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Subject:	Aspect Industrial Estate Noise Assessment Addendum		

1 Introduction

This memo provides additional information regarding the acoustic assessment for the proposed Aspect Industrial Estate in Kemps Creek, NSW. This document acts as an addendum to SLR Report 610.19127-R02, *Aspect Industrial Estate, SSDA, Noise and Vibration Assessment*, (the SSDA NVIA) dated February 2021.

2 Noise Policy for Industry – Amenity Noise Levels and Clusters of Industry

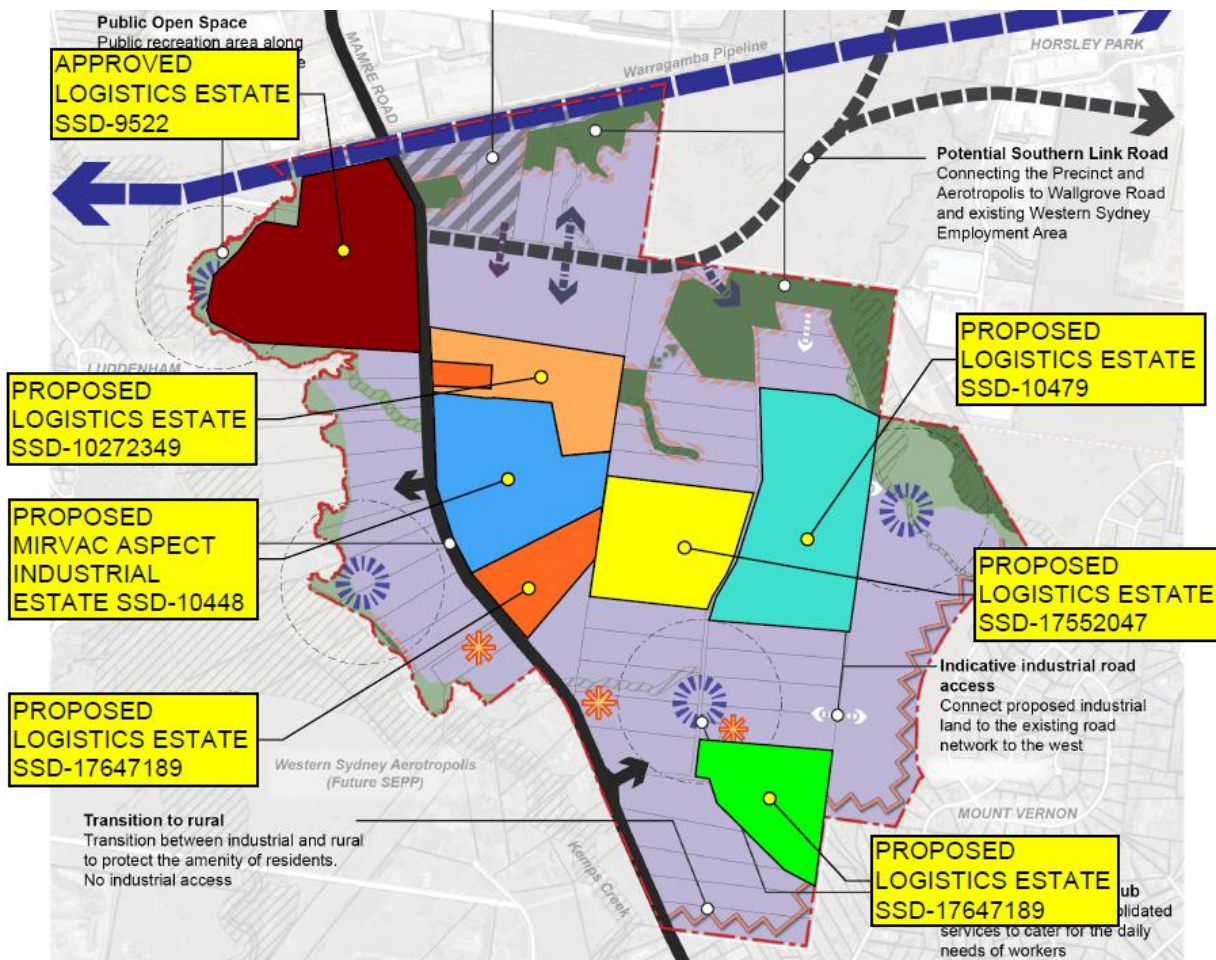
The *Noise Policy for Industry* (NPfI) describes ‘trigger levels’ which indicate the noise level at which feasible and reasonable noise management measures should be considered. Two forms of noise criteria are provided – one to account for ‘intrusive’ noise impacts and one to protect the ‘amenity’ of particular land uses.

