



Lake Macquarie ORRF

Noise Impact Assessment Modification

Remondis Australia Pty Ltd

10 January 2022

→ The Power of Commitment



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1. Introduction

1.1 Introduction

GHD has been engaged by REMONDIS Australia Pty Ltd (Remondis) to prepare and lodge an application to modify Development Consent No. DA/1940/2013/A under section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Noise Impact Assessment (NIA) has been prepared to review the potential noise impacts due to the proposed modification.

1.2 Scope

The scope of this assessment includes:

- Review the modified operations and prepare a noise source inventory based on the project description.
- Update the operational noise model for the 2019 modification application and assess modified operations against the Industrial Noise Policy (EPA, 2000).
- Provide recommendations for mitigation and management measures where required.
- Preparation of a report summarising the findings of the assessment.

1.3 Limitations

This report: has been prepared by GHD for Remondis Australia Pty Ltd and may only be used and relied on by Remondis Australia Pty Ltd for the purpose agreed between GHD and Remondis Australia Pty Ltd as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Remondis Australia Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including noise levels) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Overview of original assessment

The following reports have previously been prepared as part of the development:

- *Awaba Alternative Waste Treatment Facility – Stage 2 EIS* (Umwelt, 2013) (EIS report).
- *Awaba AWT Facility Noise Impact Assessment* (GHD, 2016) (modification report).
- *Awaba Alternative Waste Treatment Facility – Stage 2 Environmental Noise Monitoring* (Umwelt, 2018).

A review of the existing environment, noise monitoring and operational noise criteria is provided in this section.

2.1 Existing environment

The existing environment remains unchanged from the description provided in the modification report. Existing noise levels are dominated by road traffic noise from Wilton Road and Wangi Road. Industrial operations from landfill operations at the adjacent Awaba Waste Management Facility (AWMF) from operations of the Alternative Waste Treatment (AWT) facility.

The nearest residential receivers are located to the east of the site on Clover Close within the Leisure Life Village in Toronto. The nearest non-residential receivers include the following:

- Awabawac Park (passive recreation): located 380 m south of the site on Wilton Road.
- Newcastle Lake Macquarie Clay Target Club (active recreation): located 790 m south-east on Wilton Road.
- Toronto Seventh-day Adventist Church (place of worship): located 940 m east on 6 Parkside Parade.
- Toronto Adventist Primary School (educational institute): located 950 m east on 6 Parkside Parade.

2.2 Noise monitoring

2.2.1 EIS report background noise monitoring

Long-term unattended background noise monitoring was undertaken for the EIS to determine existing background noise levels. monitoring was undertaken for a period of 15 days between 19 June and 3 July 2013. A summary of the measured noise levels are provided in Table 2.1. The EIS noise levels have been adopted for this assessment.

Table 2.1 *EIS noise monitoring results summary, dBA*

Location	Rating background level (RBL) $L_{A90}(\text{period})$			Ambient noise level $L_{Aeq}(\text{period})$		
	Day	Evening	Night	Day	Evening	Night
N1	44	41	32	50	48	45

2.2.2 Attended compliance noise monitoring

Attended compliance noise monitoring was undertaken in 2018 to certify noise levels from the facility were operating within the limits as predicted in the modification assessment. The measured noise levels and the estimated site contributions over a 15-minute measurement period are provided in Table 2.2.

Table 2.2 *Attended noise monitoring summary, dBA*

Location	Period	Measured noise levels			Estimated site contribution	
		$L_{A90}(15 \text{ min})$	$L_{Aeq}(15 \text{ min})$	$L_{A1}(15 \text{ min})$	$L_{A90}(15 \text{ min})$	$L_{Aeq}(15 \text{ min})$
R2 – Clover Close, Leisure Life Village, Toronto	Day	46.2	50.0	57.3	Inaudible	Inaudible
	Evening	36.6	42.7	51.3	Inaudible	Inaudible
	Night	36.7	43.1	48.7	Inaudible	Inaudible

2.3 Operational noise criteria

The operational noise criteria from the modification report, summarised in Table 2.3, has been adopted for this assessment. There are no noise limits in the site Environmental Protection Licence (Number 20949).

