 590 litres (295 litres per pump).
- Total maximum fuel burning capacity of approximately 78 litres per hour (39 litres per hour per pump).
- Each pump will require 10 minutes of testing each month, and 30 minutes of testing each year on the annual inspection date, reflecting a total combined testing run time of 280 minutes per year (4.67 hours per year).
- Total projected annual fuel consumption of 364 litres per year (182 litres per pump).

7.2 Requirements under the City Plan

Item 54 of Council's Approval Package (Table 1) prohibits '*the installation of any fuel burning equipment (e.g. backup power generator, fire pumps, etc.), that in combination, triggers an industry use under Table SC1.1.3.A—Industry thresholds, City Plan 2014'*. The relevant industry thresholds for medium impact industry B, high impact industry, and special industry are reproduced in Table 6.

As detailed in section 7.1, the combined installed capacity of (at least) 0.1 MW for the standby power generation plus 0.342 MW for the fire pump diesel engines, triggers the threshold for high impact industry. Where an industry threshold is exceeded, an MCU for Industry Use is required. To support the MCU for Industry Use, an assessment of potential impacts to air quality due to the operation of the fuel burning equipment is provided in section 7.3.

Table 6 City Plan definitions and requirements for fuel burning equipment

Section of the City Plan	*Attribute*	*Details*
5.3 Categories of development and assessment	*Definition of prescribed accepted development*	*g. any other development not specifically referred to above, except where it involves:* *i….* *ii. fuel burning for power generation:*

Section of the City Plan	Attribute	Details
		A. with an installed capacity of 0.1MW or less, if operating more than 100 hours per year; or *B. with an installed capacity of over 0.1MW; or* *C. burning coal or coal products;*
SC1.1 Use definitions	*Definition of medium impact industry - B*	*j. Fuel burning where not a utility installation, with an installed capacity of 0.1 MW or less, if:* *i. operating more than 100 hours per year;* *ii. not involving coal combustion*
	Definition of high impact industry	*k. Fuel burning where not a utility installation with an installed capacity of more than 0.1 MW, if:* *i. less than 10 MW;* *ii. not involving coal combustion*
	Definition of special industry	*b. Fuel burning where not a Utility installation, with an installed capacity of 10 MW or greater or burning coal or coal products*
SC6.2 Air quality planning scheme policy	*Industries that require a health risk assessment*	*Fuel burning for power generation with an installed capacity of 10 MW or greater*
		Fuel burning for power generation burning coal or coal products

7.3 Assessment of potential impacts at sensitive uses

7.3.1 Potential emissions to air

Potential emissions to air that are associated with the combustion of diesel fuel in the standby generator and fire pumps include NO_X and CO as the primary air pollutants of concern. Trace pollutants from combustion of diesel may also include volatile organic compounds (VOCs), fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2) and hydrogen sulfide (H_2S). Where emissions of NO_X and CO are controlled and comply with relevant air quality criteria at nearest sensitive receptors, concentrations of all trace pollutants will also comply with the relevant air quality limits.

7.3.2 Assessment of risk to air quality

While the development meets the definition of high impact industry based on the installed capacity of more than 0.1 MW, the risk of impacts to air quality at sensitive uses (on site and neighbouring residential uses) due to the operation of fuel burning equipment is considered low. A detailed risk assessment is provided in Table 7.

The assessment has determined that:

- There is no risk of air quality impacts on sensitive land uses for most hours (99.9%) of the year (outside testing periods).
- During operation of the fuel burning equipment (monthly testing or use for backup power supply):
    - Emissions to air will be localised and minimised as far as reasonably practicable in accordance with best practice measures.
    - The risk of adverse impacts to air quality at sensitive uses (onsite or neighbouring residential uses), is considered low and will be mitigated through appropriate ventilation.

