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Environmental Protection Agency New South Wales  
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To Whom It May Concern

**EPL 21368 Condition R4.2 – Annual Rollingstock Performance Report**

Please find attached the Annual Rollingstock Performance Report from One Rail Australia in accordance with the conditions of our Licence EPL 21368.

If you have any further questions regarding this report, please do not hesitate to contact me on 0419 220 387 or at [Douglas.Mills@1rail.com.au](mailto:Douglas.Mills@1rail.com.au).

Your sincerely

A handwritten signature in black ink that reads "D. g. mills".

Douglas Mills

Executive General Manager Human Resources, Safety and Sustainability





## **EPL 21368 CONDITION R4.2 – ANNUAL ROLLINGSTOCK PERFORMANCE REPORT**

Issue Date: 20/02/2025

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## 1. INTENT

One Rail Australia Pty Ltd was issued Environment Protection Licence (EPL) 21368 by the New South Wales (NSW) Environment Protection Authority (EPA) on 05 August 2020 under the Protection of the Environment Operations Act 1997 (the POEO Act).

The EPL permits the scheduled activity 'Railway activities – rolling stock operations' on a licenced rail network.

Condition R4.2 – Annual Rollingstock Performance Report of EPL 21368 requires ORA to develop an Annual Rollingstock Performance Report for the previous calendar year and submit it to the NSW EPA by the 28 February of each year. This Rollingstock Performance Report considers the period from the 01 January 2024 – 31 December 2024.

## 2. OBJECTIVE

The objective of the Report is to satisfy the following EPL conditions:

R4.2 - The licensee must submit to the EPA no later than 28 February of each year an Annual Rolling Stock Performance report for the previous calendar year (1 January to 31 December)<sup>2</sup>.

The report must include:

*a) the number of the licensee's locomotives that underwent a Major Engine Overhaul in the calendar year and, for each locomotive:*

- i. the unique identification number of the locomotive.*
- ii. details of the class, type/model, engine manufacturer and engine model; and*
- iii. the date of the Major Engine Overhaul.*

*b) details of all locomotives identified under Condition M5.3(e) and a summary of the noise mitigation measures in the plan of management required by Condition M5.3(e) that were undertaken and completed during the calendar year, if any.*

*c) details of any unacceptable Angle of Attack event identified for a freight wagon of a priority wagon class within the meaning of this licence during the calendar year for the purposes of Condition M5.2. These details must include:*

*the unique identification number of each freight wagon involved and the time and date of any unacceptable Angle of Attack event at a Wayside Monitoring System location;*

- whether the freight wagon identified under Condition R4.2(c)(i) has been rectified in accordance with Condition U5 of this licence, or when rectification is scheduled to occur for the identified freight wagon; and,*
- where a freight wagon of a priority wagon class that has been subject to rectification under Condition U5 has recorded an unacceptable Angle of Attack, the additional measures to ensure the wagon has an acceptable Angle of Attack and timeframes for implementation of those measures*

*d) the number of freight wagons of a priority wagon class that underwent rectification under Condition U5 during the reporting period and for each freight wagon:*

- the unique identification number of the freight wagon;*
- details of the class of the freight wagon; and*
- a summary of the corrective measures undertaken to rectify the freight wagon, including the date of freight wagon rectification.*

### 3. SCOPE

As per the Condition E.1.1 of the EPL ORA Locomotives are approved as an Existing Locomotive Class which means for the purposes of noise limits in Condition L3.1 a class of Locomotive that has operated on a Licenced Rail Network and Listed on the EPA's Locomotive Class Register before the date of the issue of the licence.

As per the condition E.1.1 of the EPL ORA Freight Wagons are a railway vehicle that is used or intended to be used to transport freight for reward but does not include a locomotive.

This Report considers One Rail Locomotives and Freight Wagons that operated or were scheduled to operate over the Transport for NSW (TfNSW) and Australian Rail Track Corporation (ARTC) NSW licenced rail networks from the 01 January 2024 – 31 December 2024.

