18 October 2021

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Goodman Property Services (Australia) Pty Ltd
1-11 Hayes Road
Rosebery NSW 2108

Attention: Stephanie Partridge

Dear Stephanie

Oakdale West Estate
Stage 3 Development (2A, 2C and 2D)
Requirement to Update Air Quality Impact Assessment

1 Objective

A State Significant Development (SSD) application is being prepared for the construction, fitout and operation of three Lots (2A, 2C and 2D) within the approved Oakdale West Estate (OWE). The Secretary's Environmental Assessment Requirements (SEARs) for this Project (SSD-9794683) are reproduced below:

> *"Air Quality – including assessment of air quality impact at sensitive receivers during construction and operation in accordance with the EPA guidelines and details of mitigation, management, and monitoring measures."*

The objective of this letter report is to assess whether a revision of the Air Quality Impact Assessment (AQIA) prepared by SLR Consulting (SLR) in 2017 for the Oakdale West Estate (OWE) is required due to the construction and operation of lots 2A, 2C and 2D, whilst also addressing the SEARs for this Project.

2 Background

The AQIA prepared by SLR for the OWE, dated 23 March 2017 (610.15617-R01-v1.1), assessed the potential air quality impacts associated with the construction and operational phases of all five precincts within the OWE.

Air quality impacts associated with the proposed construction activities were assessed using a qualitative risk-based approach. It was concluded that air quality impacts during construction of the OWE Project could be adequately managed using best practice management and mitigation measures. The risk of any residual impacts after the implementation of mitigation measures was concluded to be low.

For the operational phase, atmospheric dispersion modelling was used to assess potential air quality impacts at the nearest sensitive receptors due to air emissions from vehicular traffic associated with each of the precincts within the OWE. The results of the modelling were presented as:

- the incremental impacts associated with traffic emissions from all five precincts; and
- cumulative impacts of emissions from the OWE and background concentrations.

It was concluded from the modelling results that air emissions from the proposed operational activities (vehicle movements) at the OWE would comply with all relevant ambient air quality criteria at all representative surrounding sensitive receptors. A summary of the pollutant concentrations predicted at the most impacted sensitive receptor due to emissions from the OWE is provided in **Table 1**. The road network included in the modelling presented in the AQIA is shown in **Figure 1**.

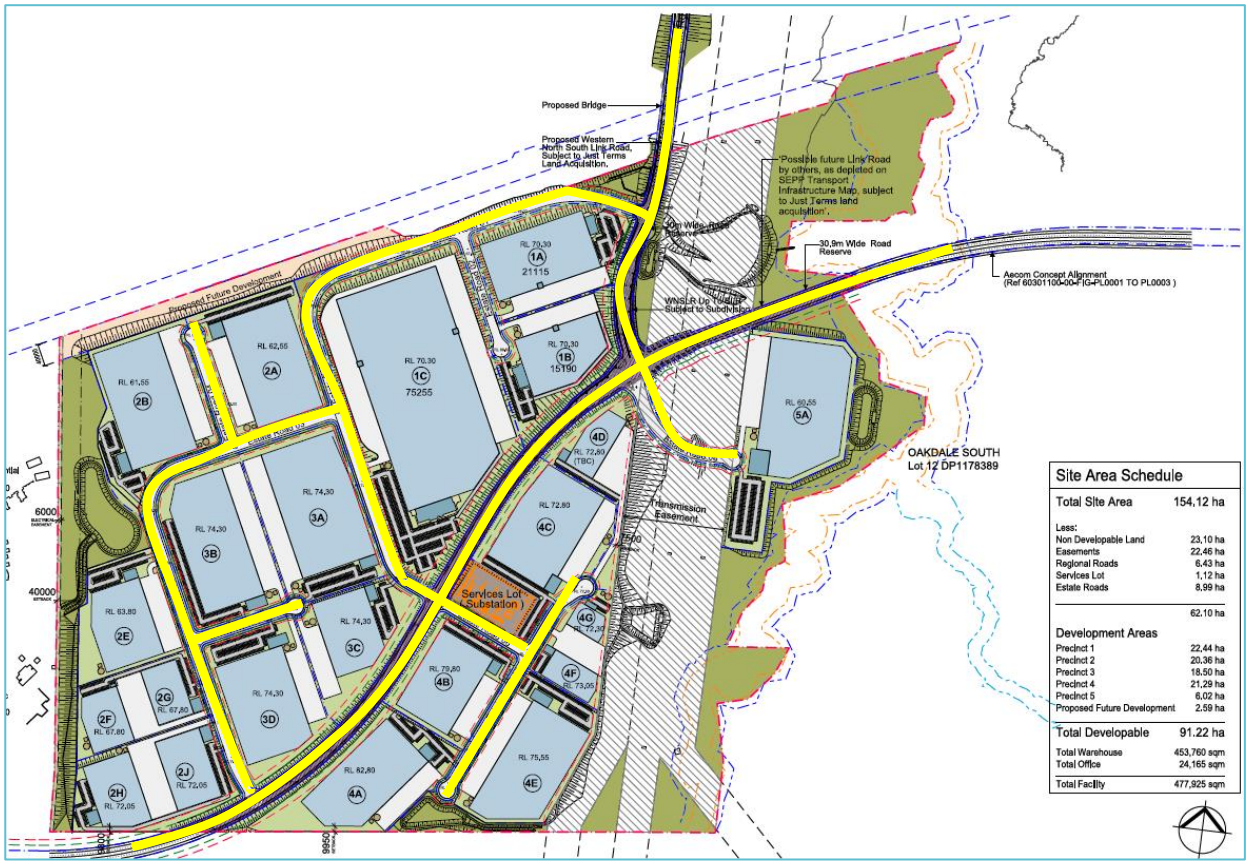
Table 1 Summary of AQIA Dispersion Modelling Results for OWE at Most Impacted Sensitive Receptor