- Consequently, no further assessment of fuel burning activities is required, and **Approval Condition 54 may be varied to provide for the fuel burning activities to the extent proposed under the current change application.**

Table 7 Air quality risk assessment for onsite fuel burning equipment

Aspect		Discussion	Assessment of risk to air quality at sensitive uses
City Plan 2014 requirements - Definition of prescribed accepted development, use definition, and requirement for a health risk assessment	Installed capacity	The installed capacity of greater than 0.1 MW triggers the requirement for an assessable development and a high impact industry. The installed capacity **does not** trigger the requirement for a health risk assessment. The installed capacity is less than 5% of the installed capacity that would trigger a health risk assessment.	High impact industry triggered due to installed capacity only. Hours of operation are below the trigger level for medium impact industry. Level of emissions to air and risk to sensitive uses are lower for diesel combustion compared to coal or coal products.
	Operating hours	The operating hours for all fuel burning equipment (standby power generation plus two fire pumps) is less than 11 hours of the year. This is less than 11% of the trigger level for a medium impact industry.	
	Burning of coal or coal products	Burning of coal or coal products will not be carried out at the site.	
Frequency and duration of operation	Standby power generation	Typical testing operation will be 30 minutes per month with a minimum of 30% load (360 minutes (6 hours) per year), equivalent to less than 0.07% of the year.	There is no risk of air quality impacts on sensitive land uses for most hours (99.9%) of the year (outside testing periods).
	Fire pumps	Each pump will require 10 minutes of testing each month, and 30 minutes of testing a year on the annual inspection date, reflecting a total combined testing run time of 280 minutes per year (4.67 hours per year), equivalent to less than 0.06% of the year.	
Emissions to air	Rate of air pollutant emissions to air	The final engine size and manufacturer have not been determined at this stage. Equipment will meet best practice industry standards including the Environmental Protection Act 1994. NO_X and CO limits will meet appropriate US or European emission standards. Consequently, emissions are anticipated to be less than those calculated below using the NPI Emission Estimation Technique Manual for Combustion Engines (Version 3.0, June 2008) (Table 49: Emission Factors (kg/kWh) for stationary small (less than 450 kW) diesel engines. Based on the anticipated total capacity of approximately 442 kW and the hours of operation of approximately 10.67 hours, the total annual NO_X emissions are estimated to be 27 kg/annum. For a point of reference, this annual total is a fraction (< 1%) of the total annual NO_X emissions reported to the NPI for the	Total annual emissions from the fuel burning equipment will be insignificant.

Aspect		Discussion	Assessment of risk to air quality at sensitive uses
		20254/2025 reporting period from facilities nearest to the site, which includes: • Visy Glass Brisbane – 280,000 kg/annum. • Australian Country Choice – 15,000 kg/annum • Mater Health Services – 14,000 kg/annum • Eagle Farm Asphalt Plant – 6,000 kg/annum • Lactalis Australia – 3,600 kg/annum	
Relevant air quality criteria averaging periods	Key air pollutants include NO_2 (1-hour and annual average air quality criteria), and CO (8-hour average air quality criteria)	Standard operation of equipment (testing) will not occur for more than 30-minutes per occasion, meaning contribution to concentrations over a longer period (1-hour, 8-hour, etc.) will be reduced.	The development has a negligible risk of chronic impacts on sensitive uses (onsite or neighbouring residential uses) due to emissions to air.
Location of fuel burning equipment	Standby power generation	Room on level 2, separated from all sensitive uses and potential exposure locations.	Emissions are separated from sensitive uses during operation. Appropriate ventilation and release points will mitigate risk of air quality impacts.
	Fire pumps	Room on mezzanine level, separated from all sensitive uses and potential exposure locations.	
Air pollutant control reduction measures	Standby power generation	Final engine size and manufacturer have not been determined at this stage. Equipment will meet best practice industry standards including the Environmental Protection Act 1994. NO_X and CO limits will meet appropriate US or European emission standards.	Emissions to air will be minimised as far as reasonably practicable in accordance with best practice measures.
	Fire pumps	Fire Services Engineers confirm the following in relation to the diesel fire pumps (Firerite Services, 2026): • *Each Fire Pump will meet best practice industry standards in accordance with the National Construction Code (NCC), the Building Act 1975 (Qld), the Queensland Development Code (QDC), the Environmental Protection Act 1994(Qld), and AS 2941.* • *All reasonable efforts will be made to avoid and/or mitigate potential nuisance (including noise, odours, and emissions) resulting from the fire pump's use.* • *Mitigation strategies will meet the NCC and Australian Standard 2941:2013 effectively ensuring the ongoing*	

Aspect		Discussion	Assessment of risk to air quality at sensitive uses
		validation, certification, and safety-critical operation of the fire pump are maintained, without risking the viability or effectiveness of the fire pump as a 'prescribed fire safety installation' under s 146N the Fire Services Act 1990 (Qld). • *In relation to air quality controls, Tier 3 diesel engines (or better if and where suitable and / or available) will be sourced for the project to provide best practice efforts in line with the regulatory requirements.*	

8. CONCLUSIONS

An air quality assessment has been carried out for the proposed multi-residential development at 47 Skyring Terrace, Newstead (Lot 73 on SP238975). The air quality assessment has been prepared to support:

- Current change application for the site seeking approval to amend the most recent development approval issued by Council on 17 September 2026 (Council reference: A007052582) in accordance with section 82 of the Planning Act.

