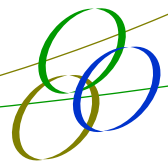
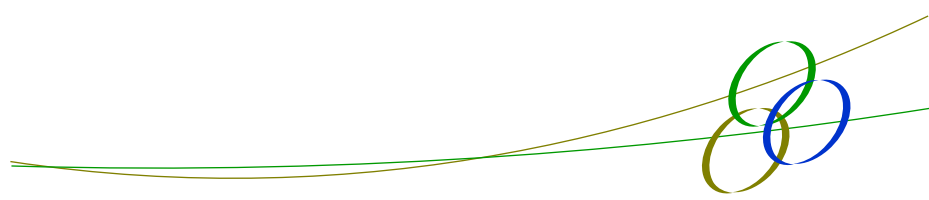


Noise Management Plan

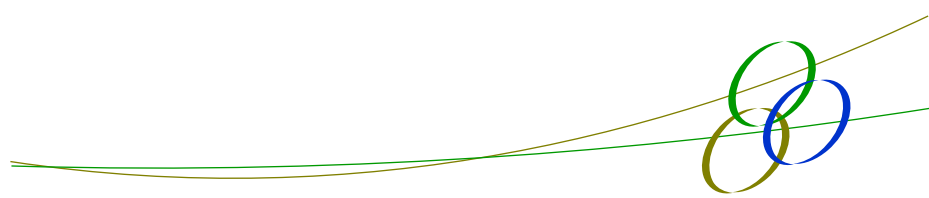
Objective	To comply with construction standards for noise control. To minimise noise due to construction.
Target	To minimise noise generated during the construction phase.
KPI	Target = no exceedances of noise goals or complaints related to noise received from nearby receivers.
Responsibilities	Construction Manager
Key Approval Requirements	<p>2.8, 2.9, 2.10, 2.11, 2.12, 2.16, 2.21, 2.22, 2.23.</p> <p>Condition 6.3 a) is particularly relevant and requires the following. Bracketed text in bold provides a cross reference to the relevant documents where these are addressed.</p> <p><i>A Noise Management Plan to detail measures to minimise noise emissions associated with the construction of the project. The Plan shall include, but not necessarily be limited to:</i></p> <ul style="list-style-type: none"> <i>i) identification of all major sources of noise that may be emitted as a result of the construction of the project ('Major Noise Sources' section of this sub-plan);</i> <i>ii) specification of the noise criteria as it applies to a particular activity ('Noise Criteria' section of this sub-plan);</i> <i>iii) identification and implementation of best practice management techniques for minimisation of noise and vibration emissions ('Mitigation Measures' section of this sub-plan);</i> <i>iv) an assessment of how any proposed blasting will meet the blasting criteria in this Approval (Condition 2.11 and 2.12) ('Blast Assessment' section of this sub-plan);</i> <i>v) procedures for the monitoring of noise emissions ('Monitoring' section of this sub-plan);</i> <i>vi) description of the procedures to be undertaken if any non-compliance is detected ('Reporting' section of this sub-plan).</i>
Key Legislative and Regulatory Requirements	<p><i>Protection of the Environment Operations Act 1997</i></p> <p><i>Protection of the Environment Operations (General) Regulation 1998</i></p> <p><i>Protection of the Environment Operations (Noise Control) Regulation 2000</i></p> <p><i>NSW Industrial Noise Policy, DEC, 2000</i></p> <p><i>Environmental Criteria for Road Traffic, DEC, 1999</i></p>
Major Noise Sources	<ul style="list-style-type: none"> • Construction equipment, particularly excavators, bulldozers, cranes, graders, concrete trucks and aggregate trucks. • Vehicles travelling to and from site. • Blasting.