- The **intrusiveness** of an industrial noise source is generally considered acceptable if the L_{Aeq} noise level of the source, measured over a period of 15 minutes, does not exceed the background noise level by more than 5 dB.
- To limit continual increases in noise levels from the use of the intrusiveness level alone, the ambient noise level within an area from all industrial sources should remain below the recommended **amenity** levels specified in the NPfI for that particular land use.

The NPfI notes that the approach for deriving the project amenity noise level based on recommending the amenity noise level minus 5 dB assumes that a receiver is not impacted by more than four individual industrial noise sources. Where a greenfield site is proposed to be redeveloped and contains more than four new noise-generating premises, the project amenity noise level should be determined using Section 2.4.2 of the NPfI, which reduces the project amenity level on the basis of the number of proposed developments.

The approved and proposed developments in the vicinity of the Aspect Industrial Estate are shown in **Figure 1**.

Figure 1 Approved and Proposed Developments near Aspect Industrial Estate



The above shows that the receivers identified in the SSDA NVIA as potentially affected by the Aspect Industrial Estate are not expected to be impacted by more than four individual noise sources, when shielding and restriction of line-of-sight that the buildings and structures on the various industrial estates would provide to the more distant estates is accounted for.

As such, the amenity noise level minus 5 dB approach as used in the SSDA NIA is considered to sufficiently account for potential cumulative noise levels from the wider precinct.

Though it should be noted that the entire Mamre Road Precinct was rezoned in June 2020 to IN1 – General Industrial under the Western Sydney Employment Area State Environmental Planning Policy (WSEA SEPP).

3 Off-site Operational Road Traffic Noise Levels on Mamre Road

The potential off-site operational road traffic noise impacts to the south of the proposal from traffic associated with the development on Mamre Road were assessed in the SSDA NVIA. The assessment predicted the potential daytime impacts based on peak hour traffic data, due to daytime and night-time data not being available at the time of the assessment.

The SSDA NIA predicted a worst-case increase in road traffic noise levels of 2.0 dB for receivers to the south on Mamre Road and concluded that, based on the data provided, mitigation was not required to be considered. The SSDA NIA noted that daytime and night-time noise levels could, however, potentially be higher than those predicted for the peak hour.

Additional information regarding operational road traffic associated with the proposal has become available since completion of the SSDA. This data includes:

- Daytime and night-time predicted traffic volumes from the development
- Information regarding the type of heavy vehicles that may access the development. This may include increased numbers of PBS 2B A-double heavy vehicles in comparison to existing traffic on Mamre Road.

3.1 Traffic Volumes

The proposal related traffic volumes for the daytime and night-time period on Mamre Road and are shown in **Table 1** in comparison to existing volumes, noting that the traffic from the development would be dependent on the future tenants which is currently unknown. As such, the volumes should be regarded as indicative.

Table 1 Daytime and Night-time Traffic Volumes on Mamre Road

Vehicle Type	Existing Traffic ¹		Stage 1		Concept Masterplan	
	Daytime (7am to 10pm)	Night-time (10pm to 7am)	Daytime (7am to 10pm)	Night-time (10pm to 7am)	Daytime (7am to 10pm)	Night-time (10pm to 7am)
Light	13,591	851	945	285	4,072	1,230
Heavy	3,181	83	362	108	1,544	467

Note 1: Existing traffic volumes on Mamre Road has been taken from the M12 Motorway EIS.

The revised assessment of the potential operational road traffic noise impacts from traffic associated with the development is provided in **Table 2**.

Table 2 Off-site Road Traffic Noise Assessment

Period	Is a Noticeable Increase in Traffic Noise Predicted (ie >2.0 dB from Existing)	
	Stage 1	Concept Masterplan
Daytime	No	No
Night-time	Yes	Yes

The above assessment shows that a noticeable increase in road traffic noise levels (ie greater than 2.0 dB) is likely for receivers to the south of the development and outside of the Mamre Road Precinct during the night-time and mitigation may need to be considered.

