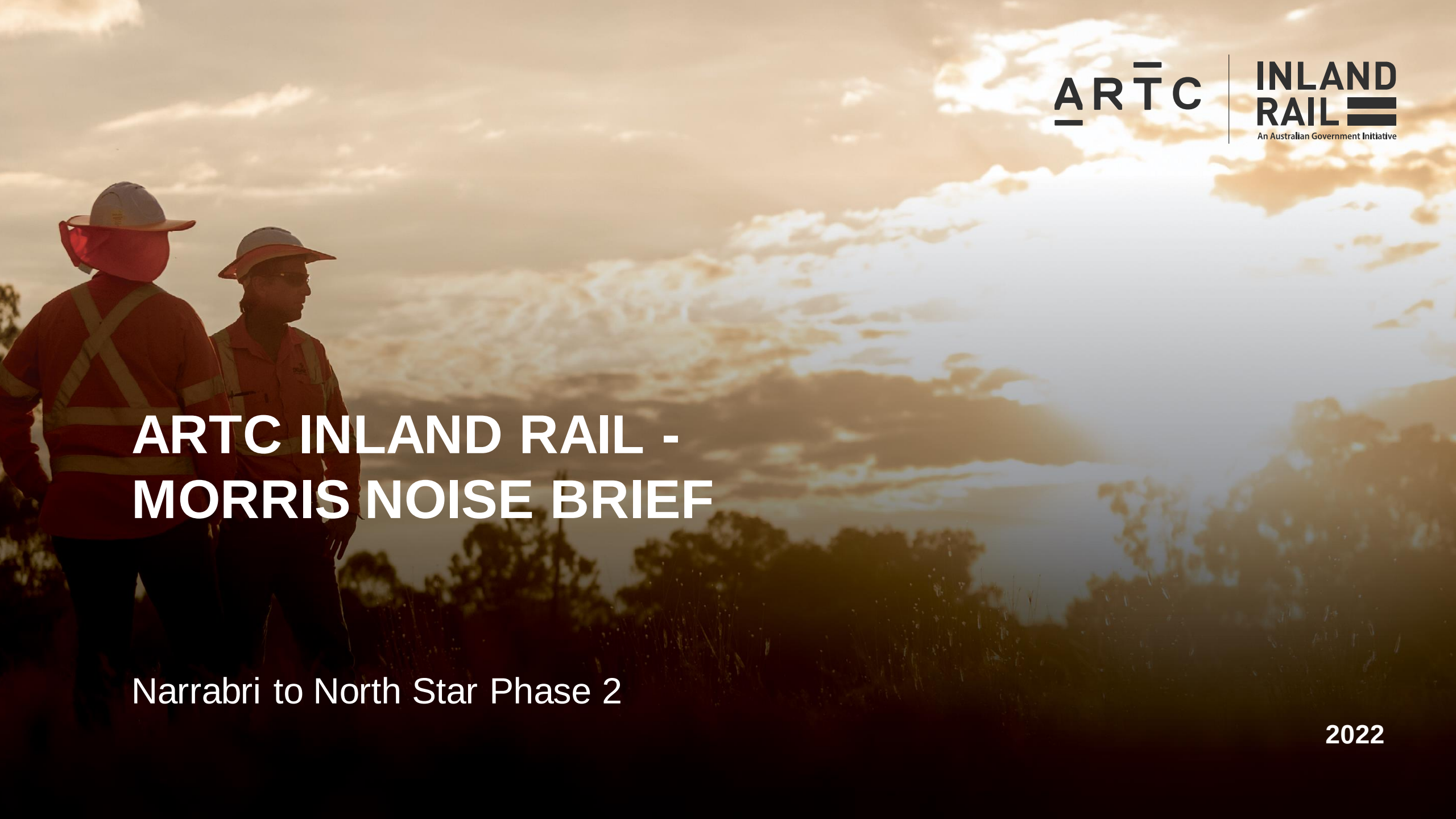


ARTC INLAND RAIL - MORRIS NOISE BRIEF

Narrabri to North Star Phase 2

2022

ACKNOWLEDGEMENT OF COUNTRY

Inland Rail acknowledges the Traditional custodians of the land on which we work, and pays our respects to Elders past and present.