<p>Noise Criteria</p>	<p>Construction traffic: NSW Road Noise Policy (2011):</p> <ul style="list-style-type: none"> • LAeq, (15 hour) 60 (external) <p>Construction equipment: Interim Construction Noise Guideline (DECC, 2009):</p> <ul style="list-style-type: none"> • RBL plus 10 dBA Leq, 15 min for works in standard hours (Monday to Friday 7am to 6pm and Saturday 8am to 1pm); and • RBL plus dBA Leq, 15 min outside standard hours. The ICNG provides a highly noise affected limit of 75 dB(A). <p>Blasting:</p> <ul style="list-style-type: none"> • No blasts to exceed overpressure 120dB(L in Peak) and ground vibration 10mm/s; and • 5% of blasts over 12 months can exceed overpressure of 115dB(L in Peak) and ground vibration 5mm/s.
<p>Mitigation Measures</p>	<ul style="list-style-type: none"> • Noise generated by any construction is to be managed in accordance with the best practice requirements and as outlined in the <i>Interim Construction Noise Guideline</i> (DECC, 2009), or its latest version. • Construction shall be limited to the following operation hours unless approved as out of hours works: <ol style="list-style-type: none"> a) 7 am to 6 pm Monday to Friday; b) 8 am to 1 pm Saturdays; and c) at no time on Sundays and NSW public holidays. • All blasting shall be undertaken between 9 am and 5 pm Monday to Saturday inclusive. No blasting is to occur on Sundays or public holidays. • In the event of community complaint regarding noise or vibration, monitoring will be undertaken and additional mitigation measures implemented where practicable. • Construction works required to be undertaken outside of the standard construction hours are only to be undertaken in accordance with the Out of Hours Work protocol in Section 3.3 of the CEMP. • High noise impact activities must be carried out reasonably in accordance with <i>Interim Construction Noise Guideline</i> (DECC, 2009) and the <i>Australian Standard 2436-1981 'Guide to noise control on construction, maintenance and demolition sites'</i>. • One to two days prior to blasting and other high noise activities, surrounding residents shall be notified through media and/or other communication options of the intended works in accordance with the Community Information Plan. • Where reasonable and feasible, noisy equipment will be sited behind structures that act as barriers or at the greatest distance from the noise-sensitive areas. • Continuous high noise activities must not exceed three hour blocks, each with a minimum respite from those activities and works of not less than one hour between each block. • Regularly grade access roads to reduce noise from rattling trucks. • Where possible, locate construction equipment in a position that provides the most acoustic shielding from buildings and topography.



	<ul style="list-style-type: none"> • Equipment will be switched off when not in use (including during breaks and down times of more than 30 minutes). • Clustering of noise generating plant is to be avoided to minimise cumulative impacts of multiple noise sources. • Equipment will be oriented away from nearby receivers where feasible to minimise noise impacts. • Ensure traffic movement is kept to a minimum, e.g. ensure trucks are fully loaded so that the volume of each delivery is maximised. • Noise complaints will be investigated and where practicable additional measures implemented to reduce the impact.
<p>Blast Assessment</p>	<p>The nearest non-windfarmer occupied residence is approximately 1600m from the nearest turbine site. The following formula provides vibration predictions:</p> $v=k(d/m^{1/2})-a$ <p>where</p> <p>k= confinement factor of 5000</p> <p>a=rock type factor 2.5</p> <p>m= maximum instantaneous charge, in this case 10 kg</p> <p>d= distance to house, 1600m</p> <p>The following formula provides overpressure predictions:</p> $P=185(D/3W)^{-1.2}$ <p>Where</p> <p>D= distance, 1600m</p> <p>W is MIC, 10 kg</p> <p>Calculation shows that MIC of 10kg will produce vibration and overpressure at a fraction of the criteria, owing to the long separation distance and small explosive charge.</p>
<p>Monitoring</p>	<ul style="list-style-type: none"> • The first three rounds of blasting will include noise monitoring to assess compliance with noise control levels. Where exceedance of approved noise levels occurs or noise complaints are received relating to blasting, ongoing monitoring of blasting will be required until noise levels comply, plus amendment to blasting routine and size of charge to mitigate noise impacts will be required. • Routine inspections will be used to proactively anticipate noise issues, instigate resolution and to ensure that previously identified control measures continue to be implemented. • Should any noise related complaints (separate from blasting related complaints) be received noise levels will be monitored and any exceedances from noise goals will be rectified. Monitoring of works will be required until noise levels can be demonstrated to comply. • Regularly inspect and maintain on site equipment in good working order so as to generate less noise. This includes ensuring all noise reduction devices such as mufflers and silencers are fitted correctly and operative.
<p>Reporting</p>	<p>Any complaints shall be managed and responded to in accordance with the Complaints Procedure and recorded in the Complaints Register.</p>



	<p>Any reported non-compliances will be managed as follows:</p> <ul style="list-style-type: none"> • Monitoring data will be compared against relevant criteria to determine the existence and quantum of the reported non-compliance. • The Environment and Community Manager will undertake a root cause analysis of the non-compliance, paying particular attention to the activities being undertaken, the equipment in use and weather conditions at the time • The root causes will be reported to the Environment Manager and recorded as a non-compliance. In serious cases, the analysis will be sent to the approval authorities. • The root causes will be conveyed to the site workforce via toolbox talks to avoid a repeat of the non-compliance, and if necessary, site procedures will be modified.
<p>Records</p>	<p>Records of training and induction. Records of routine inspections. Records of any reports of incidents.</p>
<p>Associated Documents</p>	<p>Community Information Plan Emergency Response Plan Complaints Procedure Complaints Register</p>