Table 2.3 Operational noise criteria, dBA

Receiver type	Period	Amenity criteria, L _{Aeq} (period)	Intrusive criteria, L _{Aeq} (15 min)	Sleep disturbance, L _{Amax}	Proposal specific noise criteria
Residential	Day	50	49		49 L_{Aeq}(day)
	Evening	45	46		45 L_{Aeq}(evening)
	Night	40	37	47	37 L_{Aeq}(15 min) 47 L_{Amax}
Educational institute ¹	When in use	35 (internal)	-	-	35 (internal) 45 (external)
Place of worship ¹	When in use	40 (internal)	-	-	40 (internal) 50 (external)
Passive recreation	When in use	50	-	-	50
Active recreation	When in use	55	-	-	55

Note 1: A 10 dB addition has been applied to the internal noise amenity criteria to determine external noise criteria. This is a typical noise level reduction between a partially open window.

3. Operational noise assessment

3.1 Overview of modification

Remondis are proposing to modify the site to aeration using windrow treatment. Windrow treatment involves the elongation of composting piles into windrows which will be aerated by regular mechanical turning of the piles rather than aeration of static piles by use of a Modular Aerated Floor (MAF) system.

This involves replacing the existing aeration substructure that sits on top of the handstand, running beneath the static piles, with a different system that does not provide for static aeration.

3.2 Assessment methodology

The assessment methodology and parameters used for operational noise modelling is consistent with the modification assessment. No changes to the methodology is required for this assessment.

3.3 Noise impact assessment

3.3.1 Noise generating equipment

The equipment for the curing area in the modification assessment included two front-end loaders and 16 ASP fans. These would be replaced with a windrow turner as part of the proposed modification. All other equipment modelled as part of the modification assessment would remain unchanged.

A total of 15 windrows are proposed for the modification. These windrows would replace the aerated static piles, static piles and product storage areas. No additional construction or modification to the existing footprint is required to accommodate the proposed windrows.

Some minor differences in built infrastructure and windrows onsite compared to the previously assessed design, may also result in minor changes to shielding of noise onsite.

A summary of the additional equipment is provided in Table 3.1. All other equipment listed in the modification assessment have been modelled as part of this assessment.

Table 3.1 *Equipment sound power level*

Equipment	Quantity	Sound power level, dBA	Modelled source height, m	Day-time operation	Evening / night-time operation
Windrow turner (Backhus A60)	1	112	2	10%	0%

3.3.2 Predicted noise levels

Noise levels have been predicted the following sensitive receivers. Compliance at these receivers would result in compliance at all other receivers.

- The most affected residential receiver on Clover Close (RES15) and Sunbaker Close (RES30)
- Awabawac Park (REC01)
- Newcastle Lake Macquarie Clay Target Club (REC02)
- Toronto Seventh-day Adventist Church (WOR01)
- Toronto Adventist Primary School (EDU01)

The predicted operational noise levels based on operation of all equipment on site are provided in Table 3.2.

Table 3.2 Predicted operational noise levels, dBA

Receiver ID	Receiver address	Façade	L _{Aeq} (day)	L _{Aeq} (evening)	L _{Aeq} (night)
RES15	Clover Close (Leisure Life Village)	W	41	17	17
RES30	Sunbaker Close (Leisure Life Village)	W	40	16	16
EDU01	6 Parkside Parade	W	43	18	18
REC01	408 Wilton Road	-	50	14	14
REC02	Wilton Road	-	40	13	13
WOR01	6 Parkside Parade	N	42	18	18

The modification assessment noise levels and the change in predicted noise levels for each receiver are provided in Table 3.3.

Table 3.3 Modification assessment noise levels and predicted change, dBA

Receiver ID	Modification assessment predicted level			Change in predicted noise level		
	L _{Aeq} (day)	L _{Aeq} (evening)	L _{Aeq} (night)	L _{Aeq} (day)	L _{Aeq} (evening)	L _{Aeq} (night)
RES15	36	12	12	4.5	5.0	4.7
RES30	36	14	14	4.3	2.5	2.3
EDU01	38	14	14	4.8	4.6	4.3
REC01	49	16	16	1.1	-2.2	-2.6
REC02	36	12	12	3.9	0.9	0.8
WOR01	37	13	14	4.6	4.6	4.3

3.3.3 Discussion

The proposed modification is expected to increase noise levels by up to 5 dBA at the nearest residential receivers. This would be considered a noticeable increase however the predicted noise levels are below the operational noise criteria during all assessment periods.

