Memorandum

To:	Guy Smith	**At:**	Goodman
From:	Varun Marwaha	**At:**	SLR Consulting Australia Pty Ltd
Date:	26 November 2019	**Ref:**	610.15617-M03-v1.1.docx
Subject:	Requirement to Update Air Quality Impact Assessment Oakdale West Estate (MOD 2)		

1 Aim

The aim of this memorandum is to assess the need for a revision of the full Air Quality Impact Assessment (AQIA) prepared by SLR Consulting (SLR) in 2017 for the Oakdale West Estate (OWE) due to a proposed revision to the layout of OWE.

The Secretary's Environmental Assessment Requirements (SEARs) for the Oakdale West Estate Development MOD 2 (SSD 7348 MOD 2) were issued by the Department of Planning, Industry and Environment (DPIE) on 15th November 2019. The relevant conditions of the SEARs for SSD 7348 MOD 2 are addressed in this report as shown in **Table 1**.

Table 1 SSD 7348 MOD 2 Conditions for Air Quality

SSD 7348 MOD 2 Conditions	Response
An updated description of all air quality impacts (including dust) from the modification including an assessment of air quality impacts at private properties during **construction** and **operation**, in accordance with Environment Protection Authority guidelines; and	**Section 4** (construction); and **Section 5** (operation)
Updated details of mitigation, management and monitoring measures.	**Section 4**

2 Background

The original AQIA performed 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 can 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.

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 whole OWE plus 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 OEH ambient air quality criteria at all representative surrounding sensitive receptors. A summary of the pollutant concentrations predicted at the worst-affected sensitive receptor due to emissions from the whole OWE is shown in **Table 2**. The road network included in the modelling presented in the AQIA is shown in **Figure 1**.

The maximum impacts due to air emissions from the whole of 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**.

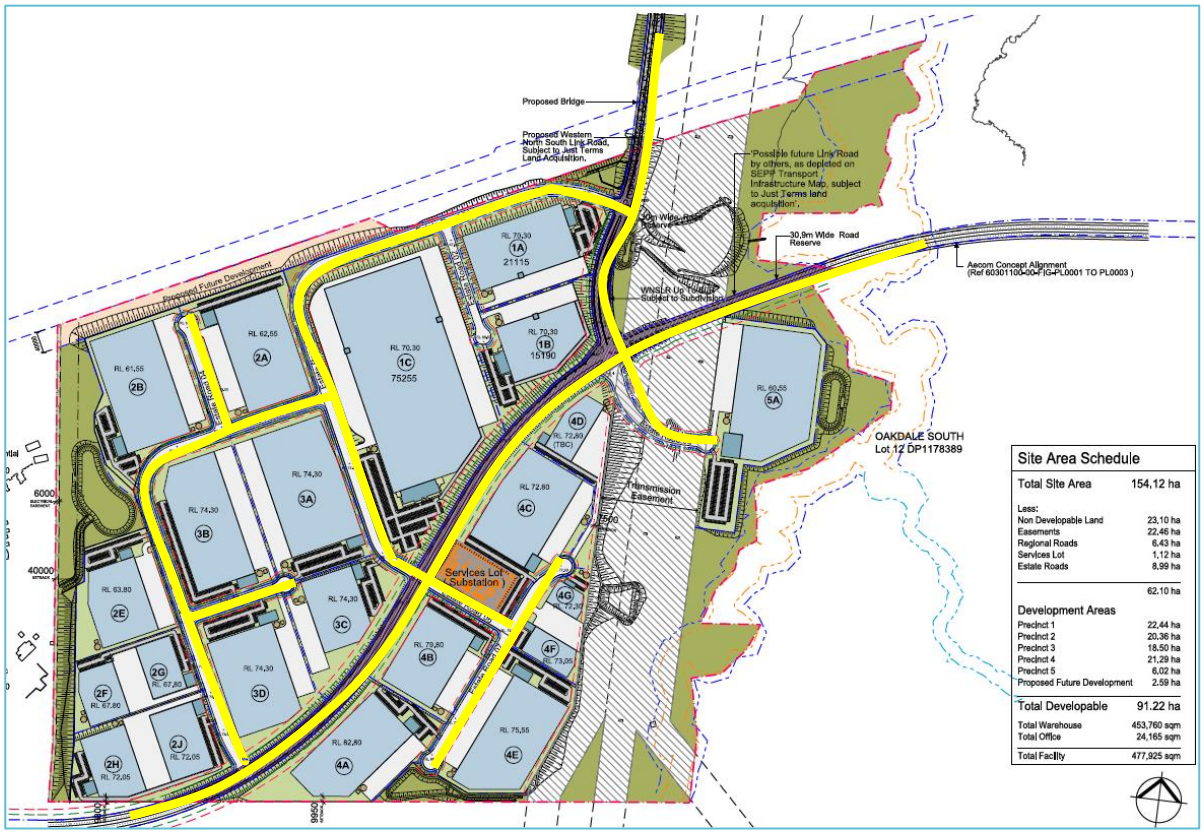
Table 2 Summary of Dispersion Modelling Results for OWE

