

To: Stephanie Partridge
From: Varun Marwaha
Date: 14 January 2020
Subject: Requirement to Update Air Quality Impact Assessment
Oakdale West Estate (MOD 3 and Stage 2)

At: Goodman Property Pty Ltd
At: SLR Consulting Australia Pty Ltd
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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 Modification 3 (MOD 3, SSD 7348) and Stage 2 Development Application (SSD 10397) 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 3 and SSD 10397 are addressed in this report as shown in **Table 1**.

Table 1 SSD 7348 MOD 3 and SSD 10397 Conditions for Air Quality

SSD 7348 MOD 3 and SSD 10397 Conditions	Response
An assessment of air quality impacts at private properties during construction and operation , in accordance with Environment Protection Authority guidelines and details of mitigation, management and monitoring measures	Section 4 (construction) Section 5 (operations)

This report assesses the change in air quality impacts resulting from the altered Estate layout proposed under MOD 3 to SSD 7348, which has been informed by the proposed operational requirements and impacts of the proposed Stage 2 development at Building 2B under SSD 10397. As such, a separate analysis of the Stage 2 building is not required.

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**.

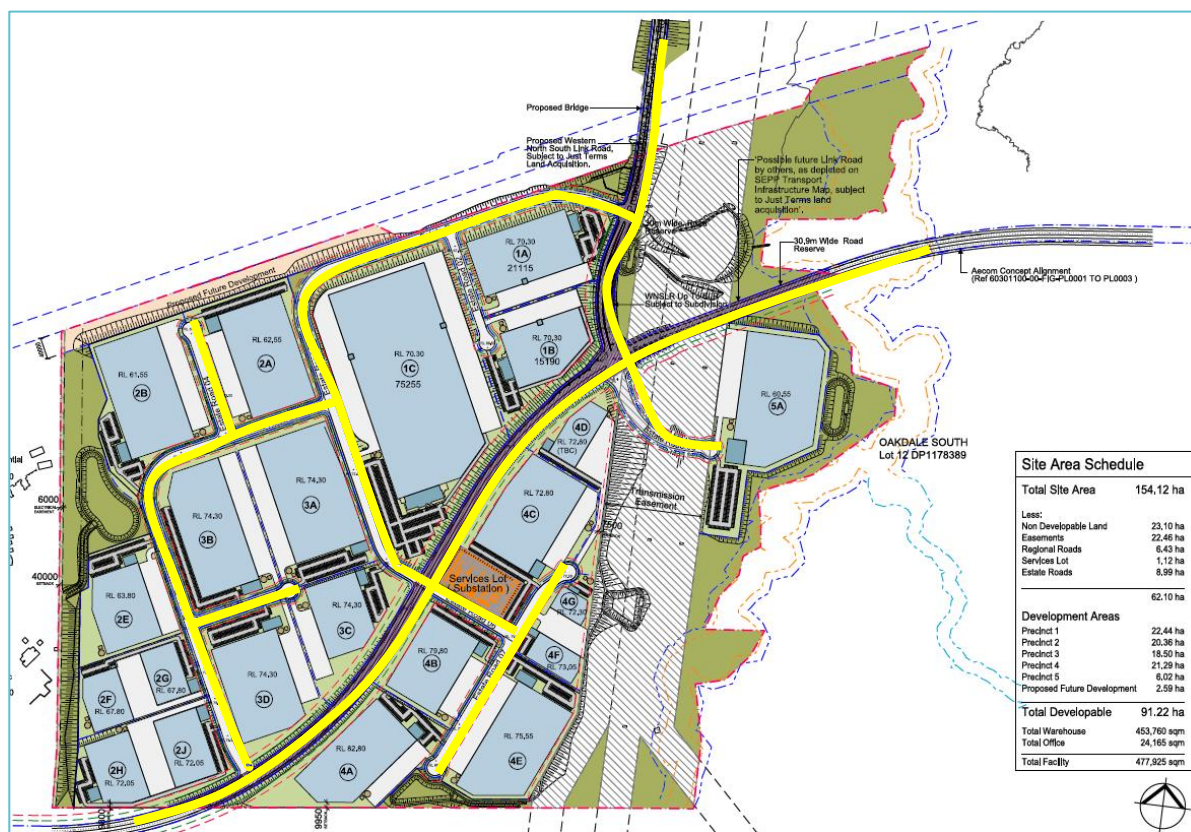
Table 2 Summary of Dispersion Modelling Results for OWE

