

To: Steve Foster
From: Mark Irish
Date: 21 December 2020
Subject: Horsley Logistics Park
Response to Additional DPIE Submission

At: ESR
At: SLR Consulting Australia Pty Ltd
Ref: 610.19360-M02-v0.2 Additional DPIE
Response.docx

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ESR is proposing to develop a new industrial estate, the Horsley Logistics Park (the development), that will be located at 327-335 Burley Road, Horsley Park, in New South Wales (NSW). SLR Consulting Australia Pty Ltd (SLR) has been engaged by ESR to prepare a Noise and Vibration Impact Assessment (NVIA) for the development to assess potential noise impacts associated with the construction and operation of the project. The report forms part of the State Significant Development Application (SSDA) for the development.

Following submission of the NVIA, the NSW Department of Planning, Industry and Environment (DPIE) has provided additional comments by email on Tuesday 17 November 2020, reproduced below. This memorandum includes SLR response to the DPIE comments.

DPIE Issue 1:

The operational noise assessment reported predicted 15-minute energy-averaged noise levels would just comply with the night-time criterion of 38 dB(A) at residences in NCA01 and NCA02 to the south of the site whilst predicted noise levels are expected to exceed criterion by 6 dB at residences to the east in NCA03. This modelled scenario included a combination of source and path noise control measures such as:

- *orientation of heavy vehicle loading areas and access routes away from the southern and eastern site boundary as far as practicable, to take advantage of screening afforded by building envelope.*
- *a 3 m height x 80 m length masonry acoustic wall along the southern end of the western truck storage/hardstand area on Lot 201.*
- *a solid wall to the full length of the southern end of the Lot 204 canopy (hardstand to canopy height).*
- *rooftop plant screening and limiting the rooftop plant to an effective sound power level of 80 dB(A) per unit.*

The effectiveness of noise mitigation measures described in points 1, 2 and 3 is not clearly identified in the NVIA.

SLR Response to Issue 1:

A number of iterative changes were carried out in collaboration with ESR during the design development stage to refine the layout and optimise the location, orientation and screening from buildings to assist in providing acoustic screening to the most affected receivers.

Additional noise walls were proposed in two locations (at Lot 201 and Lot 204), as described in the NVIA, to provide mitigation of noise level exceedances.

To illustrate the effectiveness of the proposed noise barriers, the following source contributions are provided for one example receiver in each noise catchment NCA01 and NCA02. These are the most significant noise sources at this location with and without the proposed indicative noise barriers. The predicted noise levels are for night-time, weather enhanced conditions as this is the controlling time period for the assessment.

Table 1 NCA01 Example Receiver – Noise source ranking

Noise Source	Unmitigated noise level contribution - no barriers		Mitigated noise level contribution - with barriers	
	LAeq	Highest LAmax	LAeq	Highest LAmax
HV hardstand Lot 201	31.2	60.4	25.0	51.8
201 LV	30.1		22.4	
201 HV	26.3		26.3	
204 HV	25.6		21.5	
Forklifts 201	24.6		24.6	
203 HV	24.1		23.7	
202(B) HV	22.9		22.9	
202(A) HV	21.6		21.6	
201 (2) Condenser	20.4		20.4	
201 (1) Condenser	20.4		20.4	

Table 2 NCA02 Example Receiver – Noise source ranking

Noise Source	Unmitigated noise level contribution - no barriers		Mitigated noise level contribution - with barriers	
	LAeq	Highest LAmax	LAeq	Highest LAmax
203 HV	37.3		26.9	
201 (2) Condenser	32.8		22.2	
204 HV	32.3		26.2	
204 (1) Condenser	31.6		21.6	
201 (3) Condenser	31		21.5	
Forklifts 204	30.7	55.4	26.2	53.9
201 (1) Condenser	30.3		20.5	
Forklifts 203	28.4		23.3	
202(B) HV	28.3		22.3	

Noise Source	Unmitigated noise level contribution - no barriers		Mitigated noise level contribution - with barriers	
Forklifts 204-B	27.3		21.6	

DPIE Issue 2:

Predicted operational noise levels are said to reflect the site when all stages of the masterplan are fully operational. However, the Department notes the outcome of the assessment is dependent upon the accuracy/correctness of modelled operational activities. In addition to rooftop mechanical plant, Table 24 as presented below shows the other noise generating sources included in the noise model.