Predicted evening and night-time noise levels are anticipated to increase due to the relocation of the stormwater tanks from the design assessed in the modification assessment. These stormwater tanks previously shielded noise from the tunnelling process and equipment

The increase in predicted noise level is due to following:

- Change in operational noise equipment which have higher source noise emission levels
- Change in site layout with the relocation of the stormwater tanks

3.3.4 Noise management measures

No additional noise management measures are required as the predicted noise levels are below the operational noise criteria for the project.

4. Conclusion

Operational noise impacts from the proposed modification of the Awaba Alternative Waste Treatment facility have been considered in this report. Measured noise levels and operational noise criteria were sourced from previous assessments that were completed as part of the EIS prepared in 2013 and the subsequent modification to the EIS prepared in 2016.

An operational noise model was prepared and was based off the model prepared as part of the modification assessment. The equipment in the curing area was modified in order to assess noise from operation of a windrow turner across 15 proposed windrows.

Noise levels have been predicted at the worst-affected residential and non-residential sensitive receivers. Operational noise levels are predicted to increase by up to 5 dBA over the levels predicted as part of the modification assessment. Predicted operational noise levels are below the operational noise criteria at all sensitive receivers. No additional noise management measures would be required as a result.

The proposal would be acceptable from an acoustic perspective based on the outcomes of this assessment.

5. References

EPA, *Environmental Protection Licence number 20949*

EPA (2000), *Industrial Noise Policy*

GHD (2016), *Awaba AWT Facility Noise Impact Assessment*

Umwelt (2018), *Awaba Alternative Waste Treatment Facility – Stage 2 Environmental Noise Monitoring*

Umwelt (2013), *Awaba Alternative Waste Treatment Facility – Stage 2 EIS* (Umwelt, 2013)



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Your ref: DA1940/2013/B
Our ref: 12563453

16 June 2023

The Chief Executive Officer
Lake Macquarie City Council
Box 1906
Hunter Regional Mail Centre, NSW, 2310

Att: Geoffrey Keech, Senior Development Planner

DA1940/2013/B – Revised Noise Impact Assessment

Dear Geoffrey

Further to our recent discussions regarding the abovementioned development application please find attached technical memorandum regarding a revised noise impact assessment undertaken to assess the impact of the proposed new exhaust fans on the existing receival hall at the Awaba Organics Resource Recovery Facility.

Should you have any questions in relation to the results of the noise impact assessment please don't hesitate to contact the undersigned.

Regards



Shaun Lawer
Technical Director – Planning and Environment
02 6650 5605
shaun.lawer@ghd.com

Attach: Revised Noise Impact Assessment Technical Memorandum

Technical Memorandum

14 June 2023

To	Shaun Lawer	Contact No.	02 4979 9019
Copy to	-	Email	andy.cheung@ghd.com
From	Andy Cheung	Project No.	12563453
Project Name	Awaba ORRF Modification		
Subject	Revised Noise Impact Assessment		

1. Introduction

GHD was engaged by REMONDIS Australia Pty Ltd (RE) to prepare and lodge an application with Lake Macquarie City Council (LMCC) to modify the Awaba Organics Resource Recovery Facility (Site) by replacing the existing Modular Aerated Floor (MAF) system with a windrow turner. A Noise Impact Assessment (NIA) was prepared to review the potential noise impacts due to the proposed modification (refer to previous NIA [2] for further details).

The scope of the assessment included:

- Review the modified operations and prepare a noise source inventory based on the project description.
- Update the operational noise model for the 2019 modification application and assess modified operations against the Noise Policy for Industry (NPI) (EPA, 2017).
- Provide recommendations for mitigation and management measures where required.
- Preparation of a report summarising the findings of the assessment.

Since lodgement of the application with LMCC, RE has proposed to install five (5) exhaust fans on the receival hall to reduce the odour generated at the site.

1.1 Purpose of this Memorandum

This memorandum has been prepared to consider the impacts associated with the installation of the five (5) exhaust fans on the existing environment.

It should be read in conjunction with the previous NIA [2] for the expanded operations, which was part of the modification application.

1.2 Limitations

This technical memorandum has been prepared by GHD for REMONDIS Australia Pty Ltd. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.

