



**Transport**  
Asset Standards  
Authority

# New external noise limits for electric rolling stock on the Transport for NSW network

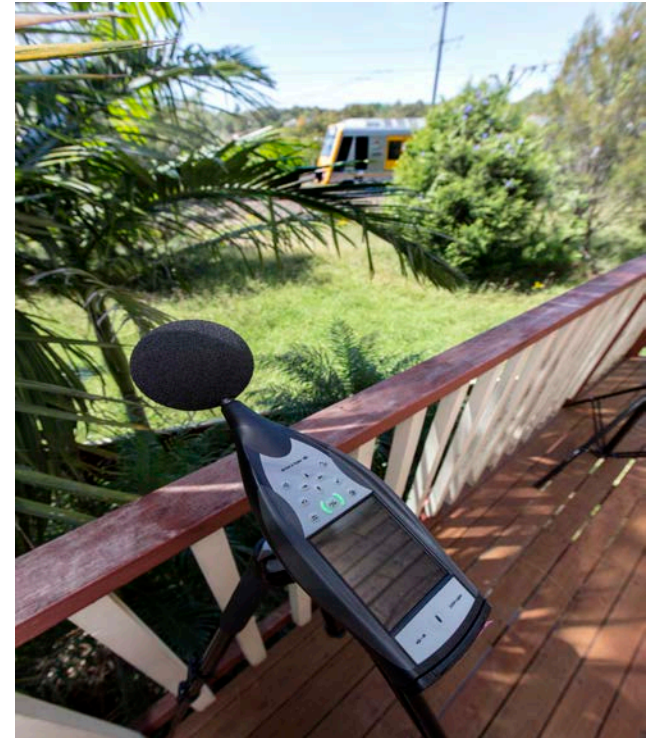
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# Agenda

1. Background
2. EMU limit 2014
3. Who is the ASA?
4. Development overview
5. Key outcomes
6. Conclusion



# 2014 limits – background

- Asset Standards Authority (ASA), of TfNSW
- T HR RS 00100 ST - *RSU 100 Series – Minimum Operating Standards for Rolling Stock – General Interface Standards*, clause 6 Environmental Interface (RSU 150)
- New noise standard for Electric Multiple Units (EMU)
- Driven by EMU acquisition project
- Assured argument for the limits

# External noise limits for Passenger EMU

- T HR RS 00100 ST Minimum Operating Standards for Rolling Stock
- RSU 100 series – general requirements for all rolling stock
- RSU 150 Environmental Requirements (noise only)
- New Section (6.3.2 page 49) for external noise limits for Electric Multiple Unit (EMU) Passenger Trains

# External noise limits for Passenger EMU

- Comply with noise emission limits for the **whole of asset operational life**
- **ISO 3095:2013** except where specified otherwise
- **Stationary tests** conducted in accordance with (iaw) Section 5 measure: LpAeq, LpAFmax, tonality, frequency spectrum and impulsiveness
- **Constant speed tests** conducted iaw Section 6, at V=80 km/h and Vmax measure: LpAeq, LpAFmax, tonality, frequency spectrum and impulsiveness
- **Acceleration tests** conducted iaw Section 7 measure: LpAeq, LpAFmax, tonality, frequency spectrum and impulsiveness
- **Braking tests:** LpAeq, LpAFmax, tonality, frequency spectrum and impulsiveness
- **Additional measurements** as necessary to determine **vehicle maximum noise operating condition** and individual items of equipment.