Table 24 Sound Power Levels for Onsite Vehicle Movements

Noise Source	Sound Power Level (SWL), per vehicle	Average Speed
Heavy Vehicles	103 dBA ¹	25 km/h
Light Vehicles	96 dBA	40 km/h
Gas-powered Forklifts ²	93 dBA	n/a

Note 1: Based on SLR's noise measurement database, this sound power level is typical of trucks travelling at low speeds, such as within industrial estates.

Note 2: If electric forklifts are proposed for the development, noise emissions from forklifts would be considerably lower than gas-powered forklifts.

Comments on modelling assumptions are as follows:

Heavy vehicle sound power level is typical of trucks travelling at low speeds. This assumed source emission scenario does not appear to include noise from acceleration, reversing alarm and during idle.

The NVIA assumed heavy vehicles would move at an average speed of 25 km/h. There is insufficient information in the EIS to verify this assumption. Source emission is sensitive to vehicle passage speed. For example, lowering heavy vehicle speed from 25 km/h to 10 km/h would increase the contribution of noise associated with heavy vehicles by around 4 dB.

Forklift movements have been modelled in the at-grade dock areas of the hardstands. One forklift has been assumed for every two heavy vehicles onsite.

SLR Response to Issue 2:

Heavy vehicle SWLs were modelled at 103 dB per vehicle as indicated in Table 24 of the report. This SWL has been used with reference to the paper 'Sound power levels of trucks at low speeds' (Granneman et al, Internoise 2009) and ongoing refinement of SLR source noise levels across many design and compliance assessment projects.

This noise level is considered representative for a broad range of heavy vehicle types travelling at a range of low speeds from 10 km/h to 30 km/h as indicated in the Internoise paper. This is considered a reasonable basis for this assessment, given the current level of detail available for the proposal does not include specific information regarding the type of vehicles associated with each Lot.

In order to assess the possibility of sleep disturbance from peak events, in addition to the above noise sources, heavy vehicle brake releases and reverse alarms (non-tonal) have been modelled at all points along the heavy vehicle routes and in the hardstand areas of the development with a L_{Amax} SWL of 117 dB, and light vehicles have been modelled with a L_{Amax} SWL of 100 dB.

As a conservative assessment, all forklift movements have been modelled as external to the building envelope for each Lot. Depending on the final configuration and operational considerations, some forklift movements may occur inside the building which would reduce the overall noise contribution from this activity. One forklift per two heavy vehicles is considered a reasonable assumption based on previous project experience as the operational requirements of each warehouse is not known at this stage.

DPIE Issue 3:

In addition, there is no mention of corrections for annoying characteristics in the NVIA. Fact sheet C of EPA's Noise Policy for Industry (NPfI) specify penalty factors for noise heard/predicted/measured at a receiver location with annoying characteristics such as tonality, intermittency, or dominant low-frequency content. If the noise is likely to be intermittent and tonal, a correction of 10 decibels would need to be added to the predicted noise levels. Unless appropriately justified in the NVIA, the Applicant would need to implement best management practice and/or mitigation measures to minimise the prominence of intermittency and tonality of the sounds heard at noise affected residential receivers.

SLR Response to Issue 3:

With regard to modifying factors described in Fact Sheet C of the NPfI, SLR does not anticipate penalties associated with the factors to be applicable to this development for the following reasons.

Tonality

The most likely potential source of tonality would be reversing alarms, however, it is expected that non-tonal reversing alarms would be used as standard for any Lot operators so no such penalty is required.

Following selection of mechanical plant during detailed design, some plant items may exhibit tonal characteristics when considered individually. Any tonal characteristics of specific plant items are considered unlikely to be apparent in the overall site noise profile at a given receiver location. This should be assessed during detailed design once plant selections are made and any relevant engineering controls applied.

Dominant low frequency content

Under the definition included in Fact Sheet C of the NPfI, this is not considered relevant to the noise sources considered in this assessment (ie heavy and light vehicle movements, forklifts and external mechanical plant).

Intermittent noise

The NPfI definition of the intermittent noise modifying factor and associated correction are provided in **Table 3**.

