APPENDIX F

Noise and Vibration Assessment Clarifications

ILLABO TO STOCKINBINGAL RESPONSE TO SUBMISSIONS

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Contents

Attachments

Figures

Tables

1. Introduction

This appendix has been prepared to address submissions received from the Department of Planning and Environment (DPE) and the Environment Protection Authority (EPA) on the Inland Rail—Illabo to Stockinbingal (I2S) project (the proposal) noise and vibration assessments. Clarifications are provided to address specific matters raised in the following documents.

- Technical Paper 8: Construction Noise and Vibration Impact Assessment (CNVIA) was prepared to assess the airborne and ground-borne noise and vibration impacts generated by the construction of the proposal.
- Technical Paper 10 – Operational Noise and Vibration Impact Assessment (Non-Rail) (ONVIA) was prepared as part of the Environmental Impact Statement (EIS) to assess potential road traffic noise impacts that may be associated with the proposal, in particular the operation of the grade-separated (road over rail) bridge at Burley Griffin Way.

ARTC has also made changes to the proposal site since exhibition of the EIS. The proposal site refers to the area used for the construction and operation of the proposal. Further identification of the changes are presented in Appendix L to the Response to Submissions Report.

2. Updated assessment for changes to the proposal site

ARTC has prepared an amended noise assessment to consider the potential impact of the changes to the proposal site on predicted levels of noise and vibration, as detailed in this appendix. This amended assessment should be read in conjunction with Technical Paper 8: Construction Noise and Vibration Impact Assessment (CNVIA) that was prepared as part of the Environmental Impact Statement (EIS).

2.1 Overview of proposal site changes

The updated proposal site has been presented for the full alignment in Appendix L of the Response to Submissions Report.

Three locations have been identified where the updated proposal site is moving substantially closer to a noise-sensitive receiver:

- Location 1: The updated Stockinbingal site is located to the north-west of Stockinbingal and involves an increase in the proposal area to the east of the alignment
- Location 2: Compound 7 is located to the east of Ironbong Road and is the proposed new site for a construction compound that was originally located approximately 500 metres (m) south of the updated location
- Location 3: Compound 5 is a proposed site compound moving from south of Eulomo Settlement Road to immediately north of Eulomo Settlement Road (approximately 300 m closer to the nearest receiver).

These sites are presented in Figure 2-1 to Figure 2-3.

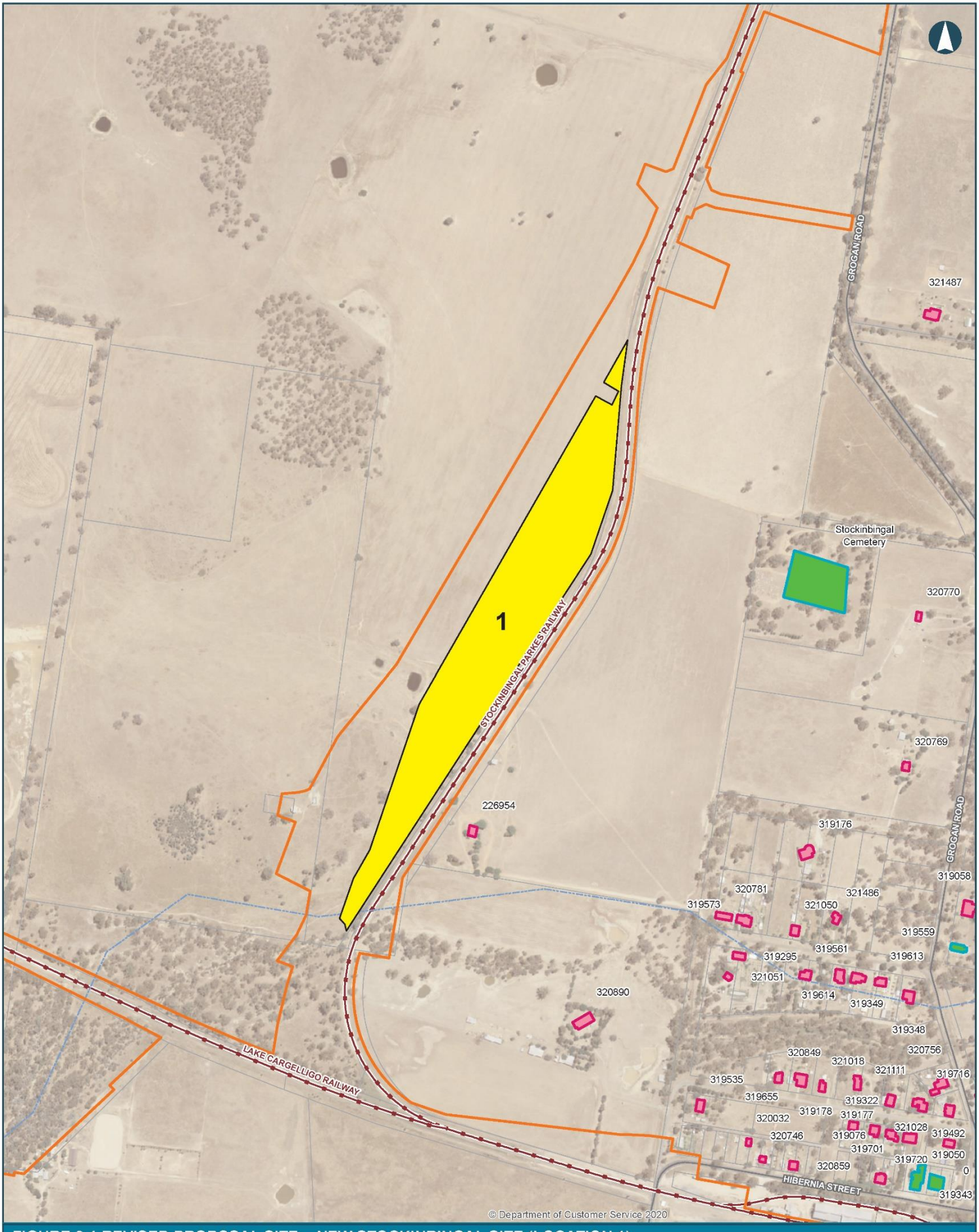

FIGURE 2-1 REVISED PROPOSAL SITE - NEW STOCKINBINGAL SITE (LOCATION 1)