GHD has prepared this memorandum on the basis of information provided by the Client and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this memorandum. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

This Technical Memorandum is provided as an interim output under our agreement with REMONDIS Australia Pty Ltd. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.

Accessibility of documents

If this Technical Memorandum is required to be accessible in any other format this can be provided by GHD upon request and at an additional cost if necessary.

1.3 Assumptions

This assessment assumes that all the exhaust fans will run simultaneously, 24 hours a day, 7 days a week.

This assessment has been prepared with the assumptions considered in the previous noise impact assessment [2] prepared for RE.

2. Assessment update

2.1 Methodology

The 3D noise model created in SoundPLAN (Version 8.2) used for the previous noise assessment was updated with the five (5) exhaust fans.

The receivers, modelling parameters and meteorological conditions used in the modelling are detailed in Section 7.1.2 and 7.1.3 of the previous NIA [2]

The operational plant and equipment were consistent with the previous assessment with the addition of five (5) exhaust fans located on the roof of the Tunnel Composting Plant. The proposed exhaust fans specified have a sound pressure level of 69 dBA at 3m based on the manufacturer's technical specifications.

The additional proposed exhaust fans would have no impact on the operational road traffic noise previously conducted and has not been assessed.

2.2 Results

Predicted noise levels during the day, evening and night-time periods of operation have been provided in Table 1.

Noise levels at all identified receivers, except one (1), are predicted to comply with the operational noise criteria during the day, evening, and night-time periods. An exceedance of 1 dB is expected at REC01 during the daytime period under prevailing winds.

The exceedance at REC01 could be considered a low risk for the following reasons:

- A 1 dB change is generally considered to be a '*just perceivable*' difference.
- The receiver is a motorsport complex, which is generally associated with noisy activities.
- The receiver is not always in use.

It should be noted that this exceedance was predicted in the previous noise assessment, which didn't include the 5 exhaust fans.

Sleep disturbance

The predicted L_{Amax} and L_{Aeq} noise levels in Table 2 indicate that sleep disturbance noise levels are below the project specific noise goals and therefore no noise mitigation measures are required to reduce the noise impacts from the proposed upgrade.

Table 1 **Operational noise predictions results**

Receiver ID	Receiver address	Predicted noise levels (Calm wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Prevailing wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Temperature inversion) L _{Aeq, 15mins} dBA	Project Specific Noise Goal L _{Aeq, 15mins} dBA		
		Day	Evening	Night	Day	Evening	Night	Night	Day	Evening	Night
RES01	12 Sydney Street	20	<15	<15	23	<15	<15	<15	41	39	35
RES02	13 Sydney Street	20	<15	<15	23	<15	<15	<15	41	39	35
RES03	181 Wilton Road	19	<15	<15	22	<15	<15	<15	41	39	35
RES04	9 Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES05	7 Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES06	5 Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES07	3 Olney Street	<15	<15	<15	15	<15	<15	<15	41	39	35
RES08	1 Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES09	1A Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES10	2 Olney Street	19	<15	<15	21	<15	<15	<15	41	39	35
RES11	170 Wilton Road	18	<15	<15	21	<15	<15	<15	41	39	35
RES12	2A Olney Street	18	<15	<15	21	<15	<15	<15	41	39	35
RES13	The Parkway (Leisure Life Village)	36	20	20	39	22	23	23	41	39	35
RES14	Clover Close (Leisure Life Village)	34	<15	<15	37	17	17	17	41	39	35
RES15	Clover Close (Leisure Life Village)	36	21	21	39	23	23	23	41	39	35
RES16	Clover Close (Leisure Life Village)	37	21	21	40	23	23	23	41	39	35
RES17	Clover Close (Leisure Life Village)	37	21	21	39	23	23	23	41	39	35
RES18	Clover Close (Leisure Life Village)	32	<15	<15	35	15	15	15	41	39	35
RES19	Clover Close (Leisure Life Village)	35	19	19	38	21	21	21	41	39	35
RES20	Clover Close (Leisure Life Village)	27	<15	<15	30	<15	<15	<15	41	39	35
RES21	Clover Close (Leisure Life Village)	31	16	16	33	17	18	18	41	39	35

This Technical Memorandum is provided as an interim output under our agreement with REMONDIS Australia Pty Ltd. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.