Table 3 NPfl Intermittent Noise Modifying Factor Definition and Associated Correction

NPfl Definition	Assessment/ measurement	When to apply	NPfl Correction	Application
noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology	Subjectively assessed <i>but should be assisted with measurement to gauge the extent of change in noise level.</i>	The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.	5 dB	Adjustment to be applied for night-time only.

Subjective definitions of noise characteristics are by definition subject to an individual’s interpretation and experience. It is therefore difficult to clearly define what a typical person would subjectively characterise as intermittent noise in cases where the intermittency is not overwhelmingly obvious.

SLR interprets the NSW EPA’s intentional use of the term ‘sudden’ as it relates to intermittent noise definitions in the NPfl as meaning the noise rapidly changes in a clearly abrupt manner over a short time period. Based on this interpretation, the principle sources of noise at the development (ie vehicle movements, mechanical plant, etc) are likely to be fairly constant sources or have a gradual rise and fall over time, such as during a vehicle passby. These sources are not considered ‘sudden’ as they are unlikely to result an immediate change in noise level state.

An example of a ‘sudden’ event would be a noise source similar to the dropping of a load, truck engine start, or other event that rapidly increases above the prevailing ambient noise level and then similarly decreases rapidly. Although such events could occur periodically throughout the industrial estate, SLR does not consider it likely that at a given receiver location, events significant enough to alter the ambient noise level by more than 5 dB would occur several times during the assessment period and meet the definition of intermittency in **Table 3**.

Checked/
 Authorised by: AW

To: Steve Foster
From: Mark Irish
Date: 11 December 2020
Subject: Horsley Logistics Park
Response to Additional Jacfin Submission

At: ESR
At: SLR Consulting Australia Pty Ltd
Ref: 610.19360-M03-v0.1 Additional Jacfin
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Following submission of the NVIA, Jacfin Pty Ltd (Jacfin) has provided a Submission on Response to Submissions Report (HWL Ebsworth report reference PNL:ACS:979050 dated 1 December 2020). This document includes a peer review report from Acoustic Dynamics (report reference 5074L001.BC.201201 dated 30 November 2020).

This memorandum includes SLR response to the above mentioned Jacfin submission.

Jacfin Issue 1: Incomplete Acoustic Modelling

The Revised SLR Report has now modelled for the use of the truck hardstand area located on the southern boundary of the Site. The report proposes that the Development will comply with the Site specific noise criteria provided that a 3 metre high barrier is erected. However, the Revised SLR Report fails to set out the calculation or modelling used to reach this calculation identifying the manner in which these calculations are achieved.

The further acoustic assessment fails to correctly model and properly assess the acoustic impacts associated with the use of the 232 space carpark and truck hardstand areas at the south-west corner of the Site. When correctly modelled, the Development fails to comply with the site specific noise criteria and the sleep disturbance criteria.

Notwithstanding any other noise generating use, Acoustic Dynamics calculate that taking into account the truck reversing alarms, the noise level at the boundary of the Jacfin residential land will increase to a LAeq(15 minute) noise level of 47 dB(A). This noise level represents the following exceedances of the Site specific noise criteria:

- (a) Daytime (standard) LAeq(15 minutes) 7 dB(A).*
- (b) Evening (standard) LAeq(15 minutes) 7 dB(A).*
- (c) Night-time (noise-enhancing) LAeq(15 minutes) 9 dB(A).*

This constitutes an unacceptable exceedance of the site specific noise criteria. The Acoustic Dynamics Assessment also states that even if the Proponent were to increase the size of the proposed acoustic wall to five metres, this would not have the effect of lowering the acoustic impact on the Jacfin residential land to an acceptable level.

As the car park and truck hardstand area will cause unacceptable acoustic impacts on the Jacfin residential land, which are not able to be acceptably mitigated, Jacfin submits that the Development must be redesigned to locate the carpark and truck hardstand area internal to the Site.

Absent such redesign, the Department must refuse the Application as the Department is not able to assess the likely impacts of the Development as required by s4.15(1)(b) of the Environmental Planning and Assessment Act 1979 (Act) and the Development will cause a nuisance to residential land within 250 metres of the Western Sydney Employment Area under clause 23(2)(e) of the WSEA SEPP (discussed below).