Pollutant	Averaging Period (Criteria)	Incremental Impact of Emissions from: 'OWE' (precincts 1 to 5) at the Worst-Affected Sensitive Receptor (µg/m³)	Cumulative Impact of Emissions from: 'OWE' (precincts 1 to 5) plus Regional Background Levels at the Worst-Affected Sensitive Receptor (µg/m³)	Contribution of 'OWE' to total Predicted Cumulative Concentrations
TSP	Annual (90 µg/m³)	13.8	44.2	31%
PM_{10}	24-hour (50 µg/m³)	22.9	38.9	59%
	Annual (25 µg/m³)	4.6	19.8	23%
$PM_{2.5}$	24-hour (25 µg/m³)	6.0	NA[a]	NA[a]
	Annual (8 µg/m³)	1.2	NA[a]	NA[a]
NO_2	1-hour (246 µg/m³)	158.8[b]	91.6	NA[b]
	Annual (62 µg/m³)	6.1[b]	12.7	NA[b]

[a] Only incremental $PM_{2.5}$ concentrations were predicted due to unavailability of background data from the St Marys Air Quality Monitoring Station (AQMS).

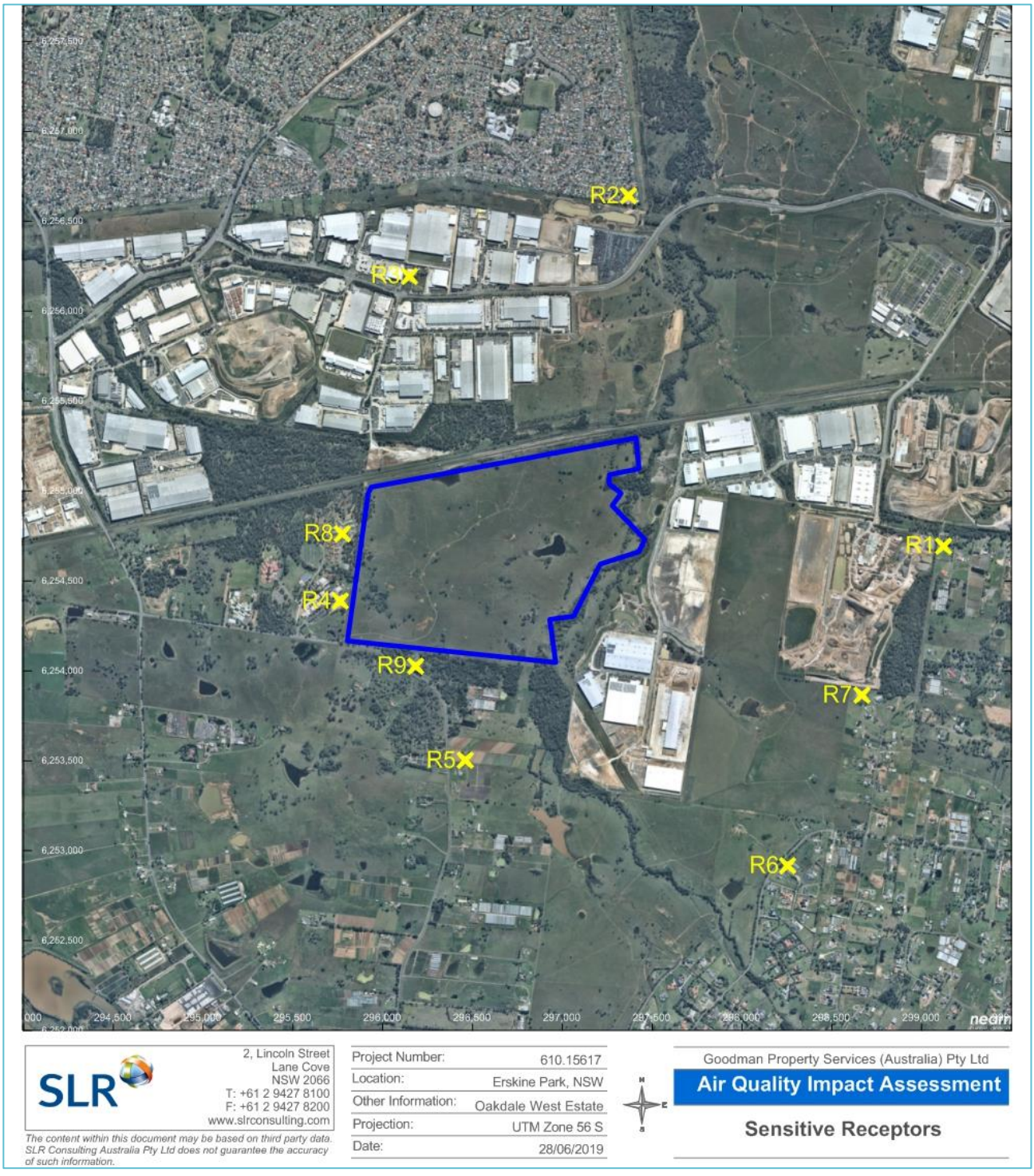
[b] The incremental concentrations represent the predicted NOx concentrations, while the cumulative concentrations represent the NO_2 concentrations, calculated using the Ozone Limiting Method (OLM).