Receiver ID	Receiver address	Predicted noise levels (Calm wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Prevailing wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Temperature inversion) L _{Aeq, 15mins} dBA	Project Specific Noise Goal L _{Aeq, 15mins} dBA		
		Day	Evening	Night	Day	Evening	Night	Night	Day	Evening	Night
RES22	The Parkway (Leisure Life Village)	34	18	18	37	20	20	20	41	39	35
RES23	The Parkway (Leisure Life Village)	34	19	19	37	21	22	22	41	39	35
RES24	The Parkway (Leisure Life Village)	28	<15	<15	31	<15	<15	<15	41	39	35
RES25	The Parkway (Leisure Life Village)	30	<15	<15	33	16	16	16	41	39	35
RES26	The Parkway (Leisure Life Village)	30	<15	<15	32	16	16	16	41	39	35
RES27	Clover Close (Leisure Life Village)	34	<15	<15	37	17	17	17	41	39	35
RES28	Clover Close (Leisure Life Village)	31	<15	<15	34	<15	<15	<15	41	39	35
RES29	Clover Close (Leisure Life Village)	26	<15	<15	29	<15	<15	<15	41	39	35
RES30	Sunbaker Close (Leisure Life Village)	36	21	21	39	23	23	23	41	39	35
RES31	Sunbaker Close (Leisure Life Village)	36	21	21	39	23	23	23	41	39	35
RES32	Sunbaker Close (Leisure Life Village)	36	21	21	39	23	23	23	41	39	35
RES33	Sunbaker Close (Leisure Life Village)	36	21	21	39	23	23	23	41	39	35
RES34	GyMEA Lily Drive (Leisure Life Village)	36	20	21	39	22	23	23	41	39	35
RES35	GyMEA Lily Drive (Leisure Life Village)	35	19	19	38	21	21	21	41	39	35
RES36	GyMEA Lily Drive (Leisure Life Village)	35	19	19	38	21	21	21	41	39	35
RES37	GyMEA Lily Drive (Leisure Life Village)	35	18	18	37	20	20	20	41	39	35
RES38	GyMEA Lily Drive (Leisure Life Village)	36	19	20	39	22	22	22	41	39	35

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Receiver ID	Receiver address	Predicted noise levels (Calm wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Prevailing wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Temperature inversion) L _{Aeq, 15mins} dBA	Project Specific Noise Goal L _{Aeq, 15mins} dBA		
		Day	Evening	Night	Day	Evening	Night	Night	Day	Evening	Night
RES39	Gymea Lily Drive (Leisure Life Village)	36	20	20	39	22	22	22	41	39	35
RES40	Gymea Lily Drive (Leisure Life Village)	36	20	20	39	22	22	22	41	39	35
RES41	Gymea Lily Drive (Leisure Life Village)	34	17	17	37	19	19	19	41	39	35
RES42	Gymea Lily Drive (Leisure Life Village)	30	16	16	33	18	18	18	41	39	35
RES43	Gymea Lily Drive (Leisure Life Village)	28	<15	<15	30	<15	<15	<15	41	39	35
RES44	Gymea Lily Drive (Leisure Life Village)	34	<15	<15	37	<15	<15	<15	41	39	35
RES45	Gymea Lily Drive (Leisure Life Village)	34	<15	<15	37	<15	<15	<15	41	39	35
RES46	Gymea Lily Drive (Leisure Life Village)	28	<15	<15	31	16	16	16	41	39	35
RES47	Gymea Lily Drive (Leisure Life Village)	33	17	17	36	19	19	19	41	39	35
RES48	Domino Drive (Leisure Life Village)	33	15	15	36	17	17	17	41	39	35
RES49	Domino Drive (Leisure Life Village)	31	16	16	34	18	18	18	41	39	35
RES50	Domino Drive (Leisure Life Village)	27	<15	<15	30	<15	<15	<15	41	39	35
RES51	Domino Drive (Leisure Life Village)	29	<15	<15	31	<15	<15	<15	41	39	35

