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TK911-01F03 Tech Memo (r0).docx

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Mr Clancy Bowman

clancy.b@nghconsulting.com.au

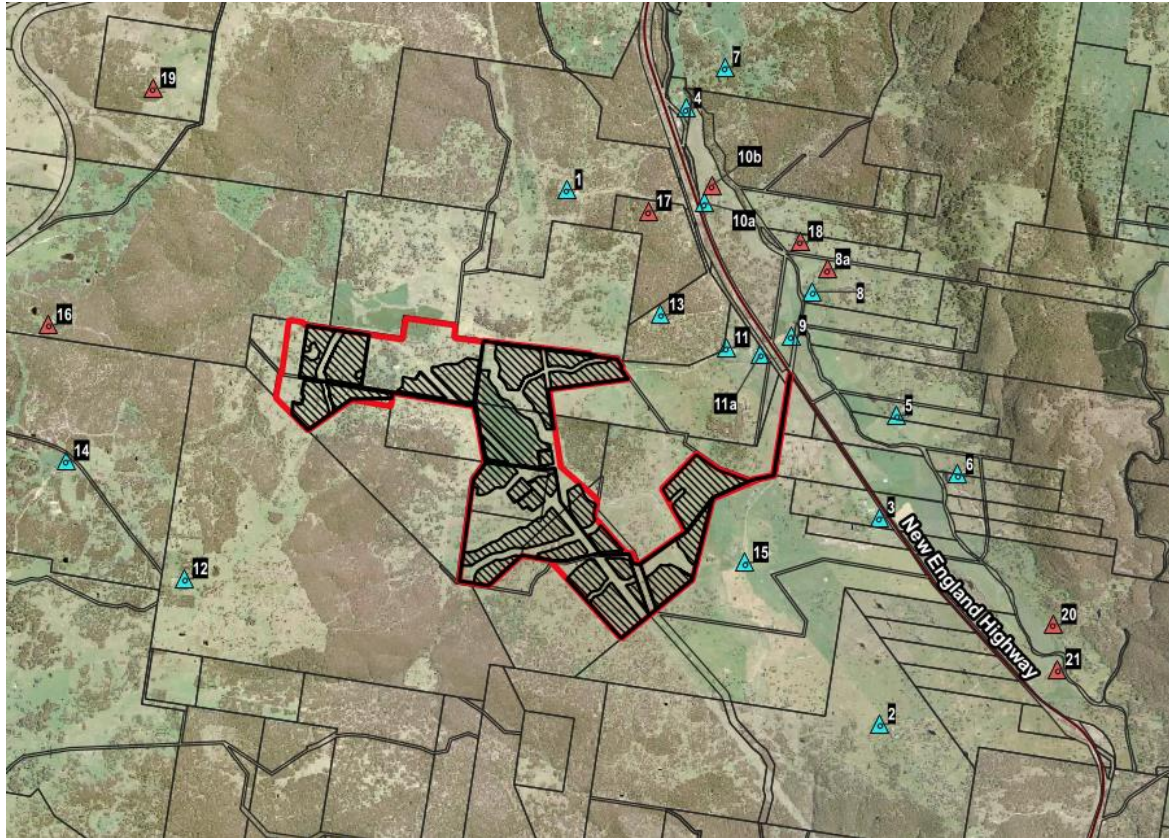
From: William Chan [William.Chan@renzotonin.com.au]

Tilbuster Solar Farm - Newly Identified Receivers

Renzo Tonin & Associates prepared the Tilbuster Solar Farm – Construction & Operational Noise & Vibration Assessment (ref.: TK91101F02 Report (r13) dated 2 April 2020), which assessed construction and operational noise impacts to the nearest receivers to the subject site. It was found that predicted construction and operational noise levels were within the nominated noise criteria for all receiver locations.

Renzo Tonin & Associates has been asked to review the noise impacts to a set of newly identified receivers that was not considered in the Noise & Vibration Assessment. Figure 1 below shows the assessed receiver locations in blue and the newly identified receivers in red.

Figure 1 - Assessed receiver and newly identified receiver locations



It can be easily seen from Figure 1 that the nearest receivers to the subject site are 11, 11a, 13 and 15, all of which are assessed receivers (i.e. compliant with nominated noise criteria). All newly identified receivers are all located at a further distance from the subject site. Therefore, it is expected that all newly identified receiver locations will experience construction and operational noise levels from the subject site that are within the nominated criteria.

Document control

| Date | Revision history | Non-issued revision | Issued revision | Prepared | Instructed | Reviewed / Authorised |
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APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

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| Adverse weather | Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter). |
| Ambient noise | The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far. |
| Assessment period | The period in a day over which assessments are made. |
| Assessment point | A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated. |
| Background noise | Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below). |
| Decibel [dB] | The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening |
| dB(A) | A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. |
| dB(C) | C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies. |
| Frequency | Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz. |
| Impulsive noise | Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise. |
| Intermittent noise | The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more. |
| L _{Max} | The maximum sound pressure level measured over a given period. |
| L _{Min} | The minimum sound pressure level measured over a given period. |

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| L ₁ | The sound pressure level that is exceeded for 1% of the time for which the given sound is measured. |
| L ₁₀ | The sound pressure level that is exceeded for 10% of the time for which the given sound is measured. |
| L ₉₀ | The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A). |
| L _{eq} | The "equivalent noise level" is the summation of noise events and integrated over a selected period of time. |
| Reflection | Sound wave changed in direction of propagation due to a solid object obscuring its path. |
| SEL | Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain Leq sound levels over any period of time and can be used for predicting noise at various locations. |
| Sound | A fluctuation of air pressure which is propagated as a wave through air. |
| Sound absorption | The ability of a material to absorb sound energy through its conversion into thermal energy. |
| Sound level meter | An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels. |
| Sound pressure level | The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone. |
| Sound power level | Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power. |
| Tonal noise | Containing a prominent frequency and characterised by a definite pitch. |