As noted in **Section 3**, the proposal has the potential to result in increased number of PBS 2B A-double heavy vehicles on Mamre Road. Larger heavy vehicles, such as b-doubles and PBS 2B A-doubles, generate more noise than smaller heavy vehicles which may results in additional adverse impacts at receivers to the south of the development on Mamre Road if the proposal increases the number of these types of vehicles. PBS 2B A-doubles also take longer to accelerate to 80 km/h than other heavy vehicles which may result in increased noise impacts to the south of the development. The acceleration profile for PBS 2B A-doubles has been investigated in **Section 3.2**.

It is however noted that Mamre Road is currently an approved PBS 2B route and if the proposal were to result in increased volumes of PBS 2B A-double heavy vehicles, then these PBS 2B A-doubles would likely replace a substantial amount of single articulated trucks and b-doubles, which would be a reduction in the overall number of heavy vehicles on Mamre Road and may result in a reduction in road traffic noise levels at nearby receivers.

Supporting the above statement regarding reduction in the overall number of heavy vehicles, the Austroads 2018 publication, *Modelling for High Productivity in Metropolitan Areas*, notes:

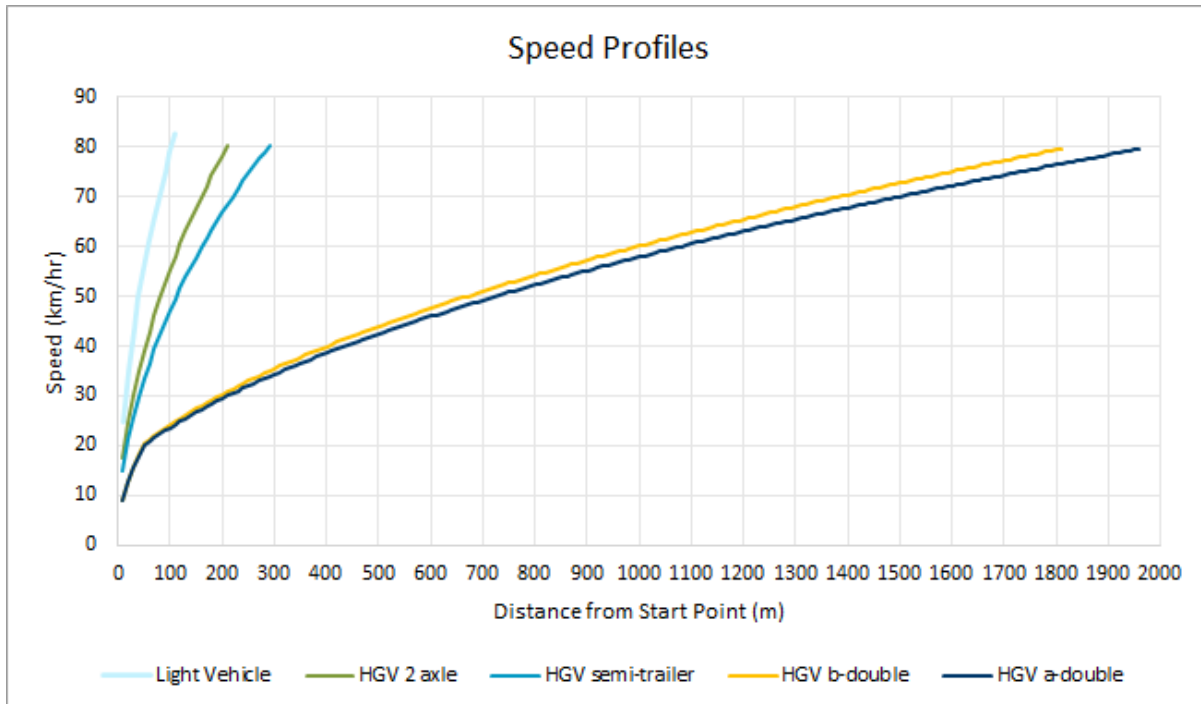
- If a route has no or limited constraints to PBS 2B operations (such as mass limits or loading / unloading facility constraints) and it is expected to have a high level of take-up, then a possible conversion of 50% to 75% may be applied.
- Assuming that freight tasks do not change then PBS 2B conversions scenarios could be as follows:
 - 6 single articulated trucks can be replaced by 3 PBS 2B vehicles; and
 - 4 B-Doubles can be replaced by 3 PBS 2B vehicles.
- During preparation of this Noise Assessment Addendum, TfNSW' Traffic Modelling and Analysis Leader, Vince Taranto, advised assumed PBS 2B uptake to be in the order of 75%. Though given the complexities and significant assumptions (in relation to freight tasks) that would need to be taken to undertake a conversion to PBS 2B vehicles, no conversion to PBS 2B vehicles and subsequent reduction of overall number of heavy vehicles has been assumed as part of this assessment.