Pollutant	Averaging Period	Criteria (µg/m³)	Incremental Impact of Emissions from OWE (µg/m³)	Cumulative Impact of Emissions from OWE and Regional Background Concentrations (µg/m³)	Contribution of OWE to total Predicted Cumulative Concentrations
TSP	Annual	90	13.8	44.2	31%
PM_{10}	24-hour	50	22.9	38.9	59%
	Annual	25	4.6	19.8	23%
$PM_{2.5}$	24-hour	25	6.0	NA[a]	NA[a]
	Annual	8	1.2	NA[a]	NA[a]
NO_2	1-hour	246	158.8[b]	91.6	NA[b]
	Annual	62	6.1[b]	12.7	NA[b]

[a] No background data was available from the St Marys Air Quality Monitoring Station.

[b] The incremental concentrations represent the predicted NOx concentrations, while the cumulative concentrations represent the NO_2 concentrations, calculated using the Ozone Limiting Method (OLM).

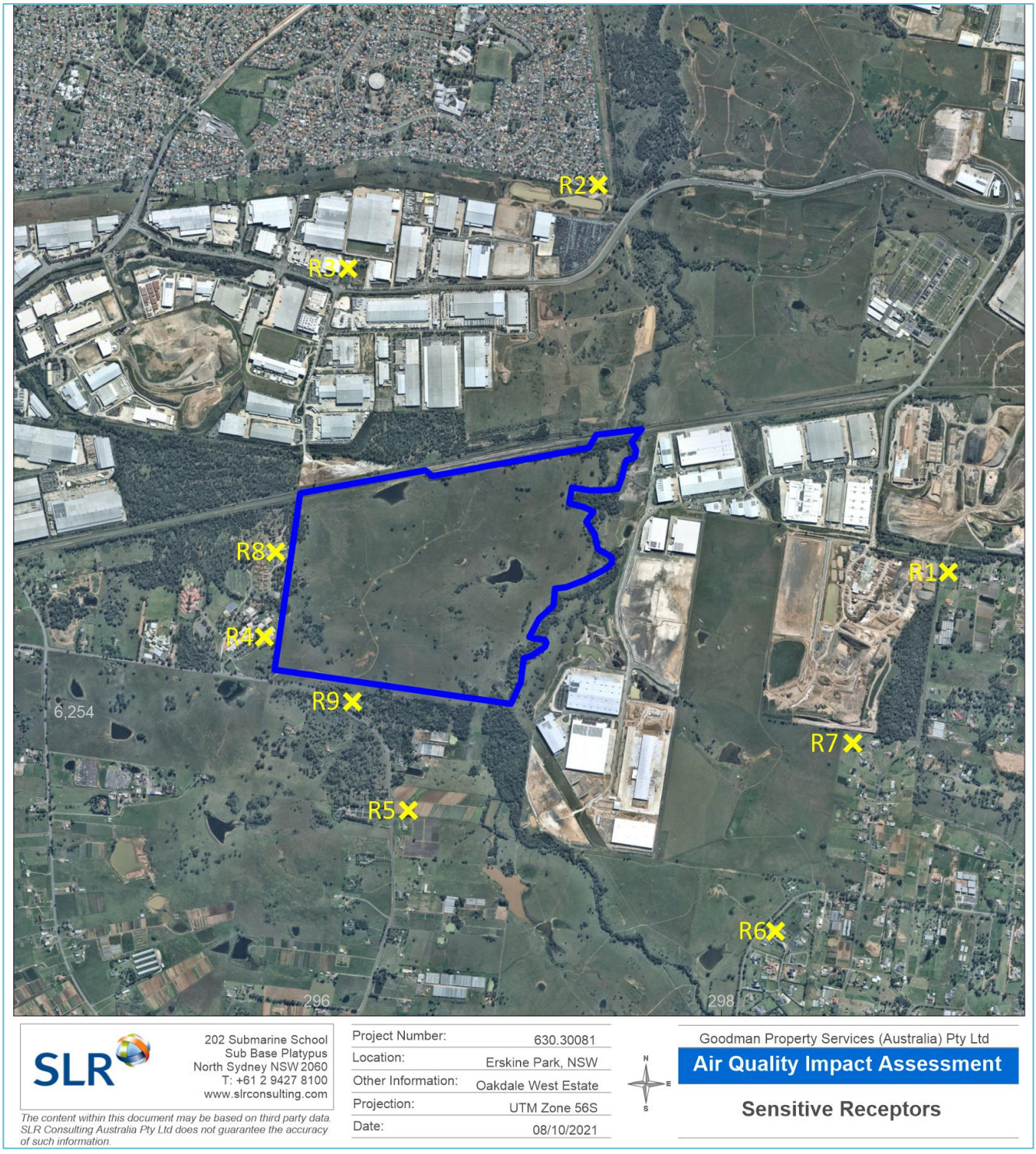
Figure 1 Oakdale West Estate – Roads Modelled in the AQIA



Source: SBA Architects, SSDA Estate Masterplan, 18 April 2018 (yellow marked line indicates modelled roads and red box indicates 40 m freight line offset).

The maximum impacts due to air emissions from the OWE were predicted to occur at receptors R8 and R9, which are located towards the west and south of the OWE respectively, as shown in **Figure 2**.