The assessment has considered the development approval conditions for air quality (Item 52, Item 53 and Item 54) for Change Application – s81 Minor Change (Council reference: A007052582) granted Council approval on 17 September 2026.

In relation to the requirements of the City Plan and Council Approval Conditions, it has been determined that:

In relation to the proposed development:

- At all on-site sensitive receptors within the development (apartment level windows, balconies, and outdoor air intakes), no exhaust vent outlets of premises where food cooking odour is released are located within 6 m; therefore, the development **complies with Approval Condition 52** and **AO3.2 of the Centre or mixed use code**.
- At all on-site sensitive receptors within the development (apartment level windows, balconies, and outdoor air intakes), no bus station exhaust vent outlet is located within 15 m; therefore, the development **complies with this aspect of Approval Condition 53** and **with this aspect of AO3.3 of the Centre or mixed use code**.
- The exhaust vent outlet from the onsite car park cannot be separated from all onsite sensitive uses by the required minimum of 15 metres; therefore, the development does not comply with this aspect of Approval Condition 53 and with this aspect of AO3.3 of the Centre or mixed use code. Consequently, a screening level risk assessment was carried out to assess the potential risk of adverse air quality impacts at these sensitive uses due to operation of the car park.
- The proposed standby power generation and fire pumps for the development trigger a high impact industry use for fuel burning due to a combined installed capacity above 0.1 megawatts (MW). Consequently, a risk assessment was carried out to assess the potential risk of adverse air quality impacts at the onsite sensitive uses due to operation of the fuel burning equipment.

The screening level risk assessment of the car park determined that:

- For the traffic generation rate of 5% up to the anticipated maximum of 30%, the minimum car park exhaust vent volumetric flow that is required to ensure adequate ventilation of the car park, and no adverse impacts to air quality (i.e. compliance with relevant short-term air quality criteria for key air pollutants) at sensitive uses near the point of release, ranges between 4,000 L/s and 26,000 L/s.
- The design capacity of the ventilation system of up to 27,450 L/s is adequate to ensure that the minimum volumetric flow rate required to avoid air quality impacts at sensitive uses can be achieved during operation of the car park.
- Following release, pollutant emissions will disperse rapidly in the atmosphere, and concentrations at nearest sensitive uses will be lower than the concentration at the point of release.
- As compliance with relevant air quality criteria is achieved with short-term periods of 1-hour, compliance will also be achieved with for longer averaging periods of 8-hour (CO air quality criteria) and 24-hour (PM_{10} and $PM_{2.5}$ air quality criteria) due to minimal vehicle activity in the car park during most hours of the day.

- Consequently, the development **complies with PO3 of the Centre or mixed use code** and this aspect of **Approval Condition 53 relating to the required 15 m separation from the car park exhaust vent need not apply**.

The risk assessment of potential impacts to air quality due to operation of the onsite fuel burning equipment determined that, while the development meets the definition of high impact industry based on the installed capacity of more than 0.1 MW, the risk of impacts to air quality at sensitive uses (on site and neighbouring residential uses) due to the operation of fuel burning equipment is considered negligible to very low. It was determined that:

- There is no risk of air quality impacts on sensitive land uses for most hours (99.9%) of the year (outside testing periods).
- During operation of the fuel burning equipment (monthly testing or use for backup power supply):
    - Emissions to air will be localised and minimised as far as reasonably practicable in accordance with best practice measures.
    - The risk of adverse impacts to air quality at sensitive uses (onsite or neighbouring residential uses), is considered low and will be mitigated through appropriate ventilation.
- Consequently, no further assessment of fuel burning activities is required, and **Approval Condition 54 may be varied to provide for the fuel burning activities to the extent proposed under the current change application.**

9. REFERENCES

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