# External noise limits for Passenger EMU

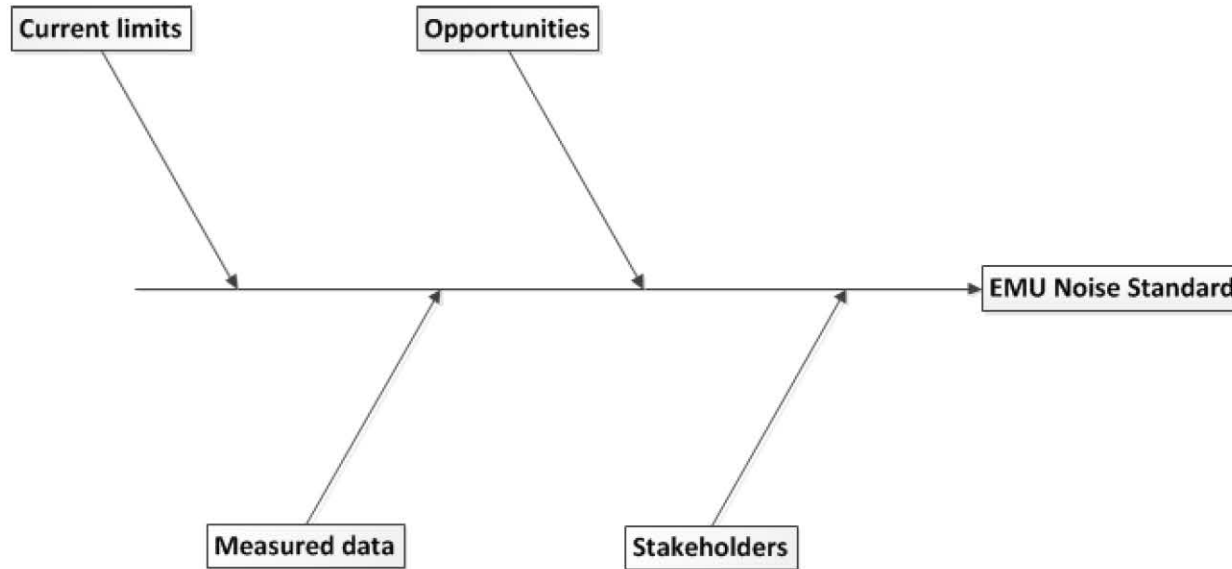
Test	Test condition <small>* Adjusted to 7.5m</small>	Metric	Limit
Stationary 1	Section 5.4.2 'normal operating conditions (with additional quantities)	$L_{AFmax}$	65
		$L_{Aeq}$	62
Stationary 2	Section 5.4.3 configured to give maximum noise operating condition	$L_{AFmax}$	71
		$L_{Aeq}$	65
Stationary 3	Section 5.4.3 configured to vehicle presentation (cleaning) mode	$L_{AFmax}$	-
		$L_{Aeq}$	59
V=80km/h	Section 6 (with additional quantities)	$L_{AFmax}$	83
		$L_{Aeq}$	80
Accelerating	Section 7 (with additional quantities)	$L_{AFmax}$	82
		$L_{Aeq}$	80
Breaking	Section 8 (with additional quantities)	$L_{AFmax}$	82
		$L_{Aeq}$	80

# ASA in Transport for NSW

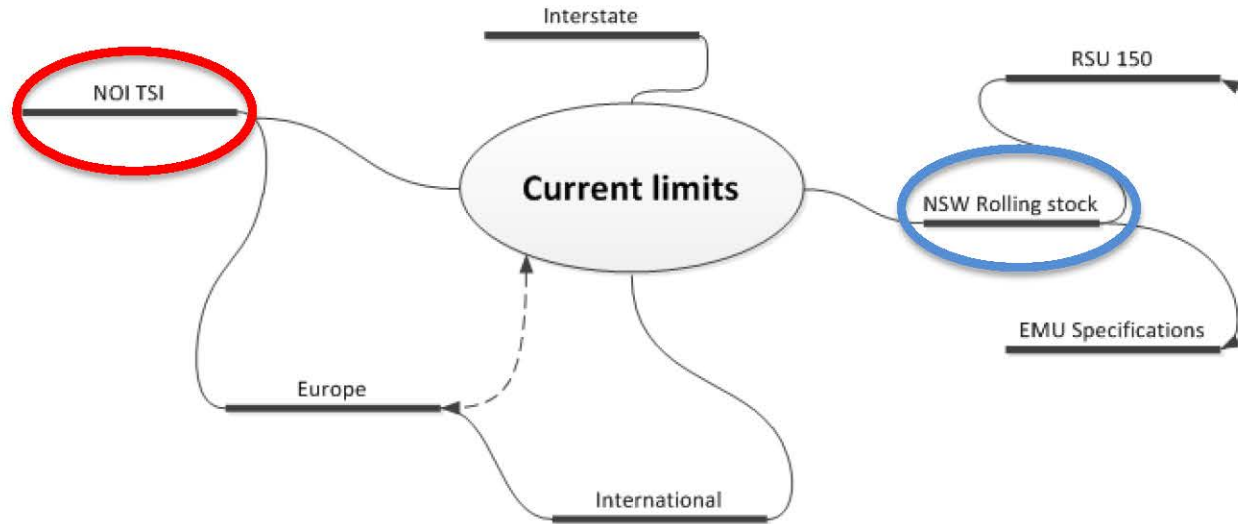
- TfNSW is asset owner/custodian
- Operations and maintenance contracted out
- ASA works on behalf of the asset owner/custodian
- Authority defined under ASA Charter