ARTC INLAND RAIL

Journey artwork created by Elenore Binge, proud Goomeroi / Kamilaroi woman

NARRABRI TO NORTH STAR – PHASE 2

ARTC INLAND RAIL

Complex two-phase project to rebuild rail corridor

Phase 2 – Upgrading 13.7km of track across a floodplain and building 1.6km of new track

RAIL CORRIDOR

Upgrading approx. 13.7km of existing rail corridor
Constructing approx. 1.6km of new rail corridor

CAPACITY

Accommodating 1.8km-long double-stacked freight trains

TRACKWORK

Revising railway corridor to bypass hairpin turn at Camurra

BRIDGES

Replacing existing bridges over the Mehi and Gwydir rivers as well as other creeks such as Duffys

FLOOD MANAGEMENT

Raising railway heights to improve flood immunity
Upgrading cross drainage and associated flood management works

LEVEL CROSSINGS

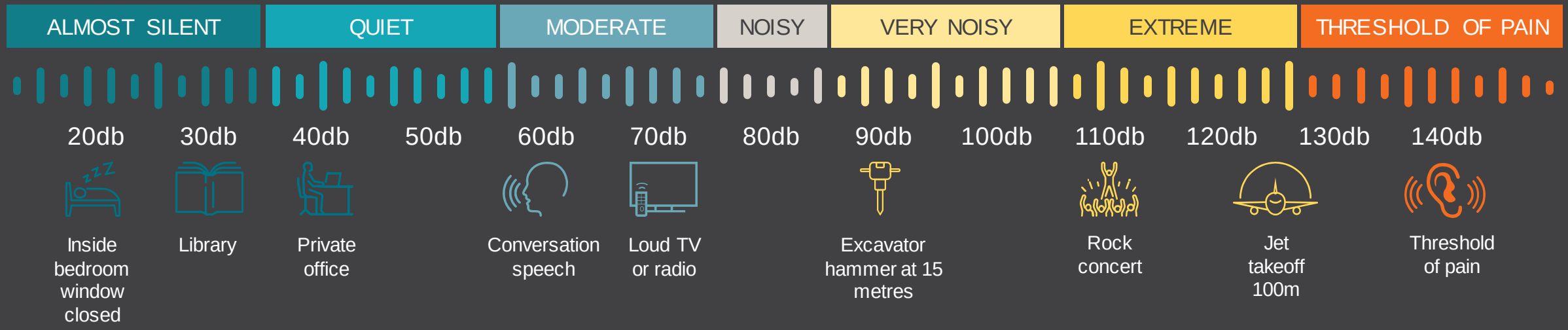
Improving level crossing safety and alignment

INFRASTRUCTURE

Replacing or upgrading utilities, structures and fencing along the alignment

NOISE MANAGEMENT PRINCIPLES

- All noise and vibration impacts associated with the construction and operation of Inland Rail are evaluated as part of EISs.
- Noise and vibration studies are conducted by specialist consultants to identify mitigation measures.
- Operational rail noise and vibration is assessed against State-specific guidelines.
- ARTC's Inland Rail Noise and Vibration Strategy guides how we mange noise and vibration levels on all projects.
- Noise and vibration levels are monitored during construction, once projects are completed and one year after Inland Rail is fully operational.



CONSTRUCTION NOISE – BACKGROUND INFORMATION AND WORK HOURS

The NSW Government **Interim Construction Noise Guideline** (or ICNG) is the over-arching reference document in which the EIS's Construction Noise assessment is built upon.

The ICNG provides guidance on managing construction works to minimise noise, with an emphasis on communication and cooperation with all involved in, or affected by, construction noise.

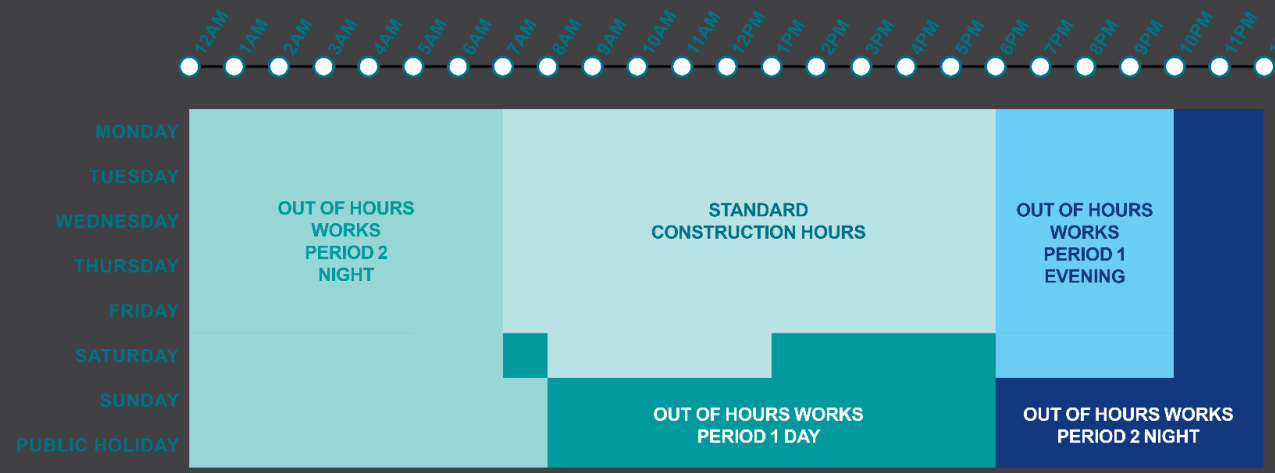
Noise Management Levels are determined by applying the ICNG and for the Morris residence are shown in table to the right.