Figure 1 Oakdale West Estate – Roads Modelled in the AQIA



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

Figure 2 Locations of Identified Sensitive Receptors



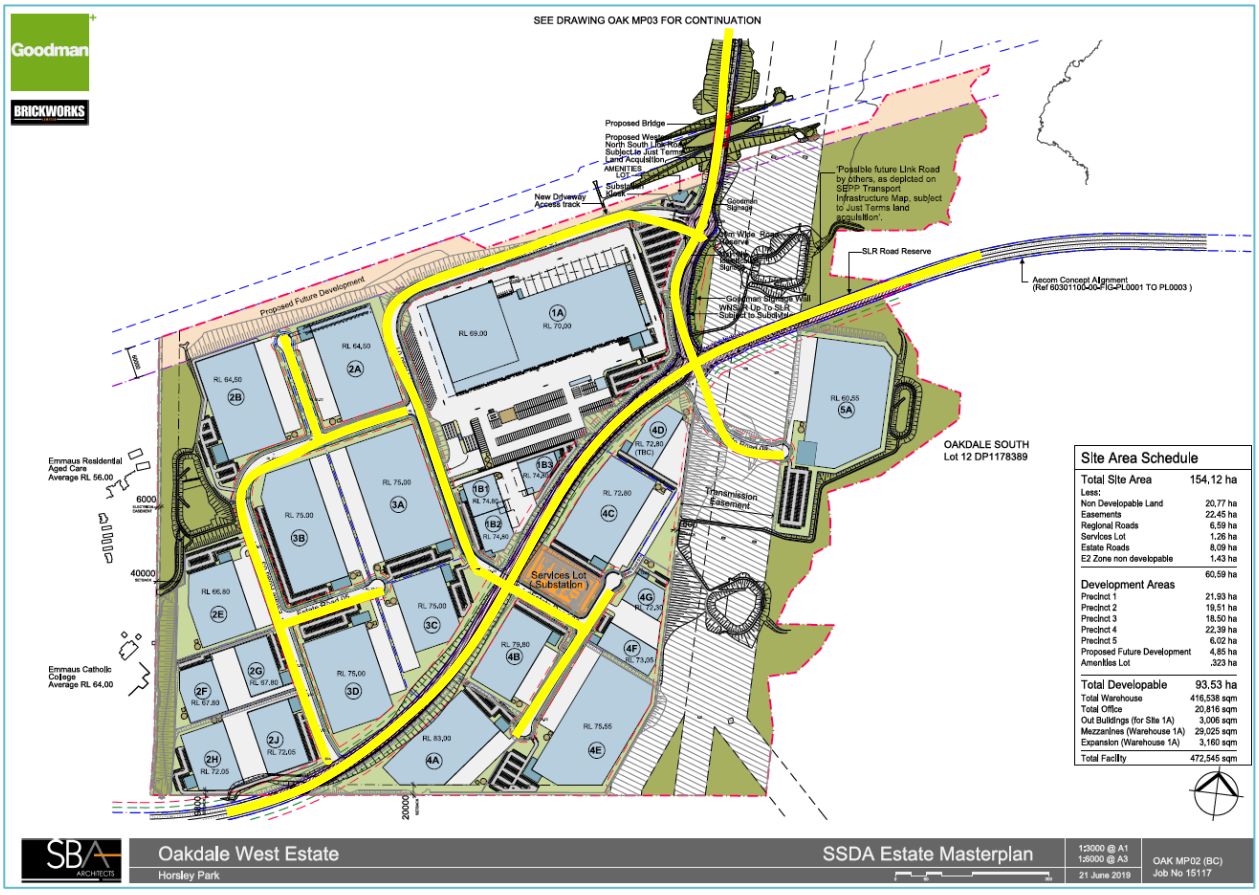
3 Modifications to the OWE Masterplan

Since the completion of AQIA in March 2017 (SLR Report # 610.15617-R01-v1.1), a minor modification is proposed to the OWE Masterplan, specifically:

- Change to Precinct 1 building layout;
- Height increase of Warehouse 1A from 13.7 m to between 27 m (lowbay) and 36 m (highbay);
- Automate Warehouse 1A, and include a dangerous goods (DG) store.

The updated masterplan is shown in **Figure 3**. A comparison of **Figure 1** and **Figure 3** shows that the revisions to the masterplan have not affected the road networks considered in the AQIA modelling study.

Figure 3 Oakdale West Estate – Updated Masterplan



Source: SBA Architects, SSDA Estate Masterplan, 21 June 2019, OAK MP02 (BC)

4 Precinct 1 DA (MOD 2) - Construction

The original AQIA performed by SLR for the OWE, dated 23 March 2017 (610.15617-R01-v1.1), assessed the potential air quality impacts associated with the construction of all five precincts within the OWE, and concluded that air quality impacts during construction of the OWE can 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 (MOD 2) 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 MOD 2 construction remains *low*. The recommended mitigation measures during the MOD 2 construction are reproduced in **Table 3**.

Table 3 Site-Specific Management Measures – OWE (610.15617-R01-v1.1)

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 PM_{10} 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 Precinct 1 DA (MOD 2) - Operations

As part of the Precinct 1 DA, the road network for Precinct 1 will remain unchanged. 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.