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Receiver ID	Receiver address	Predicted noise levels (Calm wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Prevailing wind conditions) L _{Aeq, 15mins} dBA			Predicted noise levels (Temperature inversion) L _{Aeq, 15mins} dBA	Project Specific Noise Goal L _{Aeq, 15mins} dBA		
		Day	Evening	Night	Day	Evening	Night	Night	Day	Evening	Night
RES52	Domino Drive (Leisure Life Village)	31	<15	<15	34	17	17	17	41	39	35
RES53	Domino Drive (Leisure Life Village)	32	16	16	35	18	18	18	41	39	35
RES54	Sunbaker Close	36	18	18	39	20	20	20	41	39	35
RES55	Sunbaker Close	33	19	19	36	21	21	21	41	39	35
RES56	11 Olney Street	19	<15	<15	22	<15	<15	<15	41	39	35
RES57	174 Wilton Road	19	<15	<15	22	<15	<15	<15	41	39	35
COM01	Toronto Country Club	40	24	24	42	26	26	26	63 (when in use)		
WOR03	6 Parkside Parade	39	23	23	42	25	25	25	48 ^[1] (when in use)		
WOR01	6 Parkside Parade	38	23	23	41	25	25	25	48 ^[1] (when in use)		
WOR02	6 Parkside Parade	38	22	22	41	24	24	24	48 ^[1] (when in use)		
REC01	408 Wilton Road – Westlakes Automobile Club	52	29	30	54	31	31	31	53 (when in use)		
REC02	468 Wilton Road – Newcastle Lake Macquarie Clay Target Shooting Club	37	21	21	40	23	23	23	53 (when in use)		
REC03	122 Wangi Road – Toronto Golf Range	37	21	21	40	<15	23	23	53 (when in use)		

This Technical Memorandum is provided as an interim output under our agreement with REMONDIS Australia Pty Ltd. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.

Table 2 *Predicted sleep disturbance noise levels*

Receiver ID	Receiver address	Predicted Sleep Disturbance Noise Level		Project Specific Sleep Disturbance Noise Goal	
		L _{Amax} dBA ¹	L _{Aeq} (15mins) dBA	L _{AFmax} dBA	L _{Aeq} (15mins) dBA
RES01	12 Sydney Street	<15	<15	52	40
RES02	13 Sydney Street	<15	<15	52	40
RES03	181 Wilton Road	<15	<15	52	40
RES04	9 Olney Street	<15	<15	52	40
RES05	7 Olney Street	<15	<15	52	40
RES06	5 Olney Street	<15	<15	52	40
RES07	3 Olney Street	<15	<15	52	40
RES08	1 Olney Street	<15	<15	52	40
RES09	1A Olney Street	<15	<15	52	40
RES10	2 Olney Street	<15	<15	52	40
RES11	170 Wilton Road	<15	<15	52	40
RES12	2A Olney Street	<15	<15	52	40
RES13	The Parkway (Leisure Life Village)	29	23	52	40
RES14	Clover Close (Leisure Life Village)	23	17	52	40
RES15	Clover Close (Leisure Life Village)	29	23	52	40
RES16	Clover Close (Leisure Life Village)	29	23	52	40
RES17	Clover Close (Leisure Life Village)	29	23	52	40
RES18	Clover Close (Leisure Life Village)	21	15	52	40
RES19	Clover Close (Leisure Life Village)	27	21	52	40
RES20	Clover Close (Leisure Life Village)	20	<15	52	40
RES21	Clover Close (Leisure Life Village)	24	18	52	40
RES22	The Parkway (Leisure Life Village)	26	20	52	40
RES23	The Parkway (Leisure Life Village)	28	22	52	40
RES24	The Parkway (Leisure Life Village)	20	<15	52	40
RES25	The Parkway (Leisure Life Village)	22	16	52	40
RES26	The Parkway (Leisure Life Village)	22	16	52	40
RES27	Clover Close (Leisure Life Village)	23	17	52	40
RES28	Clover Close (Leisure Life Village)	21	<15	52	40
RES29	Clover Close (Leisure Life Village)	19	<15	52	40
RES30	Sunbaker Close (Leisure Life Village)	29	23	52	40
RES31	Sunbaker Close (Leisure Life Village)	29	23	52	40
RES32	Sunbaker Close (Leisure Life Village)	29	23	52	40
RES33	Sunbaker Close (Leisure Life Village)	29	23	52	40
RES34	GyMEA Lily Drive (Leisure Life Village)	29	23	52	40
RES35	GyMEA Lily Drive (Leisure Life Village)	27	21	52	40

This Technical Memorandum is provided as an interim output under our agreement with REMONDIS Australia Pty Ltd. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.

