





# 1. CONSERVATIVE NOISE MODELLING & ASSESSMENT

As an operator has not yet been appointed for the site, the design and operation of the site is fluid in many ways, leaving several uncertainties pertaining to the final site layout/ design, construction of buildings and general operations on site.

Given the above, and consistent with our instructions from SPC to undertake noise modeling for the “worst-case” scenario so as not to unnecessarily prescribe the operation of the site at this stage, a “worst case” noise model was built and a conservative assessment was undertaken in accordance with all relevant noise policies and guidelines.

Whilst DEC’s comments acknowledge that the NIA conservatively assesses a “worst-case” operational scenario, especially with regards to the INP’s ‘Amenity’ noise criteria (which are more stringent than the ‘Intrusiveness’ criteria for this project), the need to present a likely or typical operational scenario is identified in order to demonstrate that noise impacts can be curtailed and managed if necessary.

Before considering any additional noise mitigation measures to those already included in the NIA, it is important to identify the key areas where the NIA model can be viewed as being conservative. Table 1 below presents the key areas of conservatism which are built into the assumptions used in the NIA noise model for assessing impacts at night, and what effect each of these would have if one were to model a likely or typical night operational scenario.

**Table 1 – Conservatism in the NIA’s Night-time Noise Assessment**

Item Description	Differences between NIA’s ‘Worst-Case’ Noise Assessment and a ‘Typical’ Night Noise Assessment
<p><b>1. Operations at Night the Same as for Day</b></p> <p>The modelled “worst-case” scenario is assessed as if it would occur 24 hours per day, 7 days per week. Although this is possible in situations where the ILC might operate at its maximum capacity at night, it is likely that night-time activities on site would be a fraction of the peak daytime activities as can be derived from the operational daily profile information available at this stage – see “Daily Truck Movement Profile” graph presented in Section 3.2 of this Technical Memo.</p>	<p>According to the information presented in Annexure 1, the night-time assessment presented in the NIA would be 2dB(A) higher for a 15 minute ‘intrusiveness’ criteria assessment and 7dB(A) higher for a 9hr ‘amenity’ criteria assessment, than for a typical night scenario with respect to noise contributions from mobile plant (forklifts, gantry cranes, reach stackers and trucks).</p>
<p><b>2. Activities at Capacity throughout the Entire Assessment Period</b></p> <p>The NIA conservatively assumes that the “worst-case” scenario operations will occur for an entire 9-10 hour night-time duration, where night is 10pm-7am on Mon-Sat and 10pm-8am on Sundays and Public Holidays, as is the case when assessing to the INP’s Amenity Criteria. The modelled “worst-case” scenario may occur for short periods in the night, but from what can be derived from the operational information available at this stage, this is unlikely to occur for the entire 9-10 hour night period.</p>	<p>SPC advises that for a typical night scenario, each train would take approx. 2hrs to load/unload and up to 2 trains would be handled in one night. So locomotive noise can be assumed to occur for approx. 40% of a 9-10hr night period. Therefore, the night-time assessment presented in the NIA would be 4dB(A) higher than for a typical night scenario with respect to noise contributions from locomotives.</p>
<p><b>3. Wind Blows in the Same Direction throughout the Entire Assessment Period</b></p> <p>Noise exceedances presented in Table 4.11 on p.35 of the NIA (or Table 11.7 on p.11-12 of the EA), are for when adverse winds blow in a direction that enhance noise to neighbouring residences and</p>	<p>Based on a detailed analysis conducted on the hourly wind data from the Lidcombe AWS for the entire year of 1999 (a copy can be provided on request), noise-enhancing winds to any</p>

REFERENCE: TB867-04F03 (REV 8) ADDITIONAL INFO & NOISE MITIGATION OPTIONS

Item Description	Differences between NIA's 'Worst-Case' Noise Assessment and a 'Typical' Night Noise Assessment
<p>most of the exceedances are found when assessing site noise to the INP's Amenity Criteria. It is assumed in the NIA that such noise enhancing winds blow with strengths of less than 3m/s and in the same direction for the entire 9-10 hour night period. Based on the review of hourly wind data recently provided to us by SKM, this is not likely to occur frequently.</p>	<p>one receiver are not likely to remain steady in any single direction for more than 69% of an entire night-time assessment period. This proportion of time in one night that noise-enhancing (adverse) wind could blow in any single direction, equates to 1.6dB(A). That is, the NIA night-time predictions would be 1.6dB(A) higher than for a typical night scenario with respect to this aspect alone.</p>
<p><b>4. Wind Blows at a Constant Maximum Speed throughout the Assessment Period</b></p> <p>Where adverse (or noise enhancing) wind conditions are identified to occur for more than 30% of the time, making wind a feature of the area, an assessment under these conditions is required. The noise model has conservatively used the maximum noise-enhancing wind of 3m/s occurring for the entire 9-10 hour night period. From the hourly wind data available it can be seen that wind strengths will vary up and down from 0m/s to 3m/s throughout the night, therefore the wind's level of noise enhancement is not likely to be as prominent as that modelled for the NIA.</p>	<p>Given that noise-enhancing winds to any one receiver are not likely to remain at a steady 3m/s speed throughout an entire night, but are shown to fluctuate between 0 and 3m/s throughout the night, then the night-time assessment presented in the NIA would be significantly higher than what is likely to occur. For example, depending on the location, the NIA noise model would be up to 6-7dB(A) higher than with a 1.5m/s wind speed (the highest mean and median wind speed from all four seasons analysed from the Lidcombe hourly wind data), and up to 4-5dB(A) higher than with a 2m/s wind speed, representing the average wind speed over a typical night.</p>
<p><b>5. No Acoustic Shielding from Containers on Site</b></p> <p>Local shielding benefits provided by container stacks on site are not included in the NIA noise model. Containers, which can be stacked 5-6 high (2.4m each x 5 containers = 12m high), especially in the two storage areas located in the NW and SW corners of the site, can provide 5-10dB(A) noise shielding during times when mobile plant operates behind a stack and 0dB(A) noise shielding when operating without stacking.</p>	<p>Based on an assumption that for 50% of the time in an assessment period, mobile plant is likely to be working in positions shielded by containers stacked on site and for the remaining 50% of the period mobile plant will not be shielded by containers, the night-time assessment presented in the NIA would be 3dB(A) higher than for a typical night scenario with respect to noise contributions from mobile plant (forklifts, gantry cranes, reach stackers and trucks).</p>
<p><b>6. Non-Industrial Small Buildings Off-Site not Modelled</b></p> <p>All non-industrial (ie residential and small commercial buildings) off-site have not been included in the noise model, so acoustic shielding benefits provided by such buildings located between the site and noise receiver locations are not accounted for.</p>	<p>For the worst-affected (first-row) of dwellings impacted upon by site noise, the NIA is not conservative and therefore is suitable for a typical night scenario assessment.</p> <p>However, for rows of dwellings located beyond the first row, the noise assessment presented in the NIA would be 5-10dB(A) higher than if the model included all of the off-site small buildings.</p>





























