A review of the proposed GFAs for each precinct in the modified OWE masterplan has identified a minor decrease in the Precinct 1 GFA. A summary of the total precinct GFA and associated peak and daily vehicle numbers is shown in **Table 4**, and compared to that assessed in the AQIA completed in March 2017 (Report # 610.15617-R01 v1.1).

At the time of completion of AQIA in March 2017, the traffic numbers were provided by traffic consultants as a conservative estimate due to the Project uncertainties. The peak and daily vehicle numbers adopted in the AQIA were 1,426 vph and 16,544 vpd respectively.

Table 4 Vehicle Volumes Projected for each Precinct in OWE

Precinct	Proposed GFA (m^2)	Peak Vehicles per Hour (vph)	Vehicles per Day (vpd)
1	122,082[a]	103[b]	2,503[2]
2	107,111	175	2,027
3	102,466	167	1,939
4	113,693	185	2,151
5	35,640	58	674
Proposed OWE	**480,992**	**688**	**9,294**
TOTAL OWE (Report # 610.15617-R01-v1.1)		**1,426**	**16,544**

[1] Approved GFA for Precinct 1 is 116,359 m^2.

[2] The traffic generation due to Precinct 1 operations is based on seasonal peak operation.

As the air dispersion modelling was based on the vehicular emissions for the total OWE, it can be seen from **Table 4** that the air quality assessment for OWE 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 2**, which are well below guideline levels, provide a very conservative assessment of the expected worst case air quality impacts at the sensitive receptor locations.

6 Conclusions

Based on the above, it is concluded that a full revision of the original AQIA is not required to address the proposed revision to the layout of Precinct 1, and that air quality impacts should not be considered as a constraint to this development application.

Checked/
Authorised by: KL