Noise Management Levels: NCA02

Noise Catchment Area	NML (dBA)			
	Standard hours		Out-of-hours work	
	Affected	Highly affected	Period 1	Period 2
NCA02	45	75	45	35

Proposed Construction Hours:

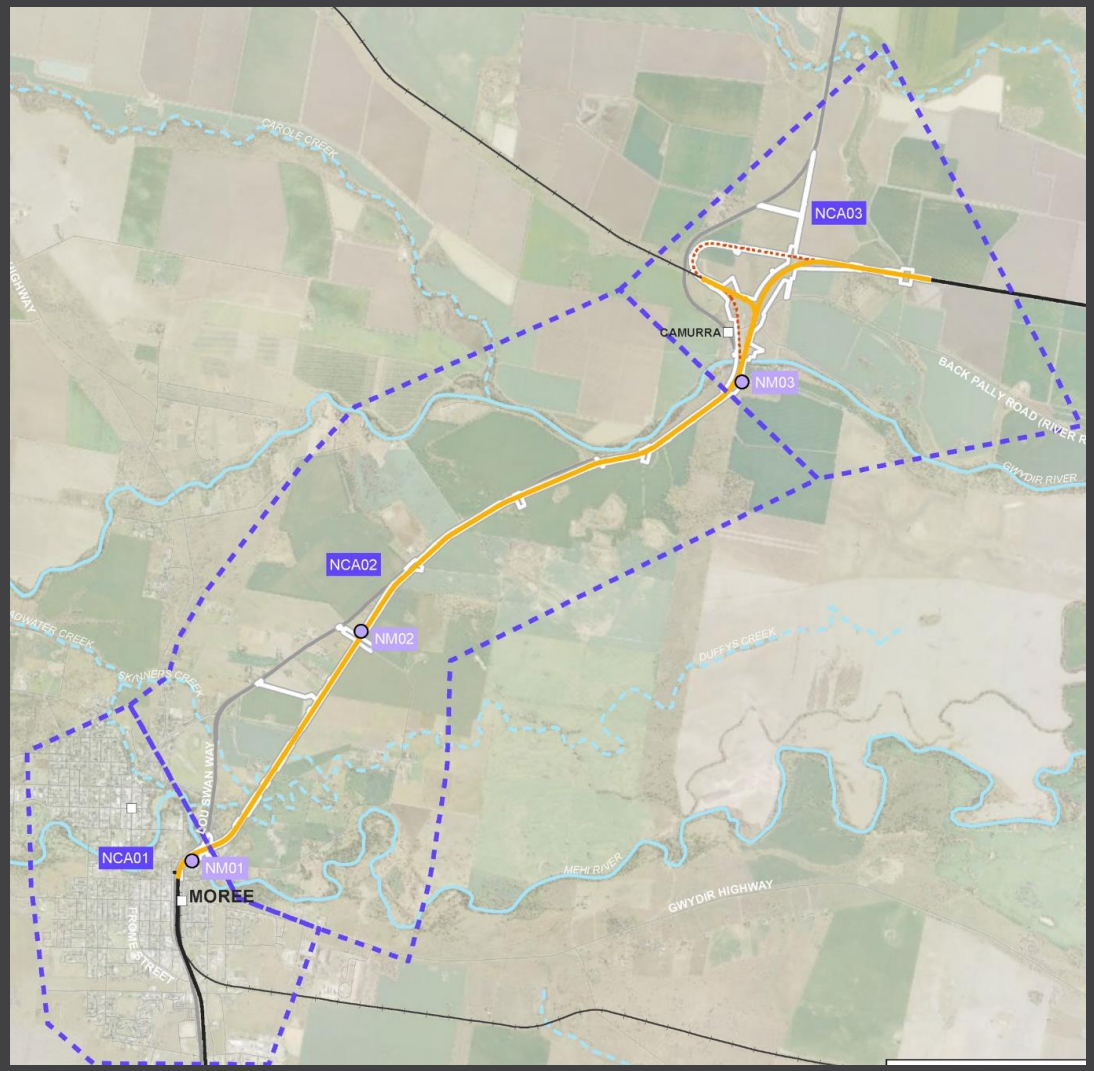
- To shorten the duration of construction as much as possible the following work hours are proposed:
  - From 6:00am to 6:00pm, Monday to Sunday, with respite provided every second weekend.
  - Respite hours will be from 1:00pm on Saturday (with no work occurring on Sunday) until 6:00am Monday morning (when work will recommence).
- Standard and out of hours periods are also shown to the right.



HOW IS CONSTRUCTION NOISE ASSESSED IN THE EIS?

- Local background noise levels measured (baseline established) – 3 noise catchments established (see figure).
- Construction (10 scenarios/activities) noise sources modeled.
- Predicted noise levels compared to guidelines/legislation that sets impacts and mitigations.
- Where there are exceedances of noise limits predicted mitigations are proposed in accordance with the guidelines/legislation – fully detailed within the EIS.