# Development process



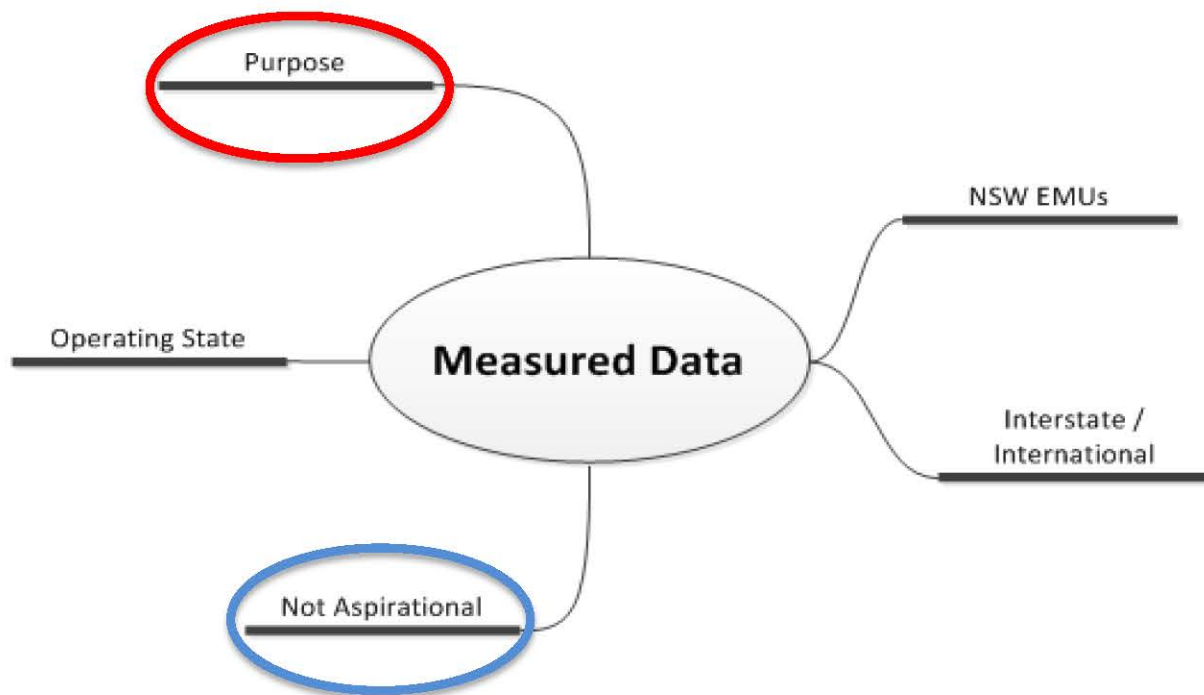
# Current limits



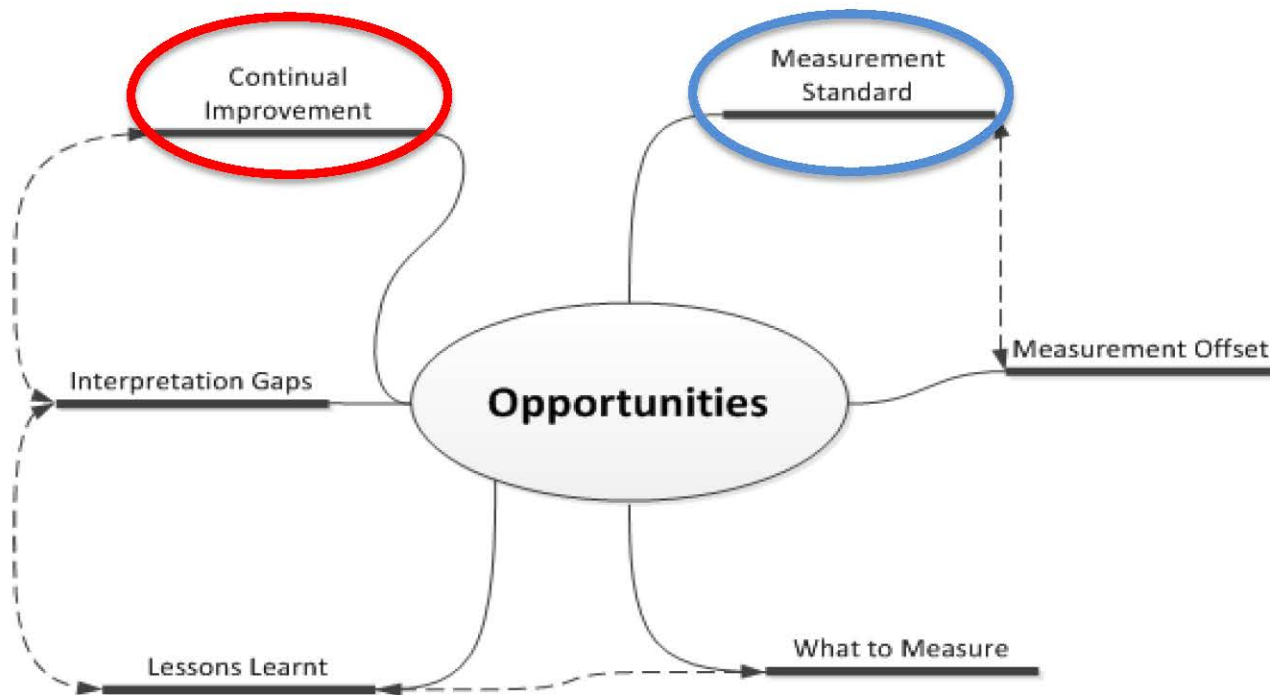
# External noise limits for Passenger EMU

Test	Test condition * Adjusted to 7.5m	Metric	ASA	Existing fleet specs*	NOI TSI 2014
Stationary 1	Section 5.4.2 'normal operating conditions (with additional quantities)	L <sub>AFmax</sub>	65	-	-
		L <sub>Aeq</sub>	62	-	65
Stationary 2	Section 5.4.3 configured to give maximum noise operating condition	L <sub>AFmax</sub>	71	65	85
		L <sub>Aeq</sub>	65	-	68
Stationary 3	Section 5.4.3 configured to vehicle presentation (cleaning) mode	L <sub>AFmax</sub>	-	62	-
		L <sub>Aeq</sub>	59	-	65
V=80km/h	Section 6 (with additional quantities)	L <sub>AFmax</sub>	83	83 - 85	-
		L <sub>Aeq</sub>	80	-	80
Accelerating	Section 7 (with additional quantities)	L <sub>AFmax</sub>	82	83 - 85	80
		L <sub>Aeq</sub>	80	-	-
Breaking	Section 8 (with additional quantities)	L <sub>AFmax</sub>	82	83 - 85	-
		L <sub>Aeq</sub>	80	-	-