### 4. ROLLING STOCK COMPLIANCE AND MAINTENANCE SUMMARY

#### 4.1 LOCOMOTIVES

##### a) Major Engine Overhauls

As per the Condition E.1.1 of the EPL a major engine overhaul is defined as either:

*“A scheduled maintenance procedure that either replaces or inspects and qualifies each and every power assembly of the locomotive engine. A major engine overhaul will not include unscheduled maintenance to replace these components due to unforeseen failure of engine component(s) prior to scheduled maintenance; or*

*Installation of a remanufactured or freshly manufactured engine into an existing locomotive...”*

For the reporting period of 2024, One Rail undertook six (6) major engine overhauls for locomotives that operated in NSW, under EPL 21368. Details for these Locomotives are listed in Table 1.

##### b) NOISE TESTING

As per condition M5.3 ORA must

*“undertake noise testing in accordance with this condition for each locomotive operating on a Licenced Rai Network (excluding locomotives listed in the Locomotive Class Register as “Legacy Locomotive Class”) after each Major Engine Overhaul”.*

*“the noise testing must be the central 15 metre point on either side of the locomotive in accordance with AS2377 for each notch setting under self-load”*

*“the licensee must compare noise measurement to the limits in Condition L3.5 and Condition L3.6.”*

*“where noise measurement is obtained under Condition M5.3(a) exceeds the limits in Condition L3.5 by more the 5dB and/or exhibit tonality in accordance with L3.6, the licensee must prepare a plan of management that:*

*Proposes feasible and reasonable noise mitigation measures to reduce noise emissions from the locomotives to comply with Conditions L3.5 and L3.6;*

*Include timeframes to implement identified noise mitigation measure; and*

*Must be submitted to the EPA for approval within 6 months of undertaking the noise testing in Condition M5.3(a).*

Five (5) Locomotives we tested by ORA in 2024 against the following parameters in EPL 21368.

Operating Condition	Location of Measurement	Noise Limit
Low idle with air compressor, all cooling fans and air conditioning operating at maximum load occurring at low idle	Stationary 15 metre contour, except end positions (front and rear)	70 dB LAFMax, 30 seconds 85 dB LZFFMax, 30 seconds (Microphone Height: 1.5 Metres Above)
All other throttle settings under self load with air compressor, all cooling fans and air conditioning operating	Stationary 15 metre contour, except end positions (front and rear)	87 dB LAFMax, 30 seconds 95 dB LZFFMax, 30 seconds (Microphone Height: 1.5 Metres Above)

Additionally, ORA have tested Tonality against the following parameters –

*External noise is non-tonal if the Leq 30s sound pressure level in each z-weighted one-third octave band does not exceed the level of the adjacent bands on both sides by:*

- *5 dB if the centre frequency of the band containing the tone is above 400 Hz; and*
- *8 dB if the centre frequency of the band containing the tone is between 160 and 400 Hz; and*
- *15 dB if the centre frequency of the band containing the tone is below 160Hz.*

Testing of the ORA Locomotives occurred at the UGL Facility in Broadmeadow adjacent to Griffiths Road. The background noise included adjacent road traffic, birds and noise from Operations on the UGL site. Noise tests were conducted in the early morning to reduce impacts from these sources.

Noise tests were recorded using two (2) Class 1 noise loggers. These loggers were calibrated before and after the testing using a calibrator. The drift on both loggers was less than 0.2dB. All instruments used in the testing had current NATA calibration. The loggers were positioned 15mtrs from the loco at the central point on each side.

Environmental conditions were recorded using a Kestrel 5000 hand-held weather station.

For the reporting period of 2024, One Rail undertook noise testing on five (5) locomotives that underwent major engine overhauls. Noise testing results are listed in Table 2. A summary of each test is provided below.

**XRN 006**

Locomotive exceeded the LZFFmax criteria requiring a management plan by 5 dB and a negligible 1 dB in low idle and Notch 8 respectively. Negligible tonality in the order of 1 dB to 2 dB above thresholds was measured at Low Idle, High Idle, Notch 2, Notch 4 and Notch 7.