- **NOTE: Predicted noise levels within the EIS are conservative and represent a 'worse case scenario' (activity, weather etc. all worst case).**
- **These predicted noise levels will not occur for the duration of the project**
- **Noise levels will quickly reduce as the construction work front progresses along the proposed alignment.**

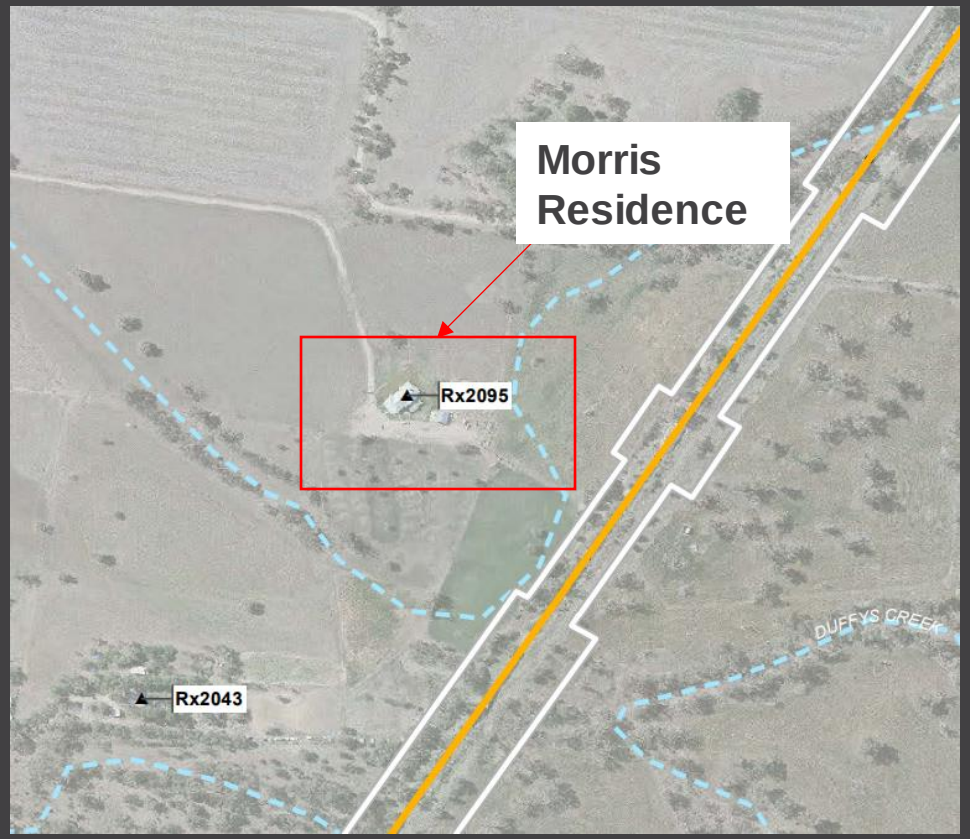


MORRIS RESIDENCE –

THE RESIDENCE HAS BEEN IDENTIFIED IN THE EIS AS A POTENTIAL RECEIVER FOR NOISE AND GIVEN A UNIQUE IDENTIFICATION NUMBER = RX2095

UNMITIGATED CONSTRUCTION NOISE IMPACTS - MORRIS RESIDENCE (RX2095)