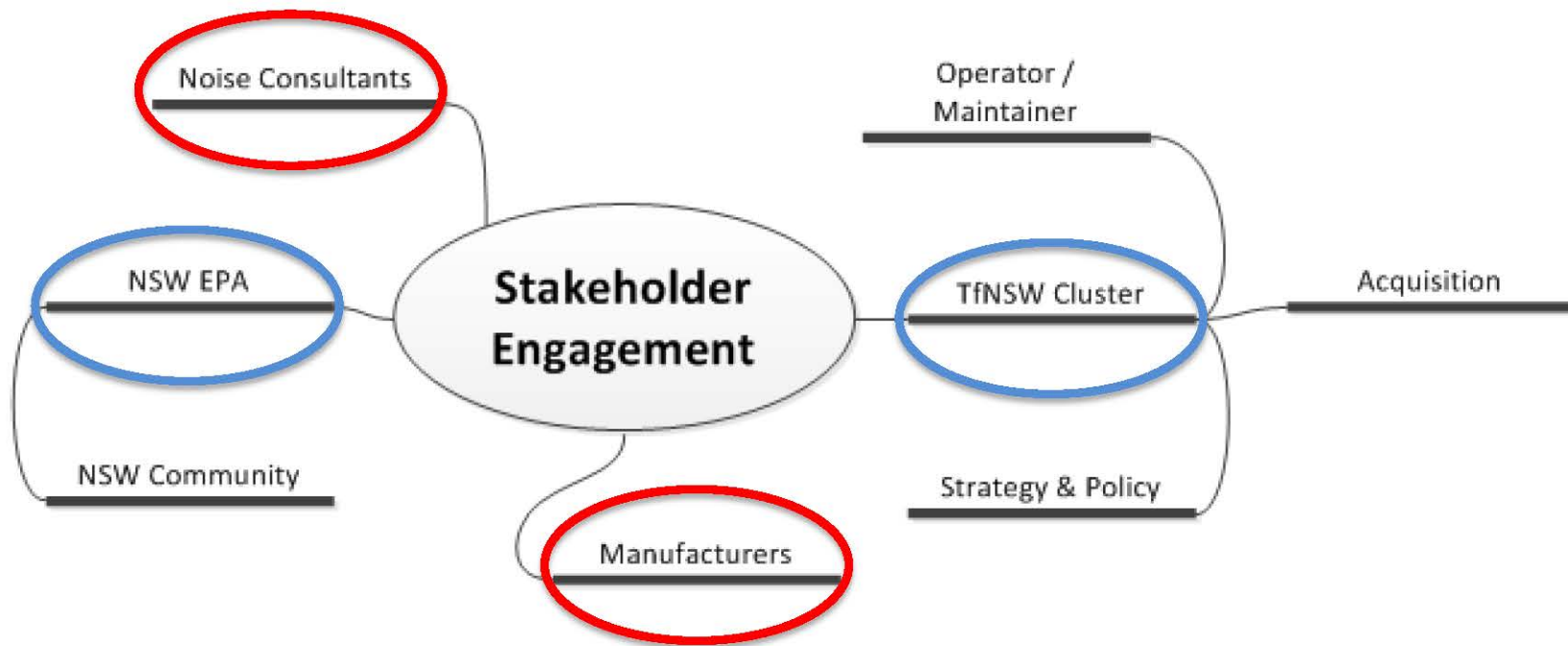
# Measured data



# Opportunities



# Stakeholders



# Key outcomes

- ISO 3095:2013 except where specified otherwise
- Aligned testing requirements with ISO 3095, including test track and conditions
- Standardised measuring distance at  $L = 7.5\text{m}$
- Standardised the rolling stock operating conditions for testing
- Criteria and limits for maximum and time-averaged measurements and maintains existing (Australian/NSW) tonal limits
- Introduces criteria for treating impulsive noise
- Additional measurements to determine vehicle maximum noise operating condition and individual items of equipment, including treatment for impulsive noise
- Standardisation for asset procurement, type-testing and easier comparison between rolling stock types eg Euro/Aus/Int/TSI

# Conclusion

- Development was collaborative
- First development of this style for TfNSW
- Focus on engagement
- Assured engineering argument
- Real test will be once the EMU's are acquired

# Questions?

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