The results of the testing indicate that noise levels from the locomotive are consistent with type testing and not indicative of deterioration in noise performance.

**XRN 004**

Locomotive exceeded the LZFFmax criteria requiring a management plan by 5 dB and a negligible 1 dB in low idle and Notch 8 respectively. The locomotive exhibited negligible tonality at Idle and tonality in the order of 5 dB above thresholds in Notch 2 and Notch 3.

The results of the testing indicate that noise levels and tonal characteristics from the locomotive are consistent with type testing and not indicative of deterioration in noise performance.

**XRN 008**

Locomotive exceeded the LZ<sub>Fmax</sub> criteria requiring a management plan by 4 dB and a negligible 1dB in low idle and Notch 8 respectively. The locomotive exhibited negligible tonality at Idle and minor tonality in the order of 3 dB above thresholds in Notch 3 and Notch 4 and Notch 6.

The results of the testing indicate that noise levels and tonal characteristics from the locomotive are consistent with type testing and not indicative of deterioration in noise performance.

**XRN 016**

Locomotive testing showed noise levels and tonality were below the criteria requiring a noise management plan.

**XRN 026**

Locomotive exceeded the LZ<sub>Fmax</sub> criteria requiring a management plan by a negligible 1dB in Notch 8. The locomotive was measured to exhibit minor tonality, however subjectively the locomotive was not determined to be tonal. The measured tonality was attributed to nearby extraneous maintenance noise.

Results of the testing indicate that noise levels from the locomotive are consistent with type testing and not indicative of deterioration in noise performance.

**c) Noise Mitigation Measures**

*“Report must include details of all locomotives identified Under Condition M5.3(e) of Licence 21368, and a summary of the noise mitigation measures in the plan of management require by Condition M5.3(e) that were undertaken and completed during the calendar year, if any.*”

For the reporting period of 2024, noise testing was undertaken following the major engine overhauls. As an outcome the noise results are consistent with Type Testing Results as noted in Table 3 from when the 1<sup>st</sup> XRN Locomotive was commissioned in 2010 and there has been no change in the noise performance of the locomotives.

With noise testing results generally no greater than 5dB above the limits in L3.5 mitigation measures are not considered essential by ORA; however, 4 locomotives have exceeded by 6dB (or a negligible 1dB above the management plan threshold allowance) when in Notch 8 setting. Similarly, exceedances of the tonality criteria, when observed, was consistent with Type Testing.

Notwithstanding testing indicating that there has been no deterioration in noise performance from the locomotives, ORA will commit to a reasonable and feasible mitigation plan to repack the mufflers on these Locomotives at their next scheduled “B” Services as listed in Table 1.

**4.2 WAGON ANGLE OF ATTACK**

During the reporting period for 2024 One Rail confirms that it is currently not operating any freight wagons of a priority class with non-compliance AoA.

Table 1 – Major Engine Overhauls

Class	Locomotive Identification #	Type	Engine Manufacturer	Engine Model	Date of Overhaul <sup>Λ</sup>	Approval Path	Mitigation Measures	Mitigation Measure Time Frame	Date Mgt Plan Submitted to EPA
XRN	006	C44ACi	Wabtec/UGL	GE 7FDL16-EFI	20/06/2024	Existing	Repack Muffler	20/12/2025	28/02/2025
XRN	004	C44ACi	Wabtec/UGL	GE 7FDL16-EFI	04/07/2024	Existing	Repack Muffler	04/01/2026	28/02/2025
XRN	008	C44ACi	Wabtec/UGL	GE 7FDL16-EFI	16/08/2024	Existing	Repack Muffler	16/02/2026	28/02/2025
XRN	016	C44ACi	Wabtec/UGL	GE 7FDL16-EFI	25/09/2024	Existing	Not Required	Not Required	Not Required
XRN	026	C44ACi	Wabtec/UGL	GE 7FDL16-EFI	06/11/2024	Existing	Repack Muffler	06/05/2026	28/02/2025

