<table>
<tr><th>Identifier</th><th>Mitigation measure</th><th>EPA Submission</th><th>MDA comment</th></tr>
<tr><td colspan="4">Noise and vibration</td></tr>
<tr><td>NV03</td><td>When pumping units over 500 kVA are located within 800 m of any dwelling, temporary acoustic barriers will be used, such as earth bunds, Echobarrier or FlexShield barriers (when the barrier height exceeds the pump height by at least 0.5 m). The barrier system will incorporate an acoustically absorptive finish to minimise reflected noise.</td><td></td><td>Acceptable
Adequacy would need to be verified based on plant noise emission data during detailed design</td></tr>
<tr><td>NV06</td><td>Contingency procedures will be developed and implemented if noise emissions during construction exceed relevant guideline values, including additional mitigation measures to be considered during less favourable meteorological conditions that may enhance noise emissions from the project area.</td><td>Recommended amendment implemented</td><td>Acceptable</td></tr>
<tr><td>NV09</td><td>A noise and vibration sub-plan will be prepared and implemented. The sub-plan will be informed by best practice guidelines. At a minimum, the sub-plan will include:
• Location of nearby residences and other sensitive land uses, including the sensitive receptors identified in this EES.
• Approved construction working hours and/or shift rotations, and inclusion of construction activities, work areas and mobile plant and equipment locations during each working shift.
• Best practice work practices to minimise noise emissions.
• Best practice vibration mitigation strategies to minimise vibration.
• Community consultation strategy required for the construction phase and associated high noise and vibration generating works.
• Complaints handling process, including contact details, follow-up inspection, monitoring and corrective action processes once a complaint is made.
• Noise monitoring procedures focused on the noise-sensitive receptors, including noise monitoring from the project area and along the HMC transportation route.
• Contingency procedures if noise emissions during operations are determined to exceed those modelled as part of the approval process, including alternatives to be considered during less favourable meteorological conditions that may enhance noise emissions from the project area.
• Requirements for recording actions taken in response to exceedances, and evaluation of their effectiveness.
• Adaptive management of noise levels for the project, where identified exceedances will inform the required control strategy.</td><td></td><td>Acceptable</td></tr>
<tr><td>NV10</td><td>Mobile plant items will be fitted with broadband reversing signals to avoid tonal characteristics associated with traditional reversing beepers at nearby sensitive receptors.</td><td></td><td>Acceptable</td></tr>
<tr><td>NV11</td><td>As the year 1 mining progresses, or moves into a new situation with respect to natural or reconstructed topography, noise modelling will be used to predict compliance at nearby sensitive receptors. Where modelling indicates potential non-compliance, additional mitigation will be implemented, or night shift overburden operations will cease to achieve compliance.</td><td></td><td>Acceptable</td></tr>
<tr><td>NV12</td><td>Earth bunds will be constructed to control noise such that noise levels from the target sources are controlled to achieve site compliance with EPA guidelines. The location and height of earth bunds for year 1 will be implemented as per the table below and as mining activities move around the project area, screening requirements will be reviewed.
<table>
<tr><th>Location</th><th>Height</th><th>Activities screened</th></tr>
<tr><td>Within mine void adjacent to MUP1</td><td>10 m</td><td>Bund will block line-of-sight to receptors to the east screening scrapers working with the mine void near MUP1.</td></tr>
<tr><td>Overburden haul route</td><td>3 m</td><td>The overburden haul route will be dug 3 m into existing terrain to provide screening of the mobile plant and truck movements</td></tr>
</table></td><td></td><td>Requirement too specific.
Location and extent of earth bunds would be developed during detail design.</td></tr>
<tr><td>NV13</td><td>Direct treatment through plant noise-reduction kits and cladding or screening of the MUP will be undertaken. Suitable noise-reduction kits have been identified for specific items of plant in consultation with industry specialists (Hushpak and Minetek), as identified in the table below, which also shows the level of reduction required, and examples of treatments available to achieve the required reduction.