Receiver ID	Receiver address	Predicted Sleep Disturbance Noise Level		Project Specific Sleep Disturbance Noise Goal	
		L _{Amax} dBA ¹	L _{Aeq} (15mins) dBA	L _{AFmax} dBA	L _{Aeq} (15mins) dBA
RES36	GyMEA Lily Drive (Leisure Life Village)	27	21	52	40
RES37	GyMEA Lily Drive (Leisure Life Village)	26	20	52	40
RES38	GyMEA Lily Drive (Leisure Life Village)	28	22	52	40
RES39	GyMEA Lily Drive (Leisure Life Village)	28	22	52	40
RES40	GyMEA Lily Drive (Leisure Life Village)	28	22	52	40
RES41	GyMEA Lily Drive (Leisure Life Village)	25	19	52	40
RES42	GyMEA Lily Drive (Leisure Life Village)	24	18	52	40
RES43	GyMEA Lily Drive (Leisure Life Village)	21	<15	52	40
RES44	GyMEA Lily Drive (Leisure Life Village)	21	<15	52	40
RES45	GyMEA Lily Drive (Leisure Life Village)	21	<15	52	40
RES46	GyMEA Lily Drive (Leisure Life Village)	22	16	52	40
RES47	GyMEA Lily Drive (Leisure Life Village)	25	19	52	40
RES48	Domino Drive (Leisure Life Village)	23	17	52	40
RES49	Domino Drive (Leisure Life Village)	24	18	52	40
RES50	Domino Drive (Leisure Life Village)	21	<15	52	40
RES51	Domino Drive (Leisure Life Village)	20	<15	52	40
RES52	Domino Drive (Leisure Life Village)	23	17	52	40
RES53	Domino Drive (Leisure Life Village)	24	18	52	40
RES54	Sunbaker Close	26	20	52	40
RES55	Sunbaker Close	27	21	52	40
RES56	11 Olney Street	<15	<15	52	40
RES57	174 Wilton Road	<15	<15	52	40
COM01	Toronto Country Club	32	26	N/A	N/A
WOR03	6 Parkside Parade	31	25	N/A	N/A
WOR01	6 Parkside Parade	31	25	N/A	N/A
WOR02	6 Parkside Parade	30	24	N/A	N/A
REC01	408 Wilton Road – Westlakes Automobile Club	37	31	N/A	N/A
REC02	468 Wilton Road – Newcastle Lake Macquarie Clay Target Shooting Club	29	23	N/A	N/A
REC03	122 Wangi Road – Toronto Golf Range	29	23	N/A	N/A

Note 1: In the absence of L_{Amax} equipment noise levels, the L_{Amax} noise levels have been assumed to be 6 dB higher than the L_{Aeq}.

3. Conclusion

GHD was engaged by RE to prepare and lodge an application with LMCC to modify the Awaba Organics Resource Recovery Facility (Site) by replacing the existing Modular Aerated Floor (MAF) system with a

windrow turner. An updated assessment, which considers the noise impacts of five (5) exhaust fans being installed on the Site, was prepared to review the potential noise impacts due to the proposed modification.

The updated operational noise impact assessment has led to the following conclusions, which are subject to the limitations outlined in Section 1.2:

- Noise levels at all identified receivers, except one (1), are predicted to comply with the operational noise criteria during the day, evening, and night-time periods. An exceedance of 1 dB is expected at REC01 during the daytime period under prevailing winds.
- The exceedance at REC01 could be considered a low risk for the following reasons:
 - A 1 dB change is generally considered to be a 'just perceivable' difference.
 - The receiver is a motorsport complex, which is generally associated with noisy activities.
 - The receiver is not always in use.
- The exceedance was predicted in the previous noise assessment, which didn't include the 5 exhaust fans.
- The predicted night-time noise levels indicate that the potential for sleep disturbance to occur is unlikely and a detailed sleep disturbance assessment is not required.

The overall noise impacts from this updated noise assessment are the same as what was identified in the previous noise assessment [2] and it is recommended that the general mitigation measures outlined in that report be used where reasonable and feasible to minimise noise impacts from any site operations.

4. References

[1] NSW EPA October 2017, *Noise Policy for Industry*

[2] GHD 2022, *Organics Resource Recovery Facility – Noise Impact Assessment*

Regards

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