Pollutant	Averaging Period (Criteria)	Incremental Impact of Emissions from: 'OWE' (precincts 1 to 5) at the Worst-Affected Sensitive Receptor ($\mu\text{g}/\text{m}^3$)	Cumulative Impact of Emissions from: 'OWE' (precincts 1 to 5) plus Regional Background Levels at the Worst-Affected Sensitive Receptor ($\mu\text{g}/\text{m}^3$)	Contribution of 'OWE' to total Predicted Cumulative Concentrations
TSP	Annual (90 $\mu\text{g}/\text{m}^3$)	13.8	44.2	31%
PM ₁₀	24-hour (50 $\mu\text{g}/\text{m}^3$)	22.9	38.9	59%
	Annual (25 $\mu\text{g}/\text{m}^3$)	4.6	19.8	23%
PM _{2.5}	24-hour (25 $\mu\text{g}/\text{m}^3$)	6.0	NA ^a	NA ^a
	Annual (8 $\mu\text{g}/\text{m}^3$)	1.2	NA ^a	NA ^a
NO ₂	1-hour (246 $\mu\text{g}/\text{m}^3$)	158.8 ^b	91.6	NA ^b
	Annual (62 $\mu\text{g}/\text{m}^3$)	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).

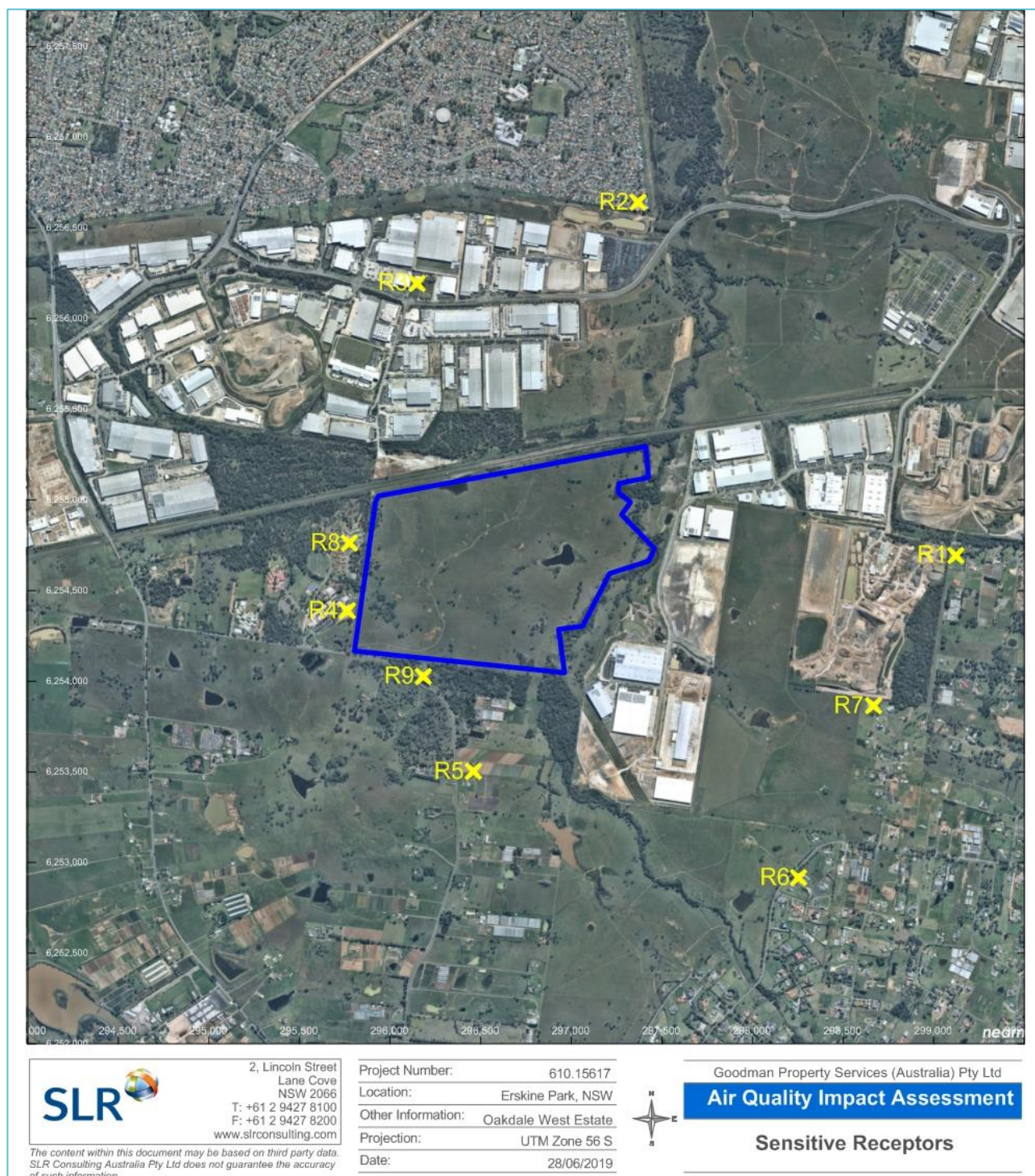
^b The incremental concentrations represent the predicted NO_x concentrations, while the cumulative concentrations represent the NO₂ concentrations, calculated using the Ozone Limiting Method (OLM).