3.2 Truck Acceleration Profiles

PBS 2B A-doubles heavy vehicles have a higher mass than other heavy vehicles and therefore generally require a longer distance to accelerate when fully laden. Receivers to the south of the proposal on Mamre Road may therefore be impacted by engine noise from higher volumes of PBS 2B A-double trucks accelerating in this direction when compared to the existing situation.

Acceleration profiles for various vehicle types are shown in **Figure 2** based on typical acceleration rates.

Figure 2 Speed Profiles for Vehicle Types

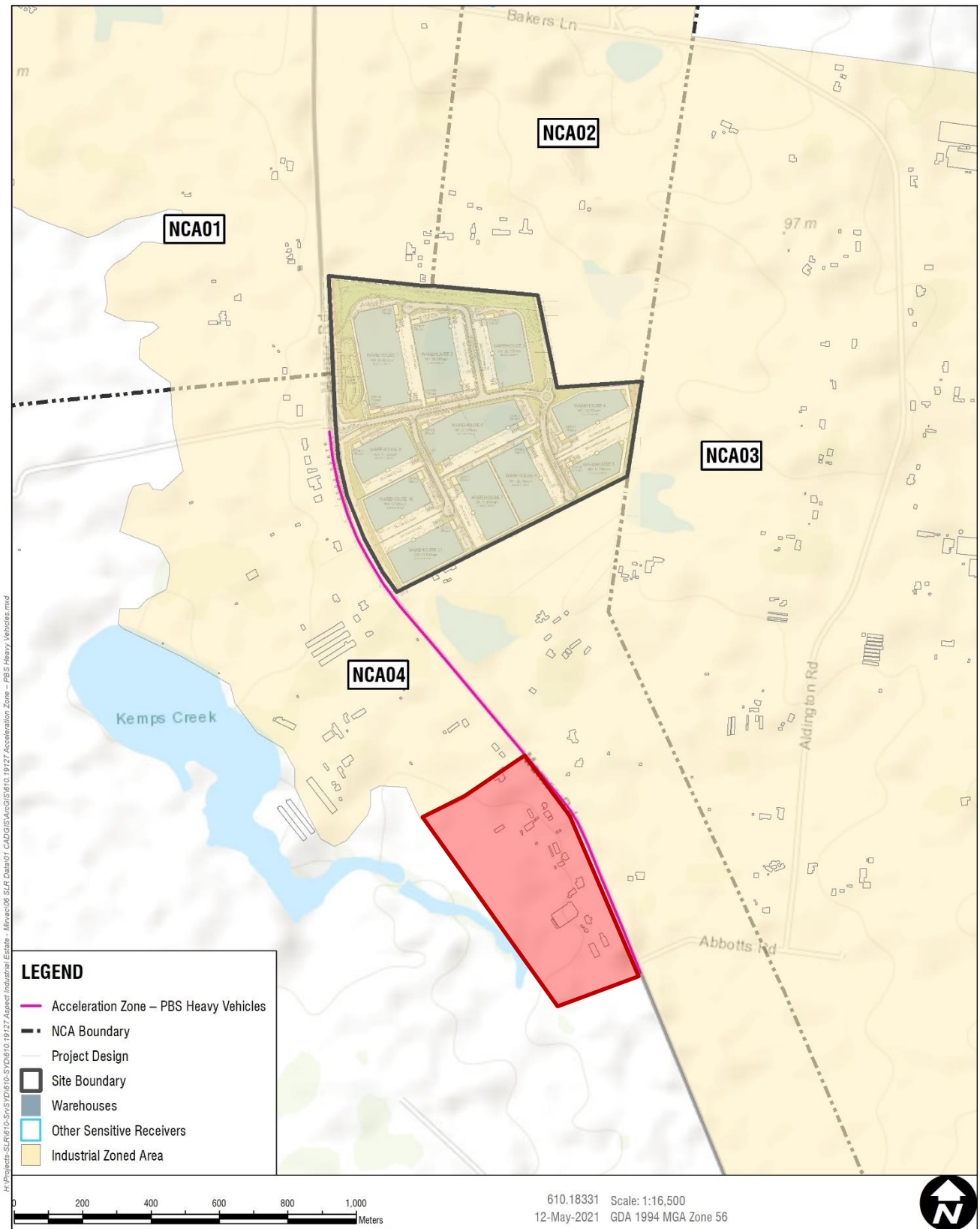


Note: The acceleration profiles are based on typical rates and include a number of assumptions regarding load, driving mode, etc.

