Weather data

The Regional Planning Panel requested a full analysis on the weather and local environmental data which underpinned the various sub-consultant reports.

The following sub-consultants rely on weather data for their assessment:

- Acoustic
- Odour
- Wastewater management
- Stormwater Management
- Flooding

Many of the submitters in the first notification period raised questions in relation to the weather data. As identified in the 'Response to submissions' dated 3 June 2022, all different consultants attempted to use the closest and most consistent weather data possible for the area. The following tables summarise the reasons for their selection.

Sub-Consultant	Weather Data Used	Alternatives Available	Reasons	Responding to local conditions
Acoustic – Stantec	Weather Underground - Denman NSW (15km)	The nearest station by the Bureau of Meteorology that has data in small increments is Nullo Mountain which is 50km away.	The Denman weather station is the closest station from Weather Underground that has historical wind and rain data in small increments, allowing us to exclude periods of bad weather that would affect the noise levels recorded. The station is approximately 15km away.	The key weather factor for the acoustic assessment is wind. The assessment uses the 'CONCAWE' model. The CONCAWE noise propagation model is used around the world and is widely accepted as an appropriate model for predicting noise over significant distances. The CONCAWE system divides the range of possible meteorological conditions into six separate "weather categories", from Category 1 to Category 6. Weather Category 1 provides "best-case" (i.e. lowest noise level) weather conditions for the propagation of noise, whilst weather Category 6 provides "worst-case" (i.e. highest noise

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				level) conditions, when considering wind speed, wind direction, time of day, and level of cloud cover. The project's acoustic consultant used a meteorological Category 5 – Moderate in their assessment, which is the second worst case scenario used. The reason why Category 5, rather than the worst-case Category 6 was adopted, is that Category 6 accounts for high wind for a majority of the time day and night. It is noted that attended noise measurements were undertaken on site. The weather data collected from the logging period showed very low wind speeds, which did not reach the speeds defined for Category 6 weather. The acoustic engineer also reconfirms that the 3D acoustic model used for their assessment accounts for the local topography, as well as the potential adverse effects of weather including wind and temperature inversions which can cause sound to carry further. The assessment demonstrates that the outcomes were compliant (and actually well under) the maximum noise criteria.
Odour - RWDI	Jerrys Plains (approx. 20km as the crow flies)	Charlton Ridge MET Station at Mount Thorley Warkworth Mine site (approx. 25km as the crow flies)	In terms of the meteorological data, our Odour Consultant indicates that Jerrys Plains is the closest MET data available. Other sources are at a considerably larger	In terms of the meteorological data, Jerrys Plains is the closest MET data available. Given the proximity of Jerrys Plains to the site this is considered to meet the local conditions.

Sub-Consultant	Weather Data Used	Alternatives Available	Reasons	Responding to local conditions
			distance away from the site and the data would have been less comparable to the conditions of the site. As such this makes the selection of Jerrys Plains the most appropriate choice.	As listed in the assessment report, the Odour consultant stated that there are no predominate winds from the kennels and facilities to the closest sensitive receivers. The assessment methodology considered the appropriate guidelines and in the first instance considered separation distances between the sensitive uses. Section 5.2 outlined the qualitative risk assessment which the consultant undertook. The conclusion was the odour exposure at the nearest receptors is considered to be 'negligible risk' based on the criteria provided. In Step 1, the potential receptors were considered. As identified in Figure 2-1 of the report, the nearest sensitive receptors are rural dwellings and more than 500m west of the site which may be affected by the odours. Step 3 – Pathway effectiveness was considered to be 'ineffective'. As per the report: *That is, the receptor is remote from the source; distance exceeds any official set-back distances. There is low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind).*
Wastewater Management – Larry Cook	Paterson station (89.4 km distant)	Scone (40.7km)	The Project's Wastewater Consultant has advised that was used because it is the closest official weather station with rainfall data matched against official	The Wastewater Management System has gone through significant review by Council. Any OSSM must be constructed in accordance with the relevant standards and regulations, including (but not limited to): - *Local Government Act 1993*

Sub-Consultant	Weather Data Used	Alternatives Available	Reasons	Responding to local conditions
			pan evaporation data and the period of operation was considered by the consultant to be satisfactory.	- *Local Government (General) Regulation 2005* - AS/NZ 1546.1:2008 On site domestic wastewater treatment units – Part 1 Septic Tanks - AS/NZ 1546.1:2008 On site domestic wastewater treatment units – Part 3 Aerated wastewater treatment systems - AS/NZ 1547:2012 On-site Domestic Wastewater Management - Muswellbrook Site Council Development Control Plan Section 23 – Onsite Sewer Management Systems
Stormwater Management - Warren Smith Consulting Engineers	*From submitted report* The rainfall data was obtained from the Bureau of Meteorology Rainfall IFD Data System using local coordinates. The MUSIC model used data from Newcastle.	Dubbo	PET (potential evapotranspiration) data set is supplied with the MUSIC software which is utilised to size the stormwater quality treatment train. Newcastle is the closest station to the subject site.	As identified by the project engineer, Newcastle was selected in the MUSIC model given it is the closest station in the system to the site. As identified in the report itself, Muswellbrook Shire Council requires that runoff from developed site must not exceed the runoff from the site prior to the development for the 50%, 20%, 10%, 5%, 2% and 1% AEP storm events. As such, the design must ensure that it is adequately sized for the level of rainfall expected on site. The stormwater management plan has been designed in accordance with: - Muswellbrook Shire Council Development Control Plan 2020; - Muswellbrook Shire Council's AUSPEC Planning and Design Specifications.

Sub-Consultant	Streamflow Data used	Alternatives available	Reason for streamflow data used
Flooding	Stream gauge data of Macdonalds River at Howes Valley	N/A	Martindale Creek is an ungauged catchment. As such a comparison had to be found for the assessment. Macdonalds River was selected as it had similar characteristics to Martindale Creek. This is due to similar locations (adjacent catchments), catchment size (299 km^2 verse 247 km^2) and similarity of predominate land use (steep, undeveloped bushland). Hence, in the absence of catchment-specific data, streamflow data from the Macdonald River gauge was used to characterise the streamflow regime of Martindale Creek at the site.