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



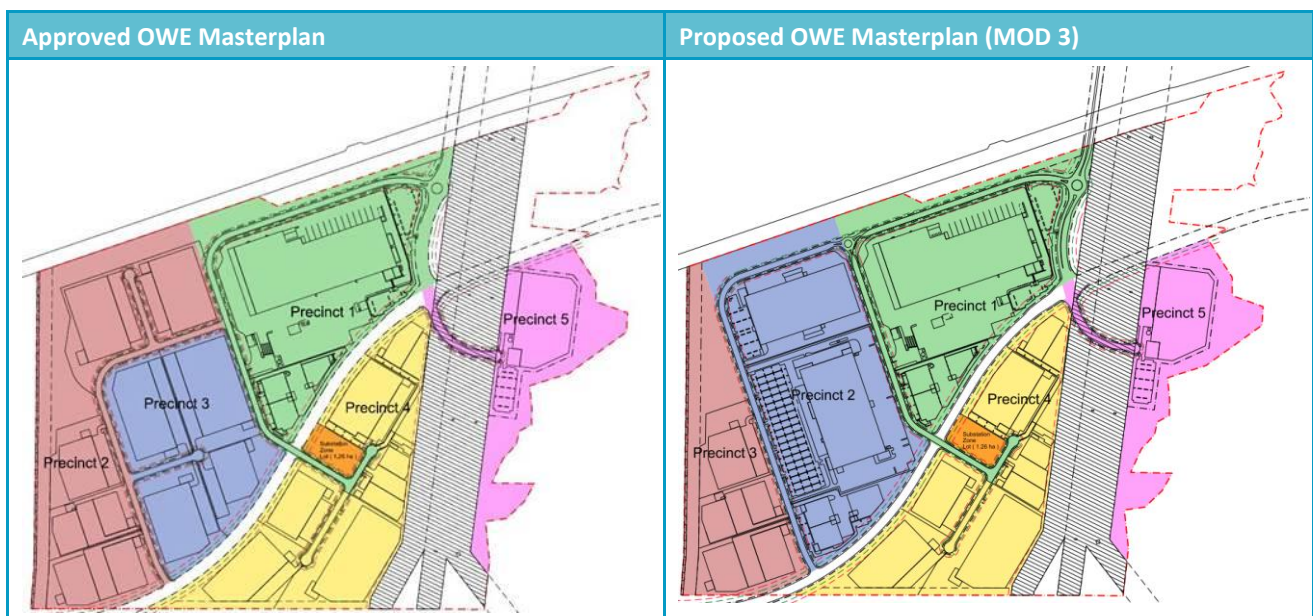
3 Modifications to the Approved Concept Masterplan and Proposed Building 2B

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

- alterations to the masterplan layout and staging
- increase in gross lettable area
- alterations to the internal road network
- alterations to the civil design, retaining wall, building pad levels, noise wall and storm basin, and
- increase in building heights.

