Appendix H

Noise Assessment

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Patric Illingworth
Environmental Project Manager
Onward
Via email: patric.illingworth@onward.au

RE: Supagas CO_2 Plant – Noise Assessment

Dear Patric,
Todoroski Air Sciences have prepared this report in relation to the proposed Supagas Pty Ltd (Supagas) carbon dioxide (CO_2) plant connected to the Wilga Park Power Station (WPPS) at Narrabri in New South Wales (NSW) (hereafter referred to as the Project).

The report has been prepared with consideration of the New South Wales (NSW) Environment Protection Authority (EPA) *Noise Policy for Industry* (**NSW EPA, 2017**), *Interim Construction Nosie Guideline* (**NSW DECC, 2009**) and NSW Road Noise Policy (**NSW DECCW, 2011**).

Overview of the Project
The Project includes the construction and operation of a CO_2 plant, which would capture and process exhaust gas from gas generators within the WPPS.

This exhaust gas would be treated to produce a CO_2 product of food grade quality for export and use in the food, beverage, and other markets. The Project would produce approximately 72 tonnes per day (tpd) of liquid CO_2, with allowance for storage of approximately 800 tonnes (t) of liquid CO_2 prior to delivery off-site.

The key activities for the Project are as follows:

- clearing and earthworks for site preparation and to enable construction of the Project;
- construction of the Project;
- operation of the Project, including export of the CO_2 product via road transport; and,
- decommissioning, rehabilitation, and closure.

The Project is located approximately 11 kilometres (km) southwest of the Narrabri township. The surrounding environment is predominantly bushland with scattered rural properties and agricultural operations. The nearest residential receivers are located approximately 1km to the southeast of the Project site. These receivers are understood to be owned by Santos (operators of the WPPS) and are considered to be associated with the Project.

Figure 1 presents the location of the Project and the identified receiver locations. Radial distance lines are also presented indicating the approximate distance from the Project site.

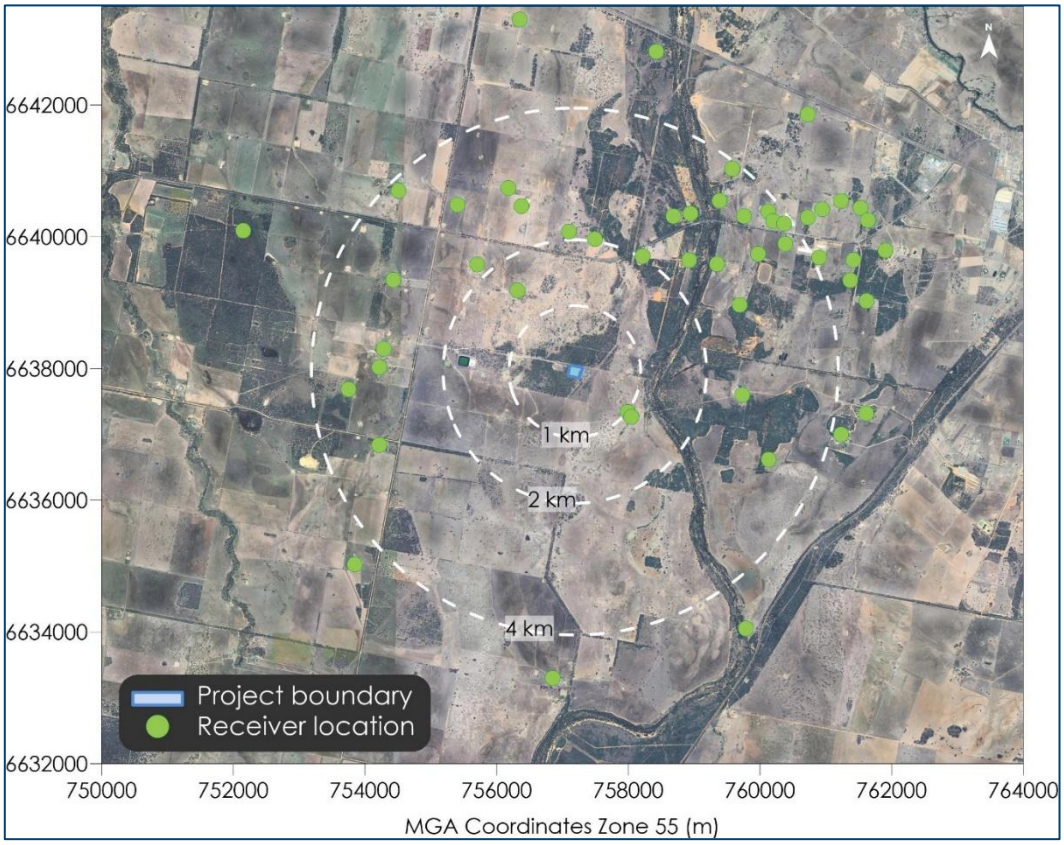

Figure 1: Project location

Construction noise assessment

Construction activities for the Project would generally involve three main phases.

First, planning and mobilisation would include surveying and setting out the Project area in line with subdivision and design plans, establishing a construction compound with site sheds, parking, equipment laydown areas, waste receptacles, stockpiling areas, and storage for construction materials. This phase would also involve the installation of environmental controls such as silt fences and stormwater diversion drains, clearing and grubbing of vegetation where required, and the removal and stockpiling of topsoil.

The second phase would involve construction and installation of the CO_2 plant, including the required equipment and structures, hardstand areas (e.g. concrete pads, vehicle parking, internal access roads, and a heavy vehicle turning area), site services (power and water), operational surface water management infrastructure, and completing power connection works to the Essential Energy grid. A groundwater bore may be established for operational water supply, with town water delivery considered as an alternative.