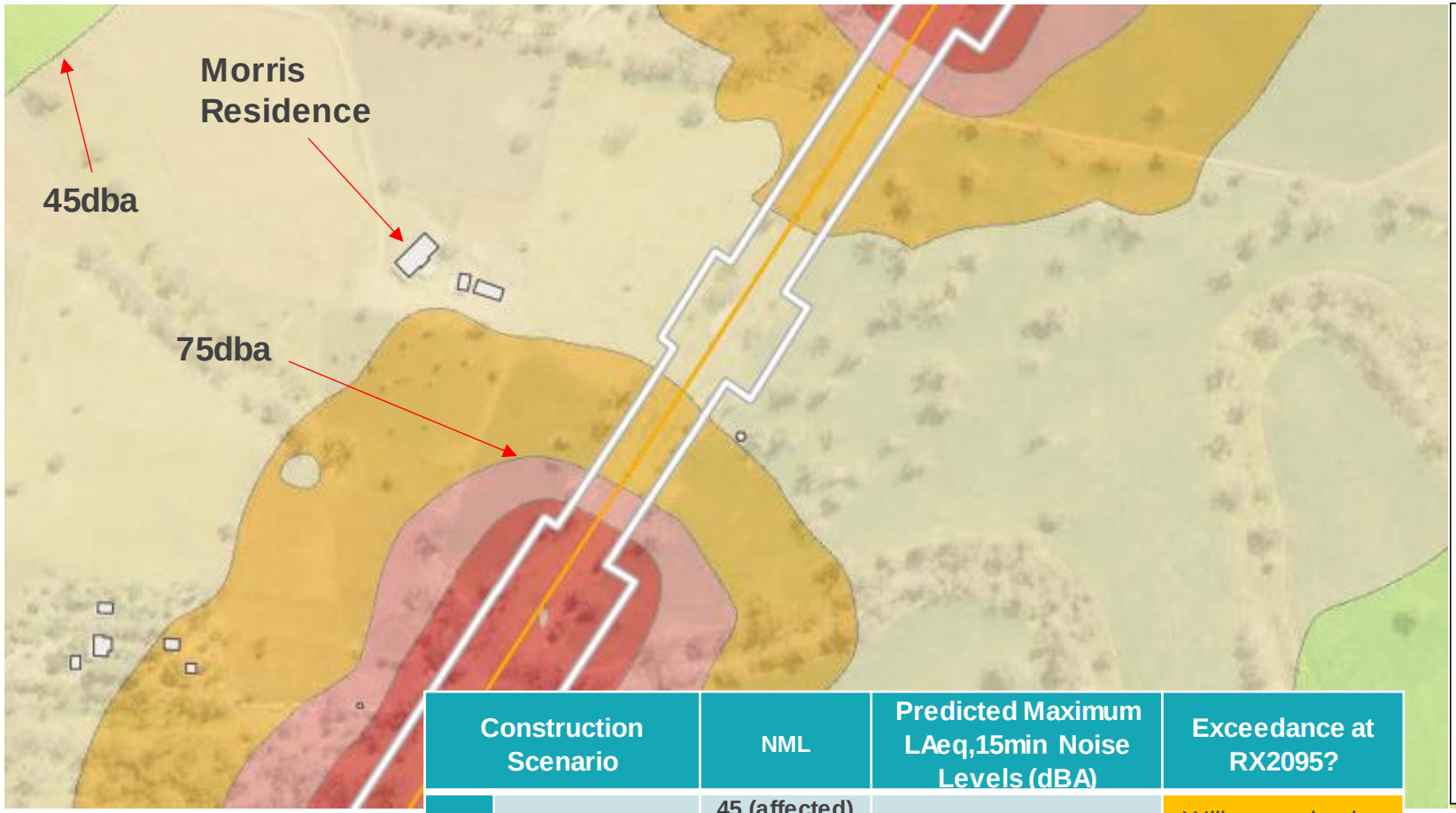
Construction Scenario		NML (standard hours)	Predicted Maximum LAeq,15min Noise Levels (dBA)	Exceedance at RX2095?
Sc01	Site establishment	45 (affected) 75 (highly affected)	<20	No
Sc02	Track upgrade – reconstruction		63	Will exceed noise mgmt level by 18 dBA
Sc03	Drainage		62	Will exceed noise mgmt level 17 dBA
Sc04	Level crossing upgrade		47	Will exceed noise mgmt level by 2 dBA
Sc05	Level crossing decommission		<20	No
Sc06	Culvert installation/replacement		53	Will exceed noise mgmt level 8 dBA
Sc07	Bridge demolition		49	Will exceed noise mgmt level 4 dBA
Sc08	Bridge construction		64	Will exceed noise mgmt level 19 dBA
Sc09	Preparation works for commissioning		<20	No
Sc10	Rehabilitation		<20	No

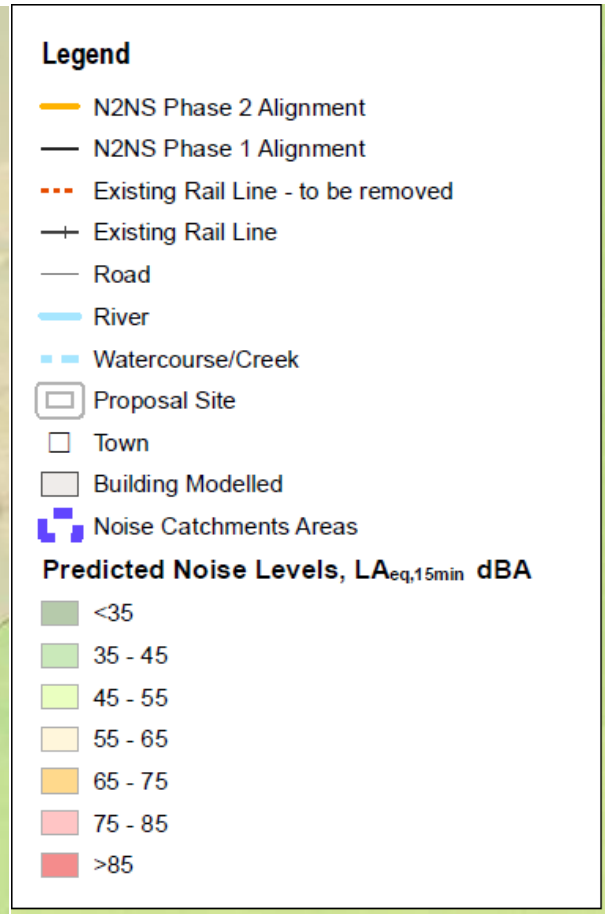


UNMITIGATED CONSTRUCTION NOISE MAPPING - MORRIS RESIDENCE (RX2095)

