

We note that despite the expected noise reduction benefits provided by noise barriers, they can sometimes result in an overall poor outcome in relation to urban design and amenity. We recommend that the noise reduction benefit of barriers is considered in conjunction with visual effects, safety/security, requirements for access, cost and other relevant factors. In some cases, alternative treatments (for example treatments to affected individual houses) may be preferred.

Table 8 presents the predicted 2019 rail noise levels for each noise sensitive receiver within the project assessment area, with noise barriers as described above. The results include adjustments for curve squeal (assuming curve squeal is not mitigated)

**Table 8 Predicted 2019 rail noise levels with proposed noise barriers.**

Location	Receiver ID	Predicted 2019 rail noise levels with noise barriers, dB(A)	
		Day Leq,15h	L <sub>max</sub>
Woodland Road and Timothy Court	RA031	53	79
	RA032	54	80
	RA033	53	77
	RA034	53	78
	RA035	56	77
	RA036	57	79
	RA037	57	79
	RA038	57	80
	RA039	56	80
	RA040	56	80
	RA041	56	81
Lynton Avenue	RA042	59	83
	RA043	55	78
	RA044	54	76
	RA045	57	82
	RA001	57	82
	RA002	57	82
	RA003	57	82
	RA004	57	82
	RA005	56	81
	RA006	57	81
	RA007	57	81
	RA012	56	79
Chestnut Court	RA016	47	70

Location	Receiver ID	Predicted 2019 rail noise levels with noise barriers, dB(A)	
		Day $L_{eq,15h}$	$L_{max}$
	RA018	49	73
Ash Avenue and Birch Crescent	RA019	53	75
	RA021	53	77
	RA022	55	79
	RA023	55	79
	RA024	56	80
	RA025	57	82
	RA026	58	83
	RA014	59	83
	RA027	58	81
	RA028	58	80
	RA029	58	80
	RA030	58	81
	RA008	58	83
	RA009	59	84
	RA010	60	85
	RA011	59	83
	RA013	58	83
	RA046	54	79
Flinders Sports Fields		49	N/A
Flinders Medical Centre		52 (Max $L_{eq,1hr}$ )	N/A

The results show that with the proposed barriers, noise levels are expected to comply with GANRI criteria at all noise sensitive locations, even if curve squeal noise is not mitigated. The reduction in noise level by incorporating the barrier is predicted to be 6 - 7 dB for the most affected receivers.

## 7.3 Individual receiver treatments

As discussed above, noise mitigation at receiver locations may be considered in the event that noise barriers within the rail corridor are deemed not reasonable or practicable. In this case, treatment should be considered for the seven residential receivers identified in Table 6 as exceeding GANRI criteria. Consideration may also be given to treatment of neighbouring properties with similar levels of rail noise exposure, to avoid a perception of unfairness.

Receiver treatments may consist of new fences on each property, or upgrades to the facades of any affected dwelling. Where fences are practicable and provide value for money (typically an insertion loss of at least 5 dB is required), they are the preferred option for receiver treatment as they provide benefit to both outdoor and indoor living areas. Where the required reduction is not able to be achieved, facade treatment may be necessary. We note that where the noise



source is elevated, very high fences would typically be required to provide the required level of noise reduction, and are therefore not likely to be practicable for most receivers for this Project.

Facade treatments should be designed to achieve the internal noise criteria described in the *Minister's Specification SA 78B: Construction requirements for the control of external noise*.

## 8 Conclusion

This Noise Assessment Report has been prepared for the Flinders Link Project based on the 30% design. Rail noise impacts from the project have been assessed against the relevant guidelines.

With no mitigation for curve squeal noise arising from the tight radius curve on the viaduct section of track, noise levels have been predicted to exceed the recommended criteria at seven residences, by up to 6 dB based on no mitigation of wheel squeal. A vehicle mounted or track-based friction modification system is recommended in order to mitigate curve squeal noise. The extent to which this mitigation measure will reduce curve squeal noise is not able to be predicted or measured with any accuracy prior to operation. As per instruction from DPTI, if measured noise levels post-construction are found to exceed the relevant limits, then noise barriers within the rail corridor should be considered. Based on experience at other locations (described in the report *Curve Squeal Risk and Mitigation Measures*, curve squeal noise is not expected to be eliminated completely.

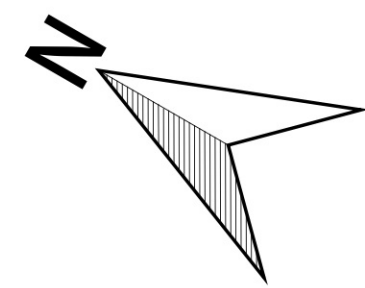
Noise barriers within the rail corridor are recommended in the event that mitigation at the source via a vehicle mounted or track-based friction modification system fails to provide the required level of curve squeal noise reduction. However, where barriers are deemed not reasonable or practicable, for example due to visual effects or cost, treatment at receiver locations may be considered as an alternative.