<table>
<tr><th>Plant item</th><th>Noise reduction required</th><th>Example product</th></tr>
<tr><td>Scraper – ore 1</td><td>-6 dB</td><td rowspan="3">Replacement muffler systems, cooling fans and addition of attenuated doors on the scraper engine bay.</td></tr>
<tr><td>Scraper – ore 2</td><td>-6 dB</td></tr>
<tr><td>Scraper – overburden</td><td>-6 dB</td></tr>
<tr><td>Dozer – D9 MUP2</td><td>-5 dB</td><td rowspan="5">Air intake and exhaust silencers fitted to each unit.</td></tr>
<tr><td>Dozer – D10 MUP2</td><td>-5 dB</td></tr>
<tr><td>Dozer – D10 fines tailings</td><td>-5 dB</td></tr>
<tr><td>Dozer – D10 MUP1</td><td>-5 dB</td></tr>
<tr><td>Haul truck CAT 785 x4</td><td>-6 dB</td><td>Replacement muffler systems.</td></tr>
</table></td><td></td><td>Acceptable</td></tr>
</table>

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NV14	Noise mitigation measures such as bunding, walls or cladding will be installed at the wet concentrator plant to control noise emissions from the plant to achieve compliance. At a distance of 20 m east and south of the plant, these levels are 50, 54 and 65 L_{Aeq} dB at heights of 1.5, 10 and 20 m above ground respectively.		This requirement may not be practical to implement with the current project design where elements from the WCP which were modelled within a unique enclosure have been seperated into a number of enclosures. Detail design modelling would determine: * Appropriate noise mitigation measures to control noise from the WCP * Suitable noise thresholds at selected derived points in close proximity of each enclosure to assist with verification measurements
NV15	Consultation with affected residents located in the vicinity of the site will be conducted during the course of the project to investigate the need for alternative or additional noise control measures depending on each individual situation (e.g., acoustic treatment for dwellings).		Acceptable
NV16	Commissioning noise tests will be undertaken at regular intervals and prior to work starting, including checking that bunds have been constructed to specifications required for site compliance with EPA guidelines.		Acceptable
NV17	Noisier activities will be scheduled for less sensitive times of day where practicable and works will be limited as much as practicable during the night and at weekends.	Recommended amendment: Noisier activities will be scheduled for less sensitive times where feasible and works will be limited as much as practicable during the night and weekends. ***Where unavoidable works do occur during the night and weekends, only the quietest activities will be scheduled.*** ***In relation to construction noise, if works are scheduled during night time hours, they will be inaudible or approved by a person independent from the Project, prior to commencement, as meeting the definitions of "Unavoidable works" or "low-noise or managed-impact works" in EPA Publication 1254.*** ***Works will be considered "low-noise or managed-impact works" in EPA Publication 1254 if the predicted noise levels are below 26 dB indoors, the noise does not present a tonal, impulsive or intermittent character, does not include low frequency content that presents a risk of intrusiveness, the Proponent can justify why there is a need to conduct the works outside the recommended standard hours and this justification is approved by a person independent from the Project, and the hours for works considered to be low-noise or managed-impact works and it is supported by the Community Reference Group.***	Acceptable
NV18	Residents at noise-sensitive receptors will be informed of the timing and location of each construction stage and associated noise reduction measures and given advance notice and details of periods of noisy activities (such as excavation).		Acceptable
NV19	Managerial processes will be implemented (such as 'push-back' mining operations) to optimise the direction of mine void excavation so the terrain provides maximum natural attenuation noise from plant and equipment.		Acceptable
NV20	All personnel will be informed about the measures required to minimise noise including through regular toolbox talks.	Recommended amendment: All personnel will be informed about the measures required to minimise noise including regular toolbox talks. ***Adherence to the relevant practices and requirements will be verified by an inspection and audit program.***	Acceptable
NV22	All pneumatic tools used near residential areas will be fitted with an effective silencer on the air exhaust port.		Acceptable
NV23	Plant will be turned off when not in use.		Acceptable
NV24	Plant, machinery and vehicles will be maintained in accordance with manufacturers' specifications to minimise emission of noise.	Recommended amendment: Plant machinery and vehicles will be maintained ***and operated*** in accordance with manufacturer's specifications ***and industry best practice*** to minimise emission of noise	Acceptable
NV25	All trucks left standing on site will, as far as practicable, have their engines switched off after no more than five minutes.		Acceptable
NV27	All project vehicles will be maintained in accordance with manufacturers' specifications.		Acceptable

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NV28	Trucks will be equipped with adequate and functioning mufflers.		Acceptable
NV29	Project vehicles will be driven to the speed limit and in a careful manner, avoiding strong acceleration/deceleration, and restricting the use of compression brakes to situations where justified on safety grounds, such as along long downhill slopes.		Acceptable
NV31	A permanent power supply will be secured as early as possible to minimise the time diesel generators are used.		Acceptable
NV32	Equipment and processes that do not exhibit characteristics of intermittency or impulsiveness will be selected, where feasible.	Recommended amendment: Equipment and processes that do not exhibit characteristics of ***tonality,*** intermittency or impulsiveness will be selected, where feasible. ***The risk of intrusive low frequency noise within noise sensitive areas is to be minimised as far as reasonably practicable.***	Acceptable Note that neither NIRV nor EPA Publication 1254 specify acceptable levels of low frequency noise.
NV33	Equipment will be selected with noise emissions that do not exceed the sound values used in the project noise modelling.	Recommended amendment: Equipment will be selected with noise emissions that do not exceed the sound values used in the project noise modelling. ***The quietest available plant and equipment will be selected for the project, where feasible.***	This requirement is too restrictive as noise emission from a large number of items may not contribute significantly to noise levels are receivers. Providing that the equipment with low sound power levels are used, as far as practicable, and detail design modelling demonstrates compliance with the relavant criteria, noise emissions of equipment may reasonably exceed that detailed in the MDA Report.
NV34	Construction of the proposed Fernbank East rail siding will be restricted to daytime hours (Monday to Friday (7:00 a.m. to 6:00 p.m.) and Saturday (7:00 a.m. to 1:00 p.m.)).		Acceptable
NV35	Project inductions will include briefings for all employees and contractors on the key principles and requirements of the noise and vibration sub-plan as relevant to their work.	Recommended amendment: Project inductions will include briefings for all employees and contractors on the key principles and requirements of the noise and vibration sub-plan as relevant to their work. ***Adherence to the relevant practices and requirements will be verified by an inspection and audit program.***	Acceptable
NV36	B-double movements on the private haulage road and rail loading activities at the Fernbank East rail siding will be restricted to the day and evening periods.	Recommended addition: [...] ***Specific measures will be included in the Operational Noise Management Plan to address the risk of impacts due to short term high noise levels and low frequency noise from truck by-passes to properties near the proposed haulage road.*** ***Specific measures will be included in the Operational Noise Management Plan to address the risk of noise from train horns at the siding impacting on nearby properties.*** ***Specific measures will be included in the Operational Noise Management Plan to address the risk of impacts from vehicles travelling on the rumble and shaker strips to properties near the proposed roundabout and rail siding.***	Acceptable