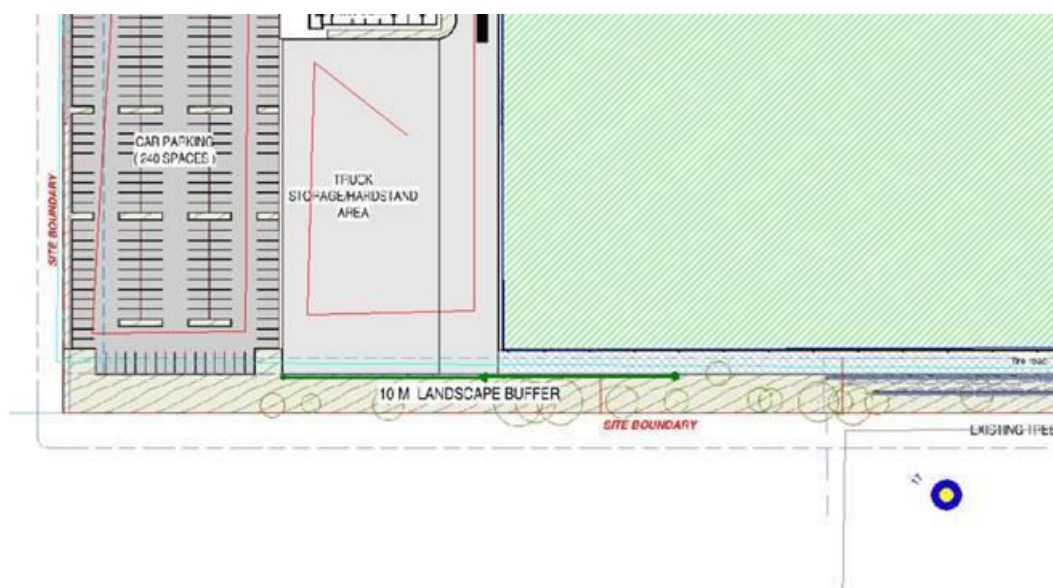
SLR Response to Issue 1:

Section 6.1 of the NVIA confirms that SoundPLAN software has been used for modelling the noise emissions from the operation of the development using the CONCAWE industrial noise prediction algorithms. Table 23 of the NVIA includes the peak one hour vehicle numbers, of which 50% are assumed to be heavy vehicles. This results in a peak 15 minute night-time scenario that includes 10 heavy vehicle movements on Lot 201 hardstand.

This scenario is considered to be conservative as it is likely there would be significantly less than 10 trucks using the hardstand in a 15 minute night-time period. It should be reiterated that the NVIA is based on preliminary vehicle numbers for each Lot in the development, and the modelling input assumptions will need to be reviewed during the detailed design stage once the nature and type of the user of each Lot is defined.

Heavy vehicle SWLs were modelled at 103 dB per vehicle as indicated in Table 24 of the report. This noise level is considered representative for a broad range of heavy vehicle types travelling at a range of low speeds from 10 km/h to 30 km/h and is considered a reasonable basis for this assessment, given the current level of detail available for the proposal does not include specific information regarding the type of vehicles associated with each Lot. The heavy vehicle SWL was applied to a 360 m path length around the truck hardstand area for the noise source prediction as shown by the red line in **Figure 1** below.

Figure 1 Modelled Location for Truck Hardstand Noise Source



It is expected that non-tonal reversing alarms would be required as a standard condition for any Lot operators, so no tonality penalty for reversing alarms has been included in the NVIA assessment in accordance with Noise Policy for Industry (NPfI) procedures.

No exceedances of the LAeq (average noise level) criteria are predicted to the Jacfin land in NCA01 with the indicative 3 m barrier to the truck hardstand, as confirmed in Table 26 and Figure 5 of the NVIA. A noise barrier to the south of the carpark is not required to achieve compliance.

As such, negligible impacts on the acoustic amenity are anticipated. This will be further confirmed during the detailed design/construction certificate stage of the development, along with any applicable noise mitigation and management measures.

Jacfin Issue 2: Failure to Meet Sleep Disturbance Criteria

Notwithstanding the failure by the Revised SLR Report to accurately or correctly model the noise level emanating from the truck hardstand area as discussed above, the Revised SLR Report acknowledges that there will be the following exceedances in the sleep disturbance criteria at the following sensitive receivers:

- (a) 7 dB(A) exceedance of the sleep disturbance criteria to the east of the Site; and*
- (b) 2 dB(A) exceedance of the sleep disturbance criteria at the Jacfin residential land.*

The Revised SLR Report, at page 27, states:

[w]here the sleep disturbance screening noise level is predicted to be exceeded then a detailed maximum noise level event assessment should be undertaken.