Approximately 1.8m noise barriers may be appropriate on both sides of the track, for the extent alongside Lynton Avenue up to Sturt Road, as shown in Appendix B. If barriers are employed, rail noise levels are expected to comply at all locations.

Alternatively (or as a supplementary measure with a reduced noise barrier extent), treatment to individual receivers could be considered. Any facade treatments should be designed to comply with the *Minister's Specification SA 78B: Construction requirements for the control of external noise*.

## Appendix A - Noise sensitive receptor locations

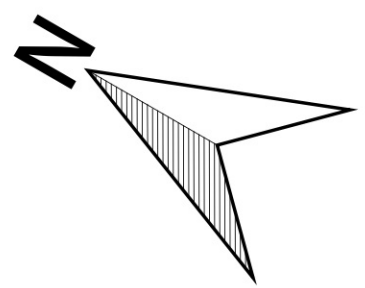






## Appendix B – Proposed noise barrier locations

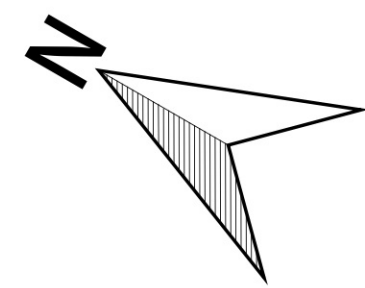
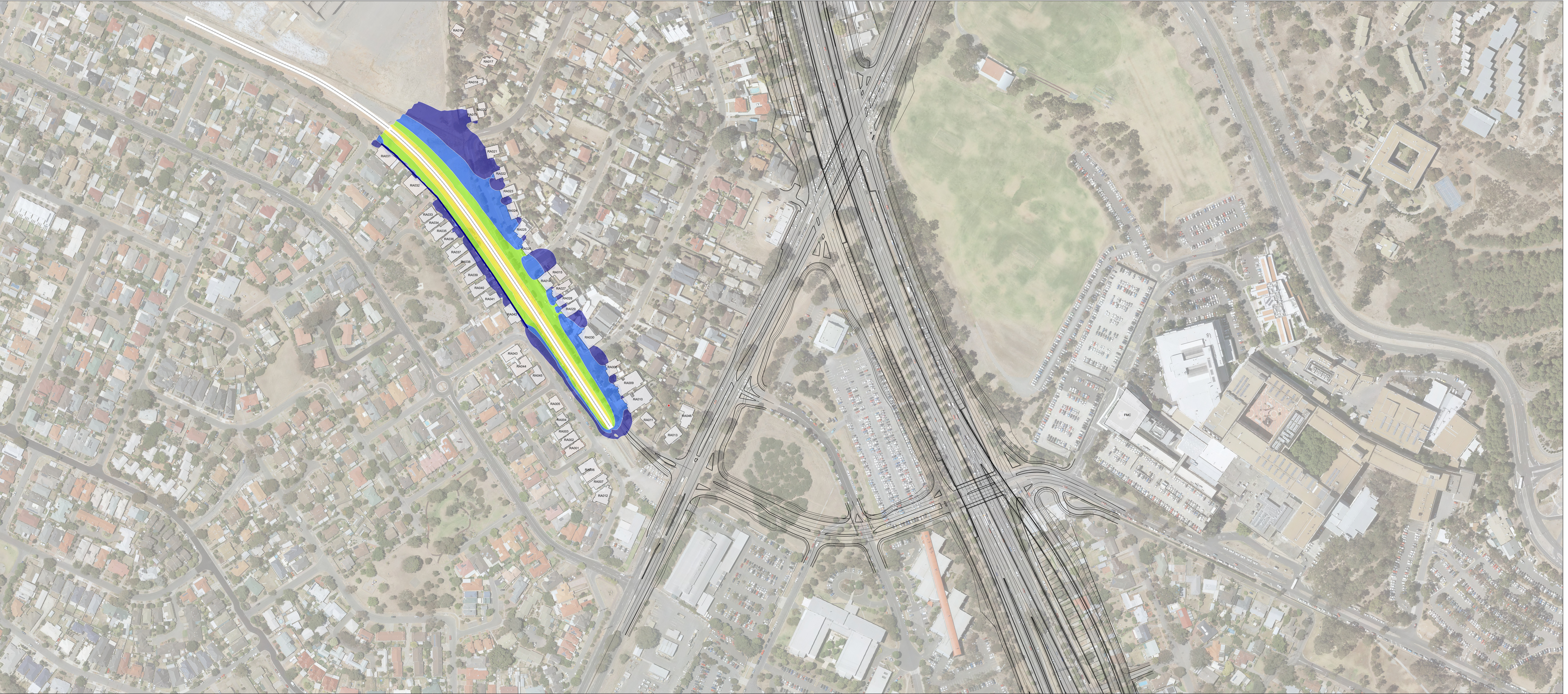