Figure 2 Locations of Identified Sensitive Receptors

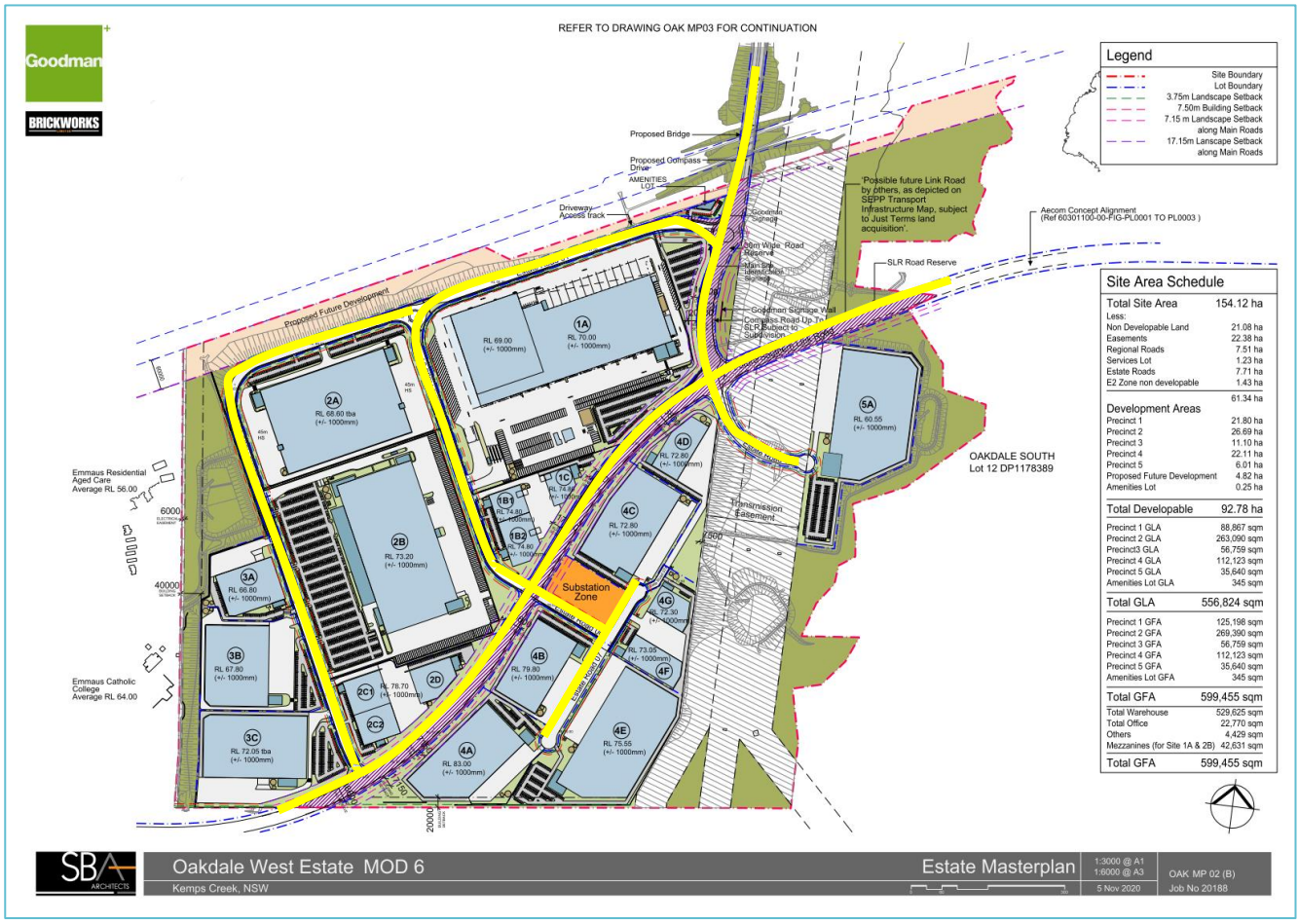


3 Modifications to the OWE Masterplan

Since the completion of AQIA in March 2017, minor modifications to the OWE Masterplan have been proposed and approved. Lots 2A, 2C and 2D are largely consistent with the building footprint and traffic generation as approved under current Oakdale West Masterplan approval (SSD 7348 – as amended), with minor changes.

The updated masterplan is shown in **Figure 3**. A comparison of **Figure 1** and **Figure 3** shows that the revisions to the masterplan have slightly modified the road networks considered in the AQIA modelling study. The changes to the road network are towards the western boundary and include a slightly longer Estate Road 3, and removal of Estate Roads 4 and 5.

Figure 3 Oakdale West Estate – Updated Masterplan



Source: SBA Architects, SSDA Estate Masterplan, 5 November 2020, OAK MP02 (B)

4 Lots 2A, 2C and 2D - Construction

The AQIA concluded that air quality impacts during construction of the OWE could be adequately managed using best practice mitigation and management measures. The risk of any residual impacts after the implementation of mitigation measures was concluded to be *low*.

As a result of the proposed modifications to the OWE Masterplan (see **Section 3**), it is concluded that the magnitude of construction impacts is unlikely to change, and hence the residual risk of dust emissions during construction of lots 2A, 2C and 2D remains *low*. The recommended management and mitigation measures during construction of lots 2A, 2C and 2D are reproduced in **Table 2**.