Despite the acknowledged exceedances to the sleep disturbance criteria, no 'detailed maximum noise assessment' has been produced by the Proponent.

Contrary to per its own recommendation, the Revised SLR Report instead inexplicably attempts to justify the exceedances by reference to the Road Noise Policy (RNP).

Jacfin submits that the use of the RNP is inappropriate as the noise generated by the carpark and truck hardstand area is markedly different being, intermittent and will involving tonal noises such as reversing alarms. Unlike road noise, the noise generated from these areas will not allow habituation of receivers.

Given the above, the Application must be refused by the Department as it is not able to assess the likely impacts of the Development as required by s4.15(1)(b) Act.

SLR Response to Issue 2:

In order to assess the possibility of sleep disturbance from peak events, heavy vehicle brake releases and reverse alarms (non-tonal) have been modelled at all points along the heavy vehicle routes and in the hardstand areas of the development with a conservative L_{Amax} SWL of 117 dB, and light vehicles have been modelled with a L_{Amax} SWL of 100 dB.

The maximum noise levels from the hardstand are predicted to be L_{Amax} 53 dBA, which is 1 dB above the sleep disturbance screening level at the Jacfin land and not 2 dBA as stated in the Jacfin submission. It is important to note that the screening level is not a criterion or noise limit, rather it indicates that further assessment of potential maximum noise impacts is required as stated in Section 2.5 of the NPfI. The NPfI document also states in Section 2.5 that *'Some guidance on possible impact is contained in the review of research results in the NSW Road Noise Policy (RNP).'*

As detailed in Section 6.3.3.1 of the NVIA, the RNP provides context in relation to maximum noise levels and potential for sleep disturbance (RNP Section 5.4). The RNP concludes that maximum internal noise levels of 50-55 dBA are unlikely to awaken people. This results in corresponding external noise levels of 60-65 dBA assuming a 10 dB loss through open windows.

On the basis that maximum noise levels from the development are predicted to be below L_{Amax} 55 dB externally at the Jacfin land, negligible impacts on acoustic amenity with regard to sleep disturbance are anticipated. This will be further confirmed during the detailed design/construction certificate stage of the development, along with any applicable noise mitigation and management measures.

Jacfin Issue 3: Receiver Noise Mitigation

Page 49 of the Revised SLR Report states that:

[a]t-receiver mitigation measures can be utilised to reduce noise impacts where residual noise impacts are present after implementation of feasible and reasonable noise source and path controls, or where those controls are not considered to be feasible or reasonable.

The Proponent's attempt to pass the burden of good scheme design and mitigation of the impacts of an industrial development to owners of residential land is inappropriate, unreasonable and must be rejected.

Moreover, the Proponent's position fails to consider the existing residences to the south and east of the Site.

As detailed in the GLN Report, the correct approach is to ensure that siting and scheme design responds to the surrounding environment to avoid land use conflicts. The use of mitigation measures is only appropriate where impacts off-site are unavoidable despite good siting and design. There is nothing to suggest that the impacts created by the current scheme could not be addressed by good design, which in this case requires the relocation of the truck hardstand area and 232 space carpark away from the boundary of the Site.

SLR Response to Issue 3:

As discussed at the beginning of Section 6.3 of the NVIA, the hierarchy for mitigation and management of industrial noise sources is as follows:

- Reducing noise emissions at the source (ie noise source control)
- Reducing noise in transmission to the receiver (ie noise path control)
- Reducing noise at the receiver (ie at-receiver control)

The NVIA therefore confirms that noise source and noise path controls are the first steps to be considered in mitigation, and further confirms that there are no exceedances of the project trigger noise levels with the included source and path control measures.

It is anticipated that refinement of noise source and path controls during detailed design would be sufficient and that receptor controls would not be necessary to comply with the project criteria.

The at-property treatments detailed in the NVIA (Section 6.3.5) are indicative measures that could be implemented (where reasonable and feasible) only in the event that exceedances of the project noise trigger levels are predicted following source and path controls.

In conclusion, the NVIA does not indicate any receiver controls are required in order to comply with the project noise trigger levels.

Checked/ Authorised by: AMcK