Finally, site commissioning and landscaping would be undertaken as relevant.

Construction activities would occur during the standard construction hours of 7:00am and 6:00pm, Monday to Friday, and between 8:00am and 1:00pm on Saturdays.

Typical construction equipment required would include excavators or similar earthmoving machinery, dump trucks, bulldozers, concrete trucks, and drill rigs. Graders and watercarts would be used for surface preparation and dust control, while heavy vehicles would deliver materials and equipment to the site. Hand-held equipment such as grinders and power saws would be used for smaller tasks associated with the installation of infrastructure, alongside light vehicles and worker transport vehicles to support general construction operations.

A typical worst-case sound power level for the construction sources operating simultaneously is 120dB(A). The nearest potential receiver to the Project (not associated with the Project) is located approximately 1.5km to the northwest (refer to **Figure 1**Error! Reference source not found.). The predicted noise level at this location has been estimated using hemispherical diffusion, accounting for ground effects (-2dB(A)) and molecular absorption (-5dB(A)), based on the following equation:

$$SPL = PWL - 20\log_{10} D + 8 \; - 2 \; - 5$$

Applying this calculation, the predicted noise level at the nearest potential receiver is 41dB(A), which complies with the applicable noise management level of 45db(A) (RBL + 10) at this location.

It is expected that standard noise mitigation measures for construction activity would be applied. To ensure effective implementation of these mitigation measures, it is recommended that the construction contractor:

- Verify actual noise levels using final equipment lists and construction sequencing.
- Prepare a Construction Noise Management Plan that includes:
  - Final noise predictions;
  - Timeline and staging of construction activities; and,
  - Mitigation and engagement measures tailored to each receiver location.

The Construction Noise Management Plan will guide ongoing construction and ensure compliance with noise mitigation measure expectations identified in this assessment.

Operational noise assessment

An indicative overview of the CO_2 plant operation is as follows.

Exhaust gas from multiple gas engines within the WPPS site is transferred via an above-ground pipeline to the CO_2 plant. In the flue gas scrubber, the gas is cooled, water is condensed, and sulfur dioxide (SO_2) is removed through a chemical reaction. The gas then passes through an absorber and heat exchanger, where CO_2 is absorbed in solution. This CO_2-rich solution is heated and processed to remove contaminants such as oxygen (O_2), nitrogen (N_2), and nitric oxide (NO), optimising CO_2 yield. The CO_2 is then removed from the solution and passes through a reboiler and condenser, and is finally liquefied and stored in a pressurised, insulated tank with a refrigeration unit. The final product is high-purity CO_2, suitable for food and beverage

use. Transport from the site will occur via single or B-double tankers, with an estimated peak of up to eight truck movements per day.

Source sound power levels for the major operational noise sources associated with the Project have been provided by the Proponent, with the noisiest equipment restricted to 100dB(A). The total sound power level for all equipment operating simultaneously is calculated to be 106dB(A).

Using a hemispherical diffusion approach, consistent with the construction noise assessment, the predicted operational noise level at the nearest potential receiver is 28dB(A). This is below the most stringent noise trigger level of 35dB(A) for this location and therefore is not expected to result in sleep disturbance at surrounding receivers.

At this level, the Project represents a minor contribution to the existing acoustic environment and therefore does not materially alter cumulative noise levels associated with the existing WPPS operations.

Given the predicted noise level and the nature of the proposed equipment, the Project is also not expected to exhibit significant tonal or low frequency characteristics that would materially influence compliance with the applicable criteria.

It is recommended that a Noise Verification Report be prepared for the Project which should include:

- Noise monitoring data during full site operation;
- An analysis of compliance with applicable noise limits;
- A description of management actions to address any exceedances of specified limits; and,
- Contingency measures to be implemented if management actions are not effective in reducing noise levels to acceptable standards.

Traffic noise assessment

Traffic generation during the construction phase is expected to peak at 29 vehicle movements per hour, the majority of which would be light vehicles. During operations, traffic generation is estimated at up to eight truck trips per day, which equates to a peak of approximately one vehicle per hour.

The Calculation of Road Traffic Noise (CORTN) method was used to predict noise levels associated with Project-related traffic at the nearest and most affected receivers. Assuming a typical road speed of 100 kilometres per hour (km/h) and a distance of approximately 0.4 km from the roadway to the receivers, the predicted noise levels are expected to comply with the applicable daytime criterion for local roads of 55 dB(A) and night-time criterion of 50 dB(A) during operations.

Summary and conclusion

This report has assessed the potential noise impacts associated with the proposed Supagas CO_2 attached to the WPPS in Narrabri.

The assessment concludes that potential construction, operational, and road traffic noise associated with the Project can be managed to remain within the applicable noise criteria at the nearest receivers. Recommendations for a Construction Noise Management Plan and a Noise Verification Report will help ensure that the assessment outcomes are achieved and provide validation of the findings.

Please feel free to contact us if you would like to clarify any aspect of this report.

Yours faithfully,
Todoroski Air Sciences

Philip Henschke

References

NSW DECC (2009)
"Interim Construction Noise Guideline", NSW Department of Environment and Climate Change, July 2009.

NSW DECCW (2011)
"NSW Road Noise Policy", NSW Department of Environment, Climate Change and Water, March 2011.

NSW EPA (2017)
"Noise Policy for Industry", NSW Environment Protection Authority, October 2017.