Table 2 Site-Specific Management Measures – OWE

1	**Communications**	
1.1	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H
1.2	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H
1.3	Display the head or regional office contact information.	H
1.4	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	H
2	**Site Management**	
2.1	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	H
2.2	Make the complaints log available to the Local Authority when requested.	H
2.3	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.	H
3	**Monitoring**	
3.1	Perform daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when requested. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the site boundary.	D
3.2	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when requested.	H
3.3	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H
3.4	Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H
4	**Preparing and Maintaining the Site**	
4.1	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H
4.2	Erect solid screens or barriers around dusty activities or the site boundary that they are at least as high as any stockpiles on site.	H
4.3	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	H
4.4	Avoid site runoff of water or mud.	H
4.5	Keep site fencing, barriers and scaffolding clean using wet methods.	H
4.6	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	H

4.7	Cover, seed or fence stockpiles to prevent wind erosion.	H
5	**Operating Vehicle/Machinery and Sustainable Travel**	
5.1	Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable.	H
5.2	Ensure all vehicles switch off engines when stationary - no idling vehicles.	H
5.3	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H
5.4	Impose and signpost a maximum-speed-limit of 25 km/hr on surfaced and 15 km/hr on unsurfaced haul roads and work areas.	D
5.5	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	H
5.6	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	D
6	**Operations**	
6.1	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H
6.2	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.	H
6.3	Use enclosed chutes and conveyors and covered skips.	H
6.4	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H
6.5	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H
7	**Waste Management**	
7.1	Avoid bonfires and burning of waste materials.	H
8	**Demolition**	
8.1	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D
8.2	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H
8.2	Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H
8.3	Bag and remove any biological debris or damp down such material before demolition.	H
9	**Construction**	
9.1	Avoid scratching or roughening of concrete surfaces, where possible.	D
9.2	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	D
10	**Trackout**	
10.1	Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site.	D
10.2	Avoid dry sweeping of large areas.	D
10.3	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D
10.4	Record all inspections of haul routes and any subsequent action in a site log book.	D
10.5	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D

H = Highly recommended; D = Desirable

5 Combined Operations of Lots 2A, 2C and 2D - Operations

The peak hourly traffic volumes and daily traffic volumes were calculated based on application of factors contained within the *Technical Direction 04a: Traffic Generated Developments – Updated traffic surveys* (RMS Guide Update), being:

- 1.892 daily vehicle trips per 100 m^2 of industrial gross floor areas (GFA) including ancillary office floor space.
- 0.163 peak hour vehicle trips per 100 m^2 of industrial GFA including ancillary office floor space.

Traffic numbers for the AQIA were provided by traffic consultants as a conservative estimate due to the Project uncertainties. The peak and daily vehicle numbers adopted for the AQIA were 1,426 vehicles per hour (vph) and 16,544 vehicles per day (vpd) respectively. A review of the proposed GFAs for each precinct in the modified OWE masterplan has identified minor variations in the GFAs of all precincts. A summary of the total precinct GFA and associated peak and daily vehicle numbers compared to that assessed in the AQIA is provided in **Table 3**.

Table 3 Vehicle Volumes Projected for each Precinct in OWE

Precinct	Proposed		
	GFA (m^2)	Vehicles per Day (vpd)	Peak Vehicles per Hour (vph)
1	125,198	2,562	108
2	269,390	5,661	861
3	57,204	1,082	93
4	111,678	1,968	142
5	35,640	674	58
Amenities Lot	345	-	-
Total	**599,455**	**11,948**	**1,263[a]**
Approved Traffic		**16,544 (+38%)**	**1,426 (+11%)**

[a] AM Peak traffic estimates (Source: Transport Assessment, Ason 2021)

As the air dispersion modelling was based on the vehicular emissions for the total OWE, it can be seen from **Table 3** that the AQIA was based on significantly higher peak and daily traffic estimates than currently proposed under the modified masterplan. Therefore, the predicted dispersion modelling results shown in **Table 1**, which are well below the relevant impact assessment criteria, provide a conservative assessment of the expected worst case air quality impacts at the sensitive receptor locations.