The above graph shows that PBS 2B A-double heavy vehicles at high mass may take around 1.95 km to reach the 80 km/h posted speed on Mamre Road. This represents an increase of around 8.5% in the acceleration distance for PBS 2B vehicles compared to around 1.8 km for fully laden B-double vehicles. The approximate acceleration zone for 2B A-double vehicles is shown in **Figure 3**.

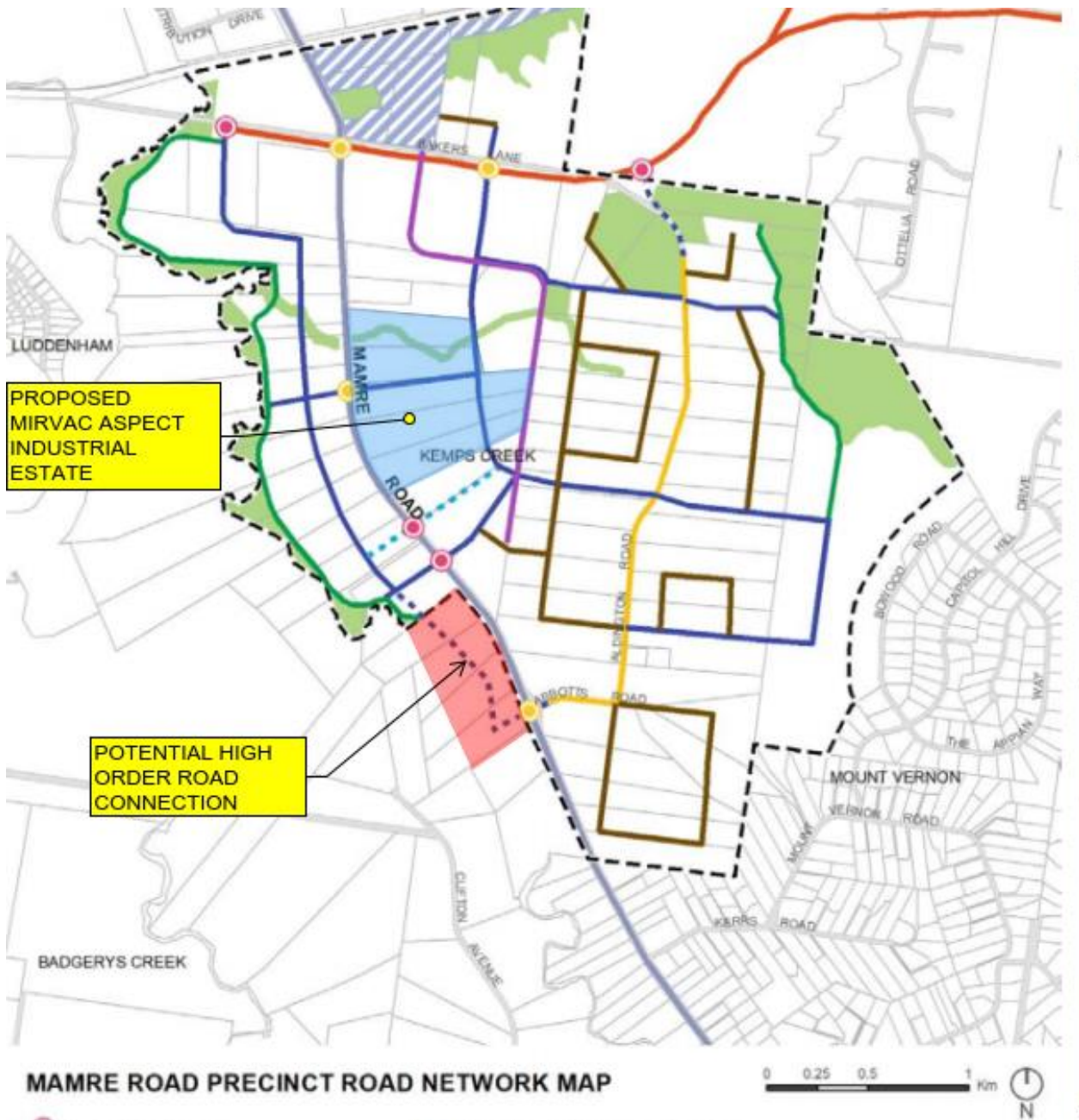
It is noted that most adjacent receivers are within the Mamre Road Precinct which was rezoned to industrial in June 2020 and are therefore not permanent receivers. The area of permanent residences which may be affected by engine noise from accelerating 2B A-double vehicles from the Aspect Industrial Estate as also shown in the figure (in red).