The approved and proposed OWE masterplan is shown in **Figure 3**.

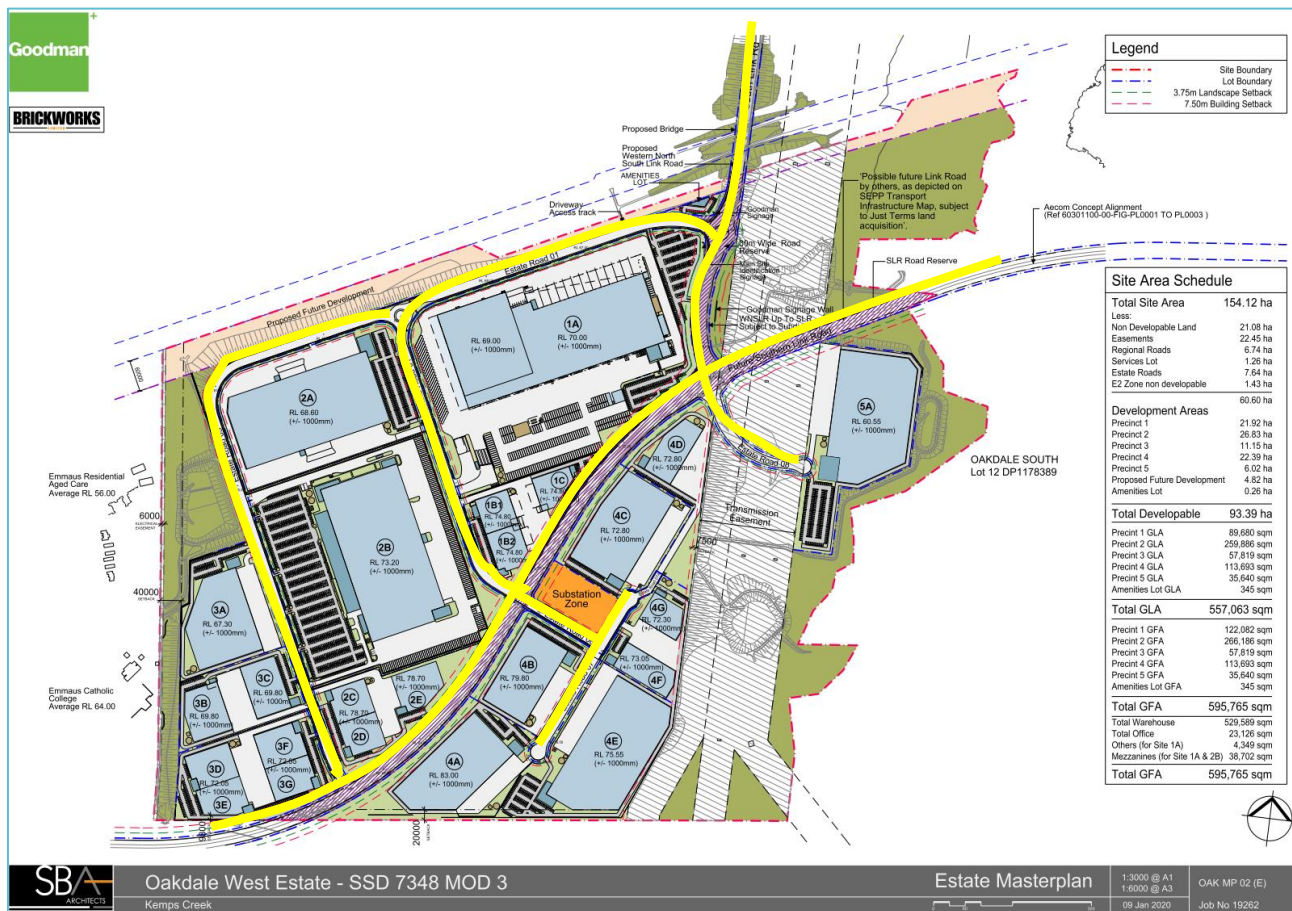
Figure 3 Oakdale West Estate – Approved and Proposed Masterplan