SCENARIO 08 – BRIDGE CONSTRUCTION

LOUDEST PREDICTED CONSTRUCTION ACTIVITY





Construction Scenario		NML	Predicted Maximum LAeq,15min Noise Levels (dBA)	Exceedance at RX2095?
Sc 08	Bridge construction	45 (affected) 75 (highly affected)	64	Will exceed noise mgmt level 19 dBA

CONSTRUCTION MITIGATIONS

- Proposed working hours and respite periods (detailed earlier)
- A construction noise and vibration management plan (CNVMP) would be prepared and implemented prior to construction to control and reduce construction noise where possible.
- Limiting works to ICNG standard hours near sensitive receptors and more restrictive times for very noisy works.
- Out-of-hours works are to be approved by Environmental Representative (acting for Department of Planning and Environment) and NSW EPA.
- Any residual construction noise exceedances after mitigations will be managed as per the below:

CONSTRUCTION HOURS	RECEIVER PERCEPTION	dB ABOVE NML	DURATION	ADDITIONAL MANAGEMENT MEASURES
OOHW Day/Evening Monday-Sunday 6 pm – 10 pm	Noticeable	< 5	Any	CO1
	Clearly audible	5 to 15	Any	CO1
	Moderately intrusive	15 to 25	Any	CO1, CO2
			>2 consecutive periods	CO1, CO2
	Highly intrusive	> 25	Any	CO1, CO2
			>2 consecutive periods	CO1, CO2, RO
OOHW Night Monday-Sunday 10 pm – 6 am	Noticeable	< 5	Any	CO1
	Clearly audible	5 to 15	Any	CO1
	Moderately intrusive	15 to 25	Any	CO1, CO2
			>2 consecutive periods	CO1, CO2, RO
	Highly intrusive	> 25	Any	CO1, CO2
			>2 consecutive periods	CO1, CO2, RO, AA

MEASURE	DESCRIPTION	ABBREVIATION
Communication Category 1 or 2	Accurate and timely communication have been developed commensurate with the scale of the impact. The purpose of the communication is described below, but the method of communication would be at the discretion of the proposal and detailed in the Proposal's Community Engagement Plan. Category 1 (CO1): Communication should be personalized (e.g. door knock, meeting, telephone call). Contact with these residents should commence early to enable feedback to be considered by the proposal. Category 2 (CO2): Communication to provide information on the proposal via letter box drop, email, newsletter, media advertisements and/or website a minimum of 5 days prior to the works commencing. At minimum the information provided to stakeholders (CO1 or CO2) would include: ▸ the reason the work is required to be undertaken outside of the Standard Programme Construction Hours ▸ a diagram that identifies the location of the proposed works in relation to nearby cross streets and local landmarks ▸ the nature, scope and duration of the works, including start and finish times ▸ the expected noise impacts on receivers ▸ information on how to obtain further information or make a complaint, including and after-hours number and Programme website.	CO1, CO2
Respite Period	Residential receivers subject to lengthy periods of noise or vibration may be eligible for a respite offer. The purpose of such an offer is to provide residents with respite from an ongoing impact and may comprise of pre-purchased movie tickets, dinner vouchers or similar. Respite offers are not applicable to non-residential receivers.	RO
Alternate Accommodation	Alternate accommodation options (i.e. accommodation in motels away from the worksite) may be provided for residents living in close proximity to construction sites. Acceptable accommodation measures would be developed with the affected community and project team.	AA

OPERATIONAL NOISE – BACKGROUND AND HOW IT IS ASSESSED IN THE EIS

- In NSW Inland Rail operational noise criteria are defined by the NSW Government's '*Rail Infrastructure Noise Management Guideline*' – the 'RING'.
- The RING defined noise assessment criteria for sensitive receivers (including residential receivers), referred to as 'noise trigger levels' – shown in table to the right
- The key potential operational impact is predicted exceedances of noise criteria for **train movements**, as outlined by the NSW Rail Infrastructure Noise Guideline.
- Potential noise impacts were modelled for years 2020 (current), 2027 (opening) and 2040 (full operations) and compared to Nosie Trigger Levels at sensitive receivers.