6 Building 2A Operations Only

The tenant for Building 2A has proposed operations which will include a number of vehicles (76 vph AM peak and 831 vpd) entering and existing the building, including parking in the building while loading/unloading goods. It has been notified by Goodman that idling of vehicles will not occur inside the building. Nevertheless, emissions due to fuel combustion are likely to occur inside the building during the vehicle entry and exit through the building.

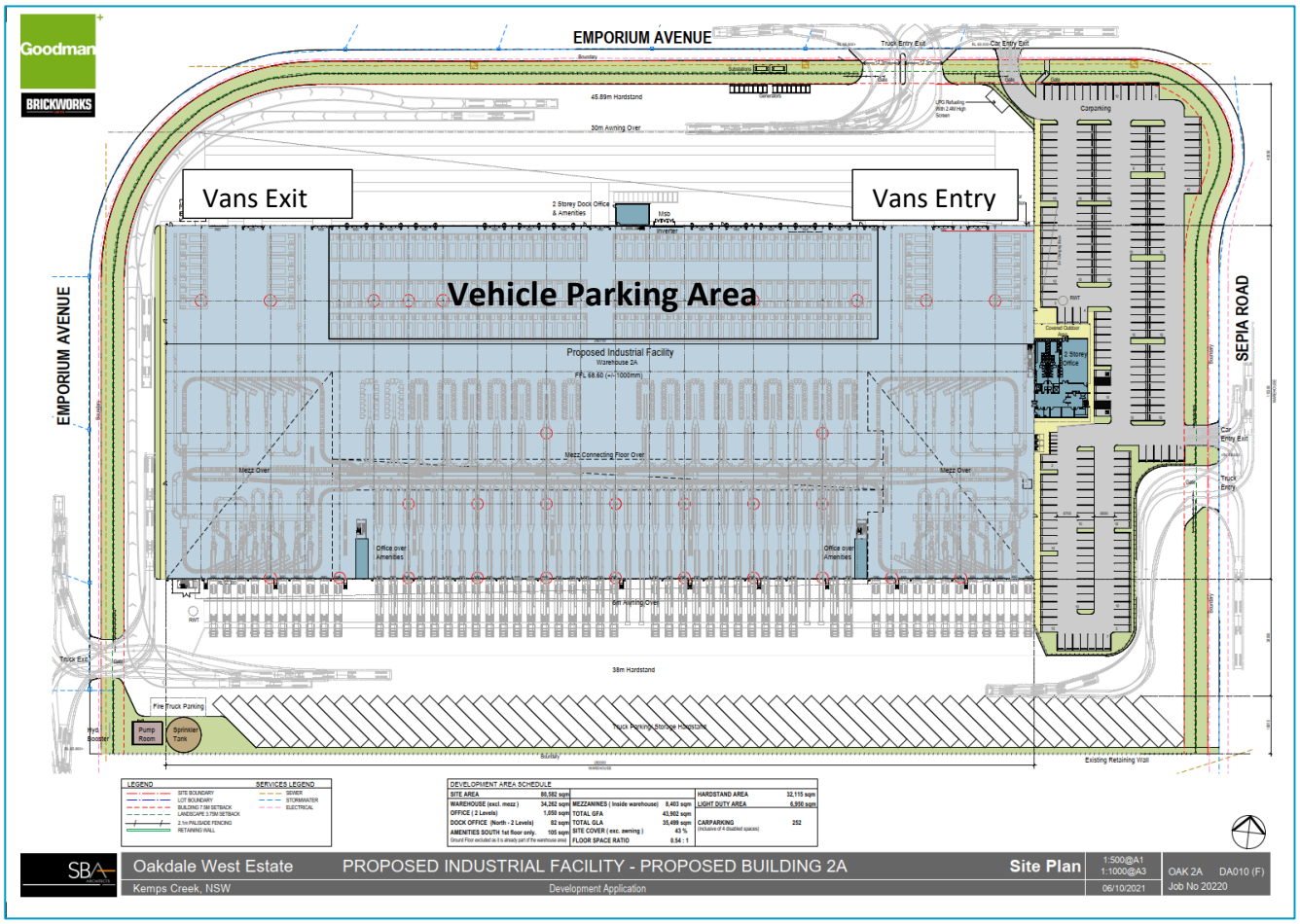
As shown in **Table 3**, the air quality impacts due to the traffic movements from the whole OWE are likely to be below the air quality criteria for the Project.