Figure 3 Acceleration Zone for PBS A-Double Heavy Vehicles and Potentially Affected Area of Permanent Receivers



It should be noted that while the potentially affected area is not zoned for IN1 – General Industrial uses within the Mamre Road Precinct, the *draft Mamre Road Precinct Development Control Plan - Figure 14 – Precinct Road Network and Hierarchy*, indicates a potential high order road connection to be provided through these allotments, as shown below within **Figure 4**.

Figure 4 Extract from draft Mamre Road Precinct Development Control Plan



3.3 Noise Mitigation

The assessment indicates the potential for noise impacts from off-site road traffic (increased volumes, altered mix of heavy vehicles, and from additional PBS a-double trucks accelerating) and that mitigation may need to be considered. It is noted that this assessment is based on several assumptions regarding the likely traffic requirements of the prospective future tenants and should be regarded as indicate of the potential impacts.

Where noise impacts from off-site traffic are confirmed, Transport for NSW as the Roads Authority for Mamre Road would be the appropriate party for determining the appropriate mitigation strategy and implementing the selected measures.

Noise mitigation strategies that may be appropriate include:

- **Restricting PBS 2B A-double heavy vehicle access to the proposed site.** In the event that a-double heavy vehicles are determined to be a cause of increased noise impacts, the restriction of their use could be used to the site. This approach is however unlikely to be justified as it would limit the functional capacity of the proposal and would not align with the future expectations of the Mamre Road Precinct.
- **At-source mitigation – quieter road pavement surfaces.** Low noise pavements reduce source noise levels, which provides noise level benefit to both outside areas and internal spaces. Low noise pavements have no associated visual impact and are also likely to provide noise benefits to receivers at greater distances than alternative such as noise barriers. Low noise pavements are, however, not effective where vehicles speeds are low and they would have no effect on heavy vehicle engine noise.
- **In-corridor mitigation – noise mounds and/or noise barriers.** In-corridor mitigation aims to block line-of-sight from the source of noise to nearby receivers. Noise barriers (in the form of walls or mounds) can provide significant noise reductions and also reduce both external and internal noise levels.

Noise barriers can, however, result in other impacts such as reduced access to property and utilities, visual impacts, overshadowing, changes to drainage, and safety concerns. These potential impacts need to be considered when determining if installation of noise barriers is justified.

- **At-receiver mitigation – at-property treatments.** Residual impacts which remain after the use of at-source and in-corridor mitigation are typically addressed using at-property mitigation. At-property treatment typically involves using architectural treatments such as thicker glazing and doors, or upgraded facade constructions to achieve appropriate internal noise levels. Installation of boundary acoustic fences or walls close to the receiver can also be considered, which can have the benefit of reducing noise levels in outdoor spaces.
- **Rezone the potentially affected landholdings.** As the draft Mamre Road Precinct Development Control Plan indicates a potential high order road connection through the identified affected areas, a potential avoidance strategy may be for the Department of Planning, Industry and Environment to include these areas within the Mamre Road Precinct and IN1 – General Industrial land uses.

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Authorised by: MI