RING Noise Trigger Levels

As the railway is classified as 'existing' the limits shown in the red box are applicable

TABLE 16-6 RAIL AIRBORNE NOISE TRIGGER LEVELS FOR RESIDENTIAL LAND USES

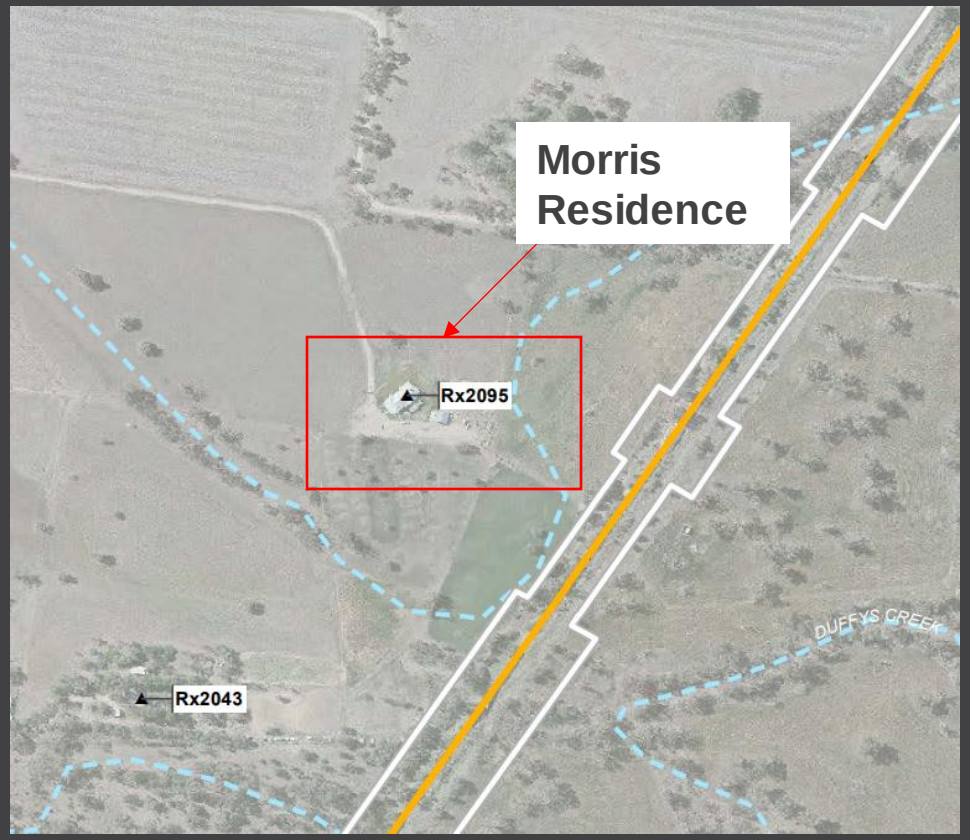
Type of development	Noise trigger levels, dBA	
	Day (7 am–10 pm)	**Night (10 pm–7 am)**
New rail line development	Predicted rail noise levels exceed:	
	$60\ L_{Aeq,15hr}$ or $80\ L_{AFmax}$	$55\ L_{Aeq,9hr}$ or $80\ L_{AFmax}$
Redevelopment of existing rail line	Development increases existing L_{Aeq} rail noise levels by 2 dB or more, or existing L_{Amax} rail noise levels by 3 dB or more and predicted rail noise levels exceed:	
	$65\ L_{Aeq,15hr}$ or $85\ L_{AFmax}$	$60\ L_{Aeq,9hr}$ or $85\ L_{AFmax}$

- **ARTC will monitor the rail line on an ongoing basis during operation to ensure noise created by the rail line is consistent with modelling.**
- **Ongoing community engagement on mitigations to occur**

OPERATIONAL NOISE IMPACTS - MORRIS RESIDENCE (RX2095)