Notwithstanding the air quality compliance for the whole OWE, a high-level risk assessment has been presented in this section for the air quality impacts from Building 2A only. The impact assessment uses a methodology which integrates the receptor sensitivity with impact magnitude to derive the potential significance of that change. Details of the operational risk assessment methodology used are provided in **Appendix A**. In the context of this methodology, the resultant risk is termed 'impact significance'.

6.1 Site Layout

The Site layout of Building 2A is shown in **Figure 4**.

Figure 4 Site Layout of Proposed Building 2A



6.2 Risk Assessment

The nearest sensitive receptors (ie residential aged care buildings) to the Building 2A are located approximately 200 m southwest from the closest boundary (see **Figure 3**). With regards to the methodology outlined in **Appendix A**, the sensitivity of the surrounding aged care residential areas to air pollutant emissions generated by Building 2A has been classified as ***very high***.

Given the scale of on-site vehicle parking and delivery van and truck operations it is considered that the emissions generated due to the combustion of fuel in light and heavy vehicles generated by the Building 2A are small compared to the emissions generated by traffic by the new Estate Roads (see **Table 1**) ie 5.5% of the peak hour traffic, and 7.3% of the total daily traffic.

Given the above considerations, the magnitude for nearby sensitive receptors is predicted to be **slight** (i.e. predicted impact may be tolerated, **Table A2**).

Given the **very high sensitivity** of the potentially affected receptors and the **slight magnitude** of the potential impacts from products of combustion from operational phase traffic activities, the potential impact significance for the local receptors is concluded to be of ***intermediate significance*** for the closest receptors.

Table 4 Risk Assessment of Impacts from Products of Combustion – Operational Phase Traffic

Sensitivity		Impact Magnitude [Defined by Table A2]			
		Substantial Magnitude	Moderate Magnitude	Slight Magnitude	Negligible Magnitude
[Defined by Table A1]	**Very High Sensitivity**	Major Significance	Major/ Intermediate Significance	Intermediate Significance	Neutral Significance
	High Sensitivity	Major/ Intermediate Significance	Intermediate Significance	Intermediate/Minor Significance	Neutral Significance
	Medium Sensitivity	Intermediate Significance	Intermediate/Minor Significance	Minor Significance	Neutral Significance
	Low Sensitivity	Intermediate/Minor Significance	Minor Significance	Minor/Neutral Significance	Neutral Significance

In order to further reduce the impact significance, additional mitigation can be put in place to reduce or remove these impacts (refer to **Section 6.3**). It is expected that the residual risk of air quality impacts could be reduced to **neutral significance** if additional mitigation measures (such as the controls listed in **Section 6.3**) are put in place.

6.3 Recommended Mitigation Measures

A number of mitigation measures are proposed for Building 2A. These include the following:

- Vehicles will not be left to 'idle' while loading/unloading (appropriate signage is required).
- No refuelling is to occur inside the building.
- Discharges of pollutants to the air from the building will be captured by a Building Code of Australia (BCA) and Australian Standard (AS1668.2-2012) "*The use of ventilation and air conditioning in building, Part 2: Ventilation design for indoor air contaminant control*" compliant extractions system and directed to rooftop vents.

Section 5 of the AS 1668.2-2012 states the following:

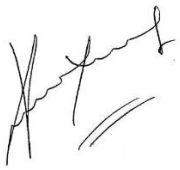
- 5.2.2 Exhaust locations: As far as practicable, exhaust-air intakes used for general exhaust-air collection shall be located on the opposite sides of the enclosure from the sources of make-up air, to ensure that the effluents are effectively removed from all parts of the enclosure.

- 5.3.2.1 General requirements: The effluent shall be collected as it is being produced, as close as practicable to the source of generation.
- 5.10.1 Air discharges: Where discharges are deemed to be objectionable (i.e. nuisance related), discharges shall:
  - Be emitted vertically with discharge velocities not less than 5 m/s.
  - Be situated at least 3 m above the roof at point of discharge.
  - Treated to reduce the concentration of contaminants where required.
  - Be emitted to the outside at velocities and in a direction that will ensure, to the extent practicable, a danger to health or a nuisance will not occur.
  - Be situated a minimum separation distance of 6 m (where the airflow rate is ≥ 1,000 L/s) from any outdoor) air intake opening, natural ventilation device or opening, and boundary to an adjacent allotment, except that where the dimensions of the allotment make this impossible, then the greatest possible distance shall apply.