A comparison of the approved and proposed masterplan (**Figure 3**) shows that the revisions to the OWE masterplan will affect the road network considered in the AQIA modelling study. The updated OWE masterplan along with the proposed road network is shown in **Figure 4**.

The development of Stage 2 relates to building 2B in Precinct 2 under SSD 10397. A site plan for Stage 2 is shown in **Figure 5**.

Figure 4 Updated OWE Masterplan (MOD 3)



Source: SBA Architects, SSDA Estate Masterplan – MOD 3, 9 January 2020, OAK MP02 (E)

Figure 5 Updated Site Plan for Building 2B in Precinct 2 - Stage 2



Source: SBA Architects, Project Waratah, 10 January 2020, DA101 revision G.

4 MOD 3 and Stage 2 Development - 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*.

An assessment of the proposed modifications to the Estate civil construction works proposed under MOD 3 to SSD 7348, and the detailed construction proposed for building 2B under SSD 10397 has found that the magnitude of construction impacts is unlikely to change from that considered under the original AQIA. Hence the residual risk of dust emissions during Estate-wise construction (in accordance with MOD 3) and Building 2B construction (in accordance with SSD 10397) remains *low*. Therefore, the recommended mitigation measures during the MOD 3 and Stage 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 MOD 3 and Stage 2 Development – Operations

An operational assessment of the OWE Estate layout as proposed by MOD 3 to SSD 7348 has been undertaken to determine the air quality impacts. This accounts for the proposed, known, operational requirements of the Stage 2 building under SSD 10397. As such, the below assessment covers both the MOD 3 and Stage 2 (Building 2B) traffic and operational requirements.

As part of the MOD 3, the road network for OWE will change. The peak hourly traffic volumes and daily traffic volumes are 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 m² of industrial gross floor areas (GFA) including ancillary office floor space.
- 0.163 peak hour vehicle trips per 100 m² 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 change in all of the precincts' GFAs, with the exception of Precinct 5. A summary of the individual 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 ^a (m ²)	MOD 3 ^b		Approved SSD 7348	
		Peak Vehicles per Hour (vph)	Vehicles per Day (vpd)	Peak Vehicles per Hour (vph)	Vehicles per Day (vpd)
1	122,082 (116,359)	103	2,503	190	2,202
2	266,186 (105,425)	920	4,901	172	1,995
3	57,819 (99,967)	94	1,094	163	1,891
4	113,693 (120,988)	185	2,151	197	2,289
5	35,640 (32,530)	58	674	53	615
Proposed OWE	595,420 (475,269)	1,360	11,324	775	8,992
TOTAL OWE (Report # 610.15617-R01-v1.1)		1,426	16,544		

^a The approved GFAs for each precinct within the OWE (SSD 7348), are shown in brackets.

^b The 'seasonal peak' for building 1A tenant and building 2B tenant have been assumed to be occurring at the same time.

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 (610.15617-R01-v1.1) for OWE was based on higher hourly peak and daily traffic estimates than currently proposed under MOD 3 proposal. The hourly peak and daily traffic estimates for the approved SSD 7348 are also shown for comparison.

Even though the distribution of emission sources within the OWE will change as the locations of roads within the OWE are proposed to change, the change in downwind concentration attributed to the source location is considered negligible due to the separation distance between the modelled source and the receptors.

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 concept masterplan (MOD 3) and Stage 2 Development, and that air quality impacts should not be considered as a constraint to this development application.

Checked/ Authorised by: KL