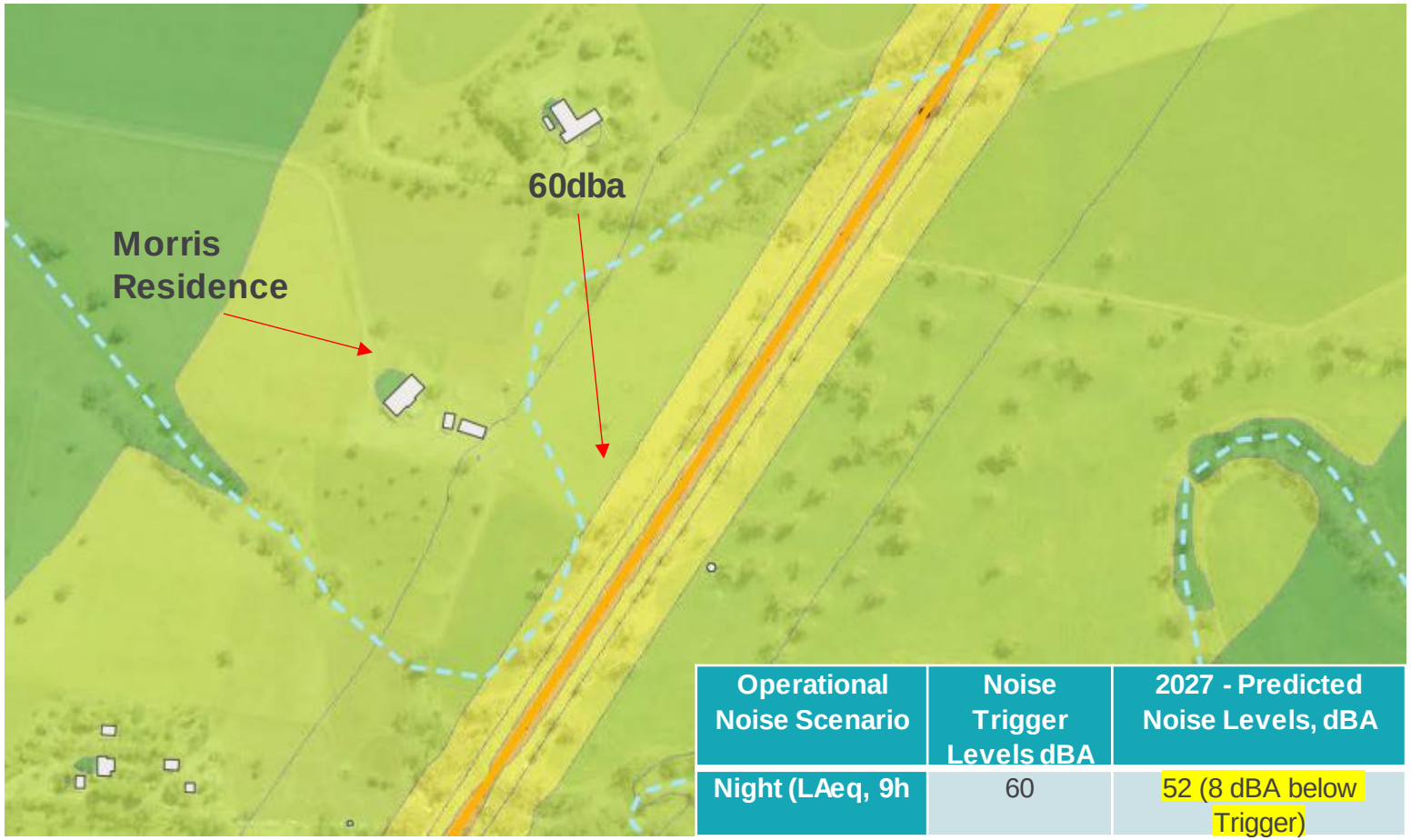
- No Noise Trigger Levels Exceeded
- No Operational Mitigations Triggered under NSW rail noise regulations/guidelines
- **This does not mean you won't hear train noise**

Operational Noise Scenario	Noise Trigger Levels dBA	Existing (no IR build with grain trains)	2027 - Predicted Noise Levels, dBA	2040 - Predicted Noise Levels, dBA
Day (LAeq,15h)	65	38	51 (14 dBA below Trigger)	53 (12 dBA below Trigger)
Day Max (LAmax)	85	72	75 (10 dBA below Trigger)	77 (8 dBA below Trigger)
Night (LAeq, 9h	60	40	52 (8 dBA below Trigger)	55 (5 dBA below Trigger)
Night Max (LAmax)	85	71	76 (9 dBA below Trigger)	77 (8 dBA below Trigger)



OPERATIONAL NOISE MODEL – 2027 (NIGHT) - MORRIS RESIDENCE (RX2095)

LOWEST NOISE MANAGEMENT LEVELS APPLY TO NIGHT PERIOD



Operational Noise Scenario	Noise Trigger Levels dBA	2027 - Predicted Noise Levels, dBA
Night (LAeq, 9h	60	52 (8 dBA below Trigger)

Legend

2040 Night Predicted LAeq,9h Noise Levels dBA

- <45
- 45- 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 85
- 85 - 90
- >=90

Rail Infrastructure Noise Guideline Triggers

+2dB increase in average noise received
+3dB increase in maximum noise received

AND

Day > 65dB average over 15 hours: 7:00-22:00
Night > 60dB average over 9 hours: 22:00-07:00
Max 85 dB

OPERATIONAL NOISE MODEL – 2040 (NIGHT) - MORRIS RESIDENCE (RX2095)

LOWEST NOISE MANAGEMENT LEVELS APPLY TO NIGHT PERIOD

Operational Noise Scenario	Noise Trigger Levels dBA	2040 - Predicted Noise Levels, dBA
Night (LAeq, 9h	60	55 (5 dBA below Trigger)

Legend

2040 Night Predicted LAeq,9h Noise Levels dBA

- <45
- 45- 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 85
- 85 - 90
- >=90

Rail Infrastructure Noise Guideline Triggers

+2dB increase in average noise received
+3dB increase in maximum noise received

AND

Day > 65dB average over 15 hours: 7:00-22:00
Night > 60dB average over 9 hours: 22:00-07:00
Max 85 dB

EXHIBITION AND SUBMISSIONS

- Exhibition is your chance to review and respond to the EIS.
- ARTC encourages any stakeholder to submit a formal response to the EIS if they wish.
- Information on how to make a submission will be provided with the EIS.
- ARTC are required to formally respond to all submissions.

Exhibition commenced on 22nd of September and will conclude 2nd of November 2022.

THANK YOU

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.