7 Conclusions

Based on the above, it is concluded that an update of the AQIA is not required to address the proposed revision to the layout of lots 2A, 2C and 2D, and that as originally concluded, air quality impacts should not be considered a constraint to this development application.

Yours sincerely



VARUN MARWAHA
Principal Air Quality Consultant

Checked/
Authorised by: JC

APPENDIX A

Operational Assessment Methodology

The risk-based assessment takes account of a range of impact descriptors, including the following:

- **Nature of Impact**: does the impact result in an adverse or beneficial environment?
- **Sensitivity**: how sensitive is the receiving environment to the anticipated impacts? This may be applied to the sensitivity of the environment in a regional context or specific receptor locations.
- **Magnitude**: what is the anticipated scale of the impact?

The integration of receptor sensitivity with impact magnitude is used to derive the predicted **significance** of that change.

Nature of Impact

Predicted impacts may be described in terms of the overall effect upon the environment:

- **Beneficial**: the predicted impact will cause a beneficial effect on the receiving environment.
- **Neutral**: the predicted impact will cause neither a beneficial nor adverse effect.
- **Adverse**: the predicted impact will cause an adverse effect on the receiving environment.

Receptor Sensitivity

Sensitivity may vary with the anticipated impact or effect. A receptor may be determined to have varying sensitivity to different environmental changes, for example, a high sensitivity to changes in air quality, but low sensitivity to noise impacts. Sensitivity may also be derived from statutory designation which is designed to protect the receptor from such impacts.

Sensitivity terminology may vary depending upon the environmental effect, but generally this may be described in accordance with the broad categories outlined in **Table A1**, which has been used in this assessment to define the sensitivity of receptors to air quality impacts.

Table A1 Methodology for Assessing Sensitivity of a Receptor to Air Quality Impacts

Sensitivity	Criteria
Very High	Receptors of very high sensitivity to air pollution (eg dust or odour) such as: hospitals and clinics, retirement homes, painting and furnishing businesses, hi-tech industries and food processing.
High	Receptors of high sensitivity to air pollution, such as: schools, residential areas, food retailers, glasshouses and nurseries, horticultural land and offices.
Medium	Receptors of medium sensitivity to air pollution, such as: farms, outdoor storage, light and heavy industry.
Low	All other air quality sensitive receptors not identified above.

Magnitude of Impact

Magnitude describes the anticipated scale of the anticipated environmental change in terms of how that impact may cause a change to baseline conditions. **Table A2** outlines the methodology used in this assessment to define the magnitude of the identified potential air quality impacts.

Table A2 Methodology for Assessing Magnitude of Impacts

Magnitude	Description
Substantial	Impact is predicted to cause significant consequences on the receiving environment (may be adverse or beneficial)
Moderate	Impact is predicted to possibly cause statutory objectives/standards to be exceeded (may be adverse)
Slight	Predicted impact may be tolerated.
Negligible	Impact is predicted to cause no significant consequences.

Significance of Impact

The risk-based matrix provided below illustrates how the definition of the sensitivity and magnitude interact to produce impact significance.

Table A3 Impact Significance Matrix

Sensitivity / Magnitude		[Defined by Table A2]			
		Substantial Magnitude	Moderate Magnitude	Slight Magnitude	Negligible Magnitude
[Defined by Table A1]	**Very High Sensitivity**	Major Significance	Major/ Intermediate Significance	Intermediate Significance	Neutral Significance
	High Sensitivity	Major/ Intermediate Significance	Intermediate Significance	Intermediate/Minor Significance	Neutral Significance
	Medium Sensitivity	Intermediate Significance	Intermediate/Minor Significance	Minor Significance	Neutral Significance
	Low Sensitivity	Intermediate/Minor Significance	Minor Significance	Minor/Neutral Significance	Neutral Significance