## Appendix C – Predicted noise level contours





**Legend**

— Existing Rail Alignment

— Existing Barrier

**Predicted Noise Level, dB(A) L**

- 50 - 53 dB(A)
- 53 - 56 dB(A)
- 56 - 59 dB(A)
- 59 - 62 dB(A)
- 62 - 65 dB(A)
- >65 dB(A)

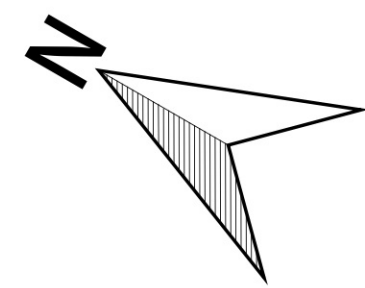
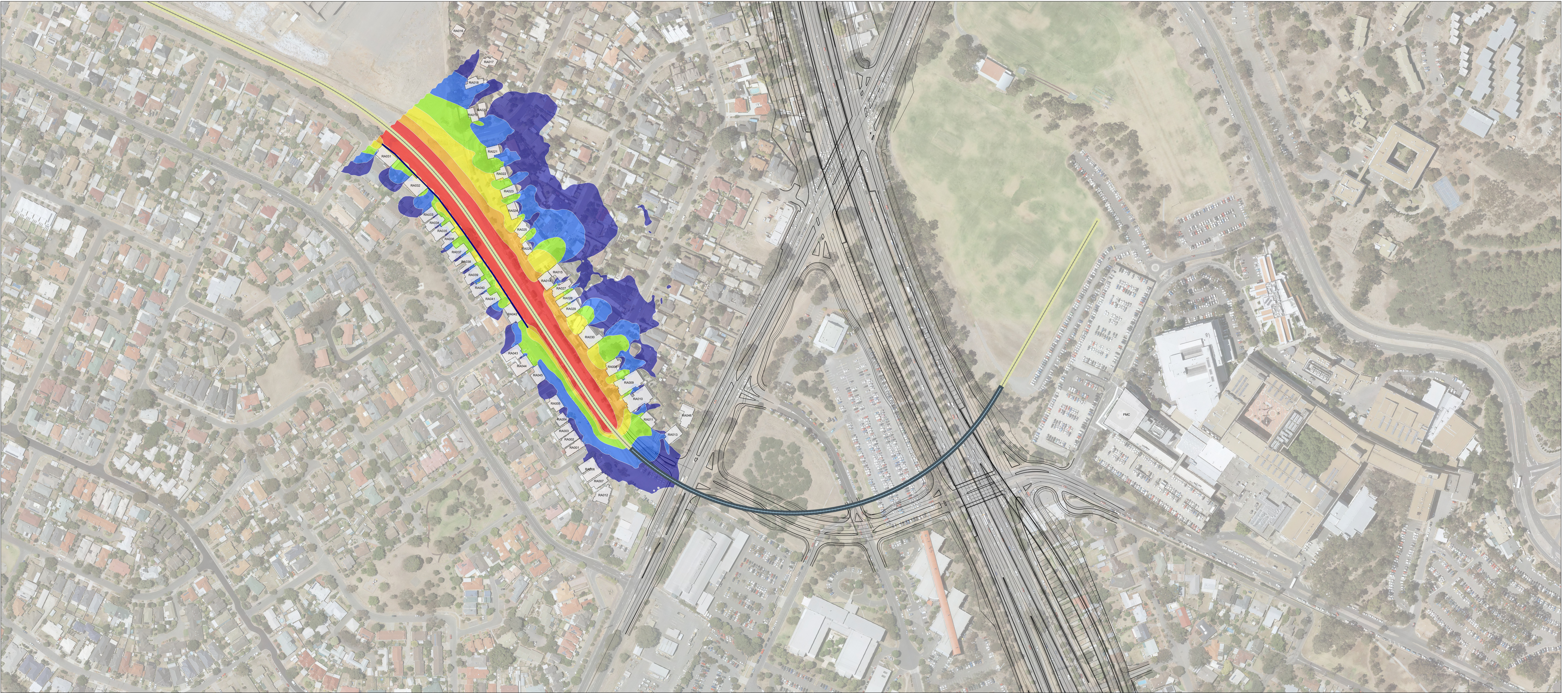
**Flinders Link Project**

30% Design  
Noise Assessment  
Existing Rail Noise Levels (Leq)

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- Legend
- Existing rail alignment
  - Existing barrier
- Rail Noise Level, dB(A) Lmax
- 70 - 73 dB(A)
  - 73 - 76 dB(A)
  - 76 - 79 dB(A)
  - 79 - 82 dB(A)
  - 82 - 85 dB(A)
  - >85 dB(A)

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30% Design  
Noise Assessment  
Existing Maximum Rail Noise Levels

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