Table 2 – Noise Testing Results

L3.5 LIMITS		Test Type	Idle	Notch 1	Notch 2	Notch 3	Notch 4	Notch 5	Notch 6	Notch 7	Notch 8
Class	Locomotive Identification #	Test Date	Result	Result	Result	Result	Result	Result	Result	Result	Result
XRN	006	LAFMax	70dB	87dB	87dB	87dB	87dB	87dB	87dB	87dB	87dB
		LZFMMax	85dB	95dB	95dB	95dB	95dB	95dB	95dB	95dB	95dB
		Test Type	Idle Result	Notch 1 Result	Notch 2 Result	Notch 3 Result	Notch 4 Result	Notch 5 Result	Notch 6 Result	Notch 7 Result	Notch 8 Result
XRN	004	LAFMax	68dB	71dB	75dB	79dB	82dB	83dB	82dB	85dB	88dB
		LZFMMax	95dB	92dB	91dB	92dB	96dB	94dB	97dB	98dB	101dB
		Tonal	Negligible	Pass	Negligible	Pass	Negligible	Pass	Pass	Negligible	Pass
XRN	008	LAFMax	67dB	72dB	75dB	82dB	83dB	84dB	83dB	84dB	87dB
		LZFMMax	95dB	93dB	92dB	93dB	96dB	95dB	98dB	100dB	101dB
		Tonal	Pass	Pass	Pass	Fail	Fail	Fail	Pass	Pass	Pass
XRN	016	LAFMax	68dB	73dB	76dB	82dB	82dB	84dB	85dB	85dB	88dB
		LZFMMax	94dB	91dB	92dB	93dB	96dB	96dB	98dB	99dB	101dB
		Tonal	Pass	Pass	Pass	Fail	Fail	Fail	Pass	Pass	Pass
XRN	026	LAFMax	71dB	74dB	76dB	81dB	82dB	82dB	84dB	86dB	87dB
		LZFMMax	90dB	93dB	94dB	93dB	97dB	95dB	98dB	99dB	100dB
		Tonal	Pass	Pass	Pass	Pass	Pass	Pass	Negligible	Pass	Pass
XRN	026	LAFMax	69dB	73dB	74dB	81dB	81dB	81dB	82dB	87dB	87dB
		LZFMMax	87dB	88dB	91dB	93dB	97dB	93dB	97dB	98dB	101dB
		Tonal	Pass	Pass	Pass	Fail	Fail	Fail	Pass	Pass	Pass

Note – Results not exceeding L3.5 limits by more than 5dB are considered acceptable as per M5.3(e)

 Table 3 – Type Testing Noise Testing Results – From 1<sup>st</sup> C44 Loco Commissioning for ORA in 2010.

L3.5 LIMITS		Test Type	Idle	Notch 1	Notch 2	Notch 3	Notch 4	Notch 5	Notch 6	Notch 7	Notch 8
Class	Locomotive Identification #	Test Date	Result	Result	Result	Result	Result	Result	Result	Result	Result
XRN	001	LAFMax	70dB	87dB	87dB	87dB	87dB	87dB	87dB	87dB	87dB
		LZFMMax	85dB	95dB	95dB	95dB	95dB	95dB	95dB	95dB	95dB
		Test Type	Idle Result	Notch 1 Result	Notch 2 Result	Notch 3 Result	Notch 4 Result	Notch 5 Result	Notch 6 Result	Notch 7 Result	Notch 8 Result
XRN	001	LAFMax	78dB	72dB	75dB	80dB	80dB	81dB	82dB	83dB	85dB
		LZFMMax	98dB	93dB	80dB	96dB	99dB	96dB	99dB	99dB	100dB
		Tonal	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note – Tonality as indicated when tested in 2010.

Note – Results not exceeding L3.5 limits by more than 5dB are considered acceptable as per M5.3(e)