0 80 160 240 Meters

Coordinate System: GDA 1994 MGA Zone 55

Date: 24/10/2023
Author: IRDJV
Paper: A3
Scale: 1:6,000

Data Sources: IRDJV, ARTC, LPI

- Existing Rail
- Arterial and sub-arterial roads
- Minor Watercourse
- Cadastral Boundary
- Project Boundary
- Updated Proposal Site Boundary
- Residential Receiver
- Non-residential Receiver

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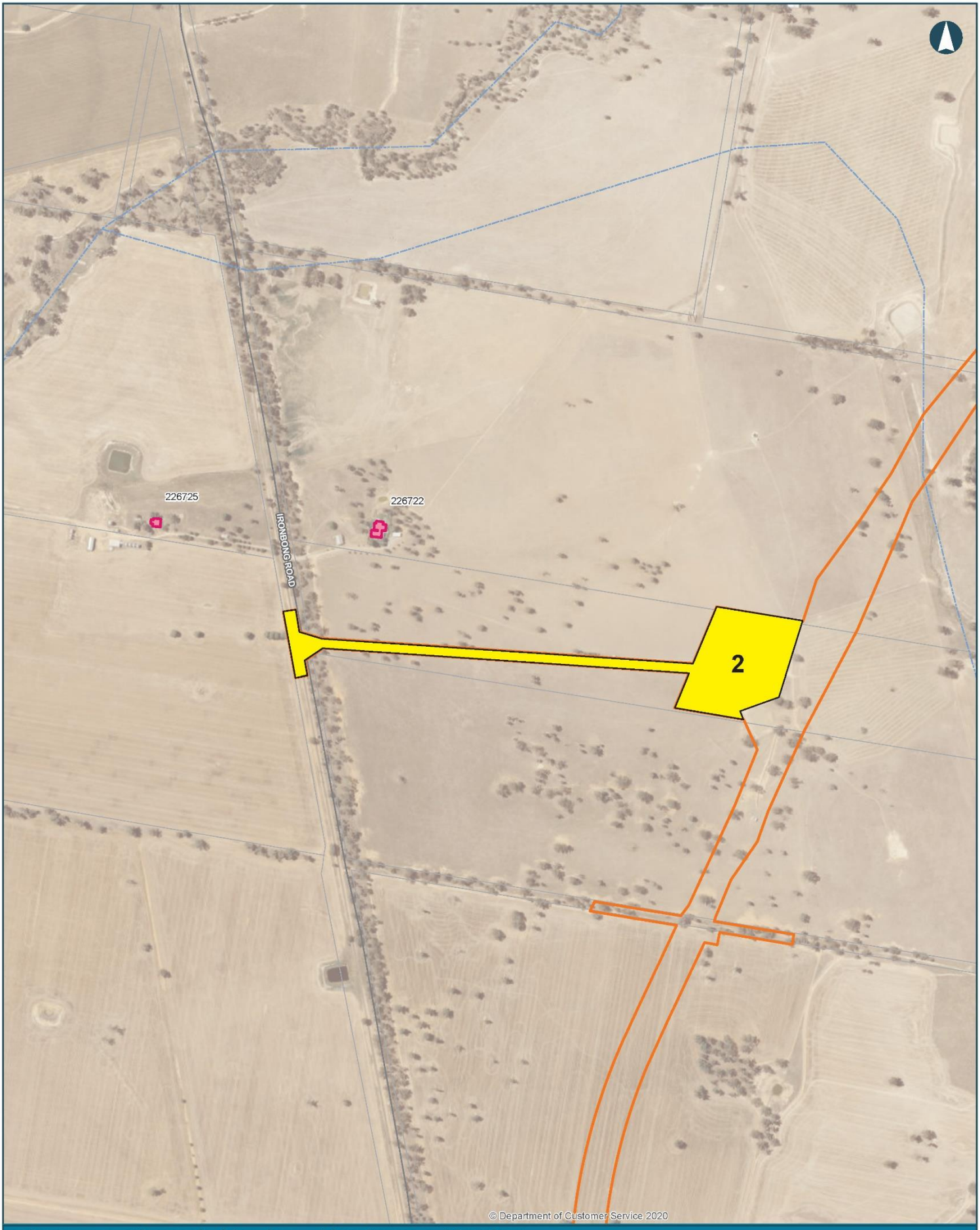

FIGURE 2-2 REVISED PROPOSAL SITE - COMPOUND 7 (LOCATION 2)

0 90 180 270 Meters

Coordinate System: GDA 1994 MGA Zone 55

Date: 24/10/2023 Paper: A3
Author: IRDJV Scale: 1:7,000
Data Sources: IRDJV, ARTC, LPI

- Arterial and sub-arterial roads
- Minor Watercourse
- Cadastral Boundary
- Project Boundary
- Updated Proposal Site Boundary
- Residential Receiver

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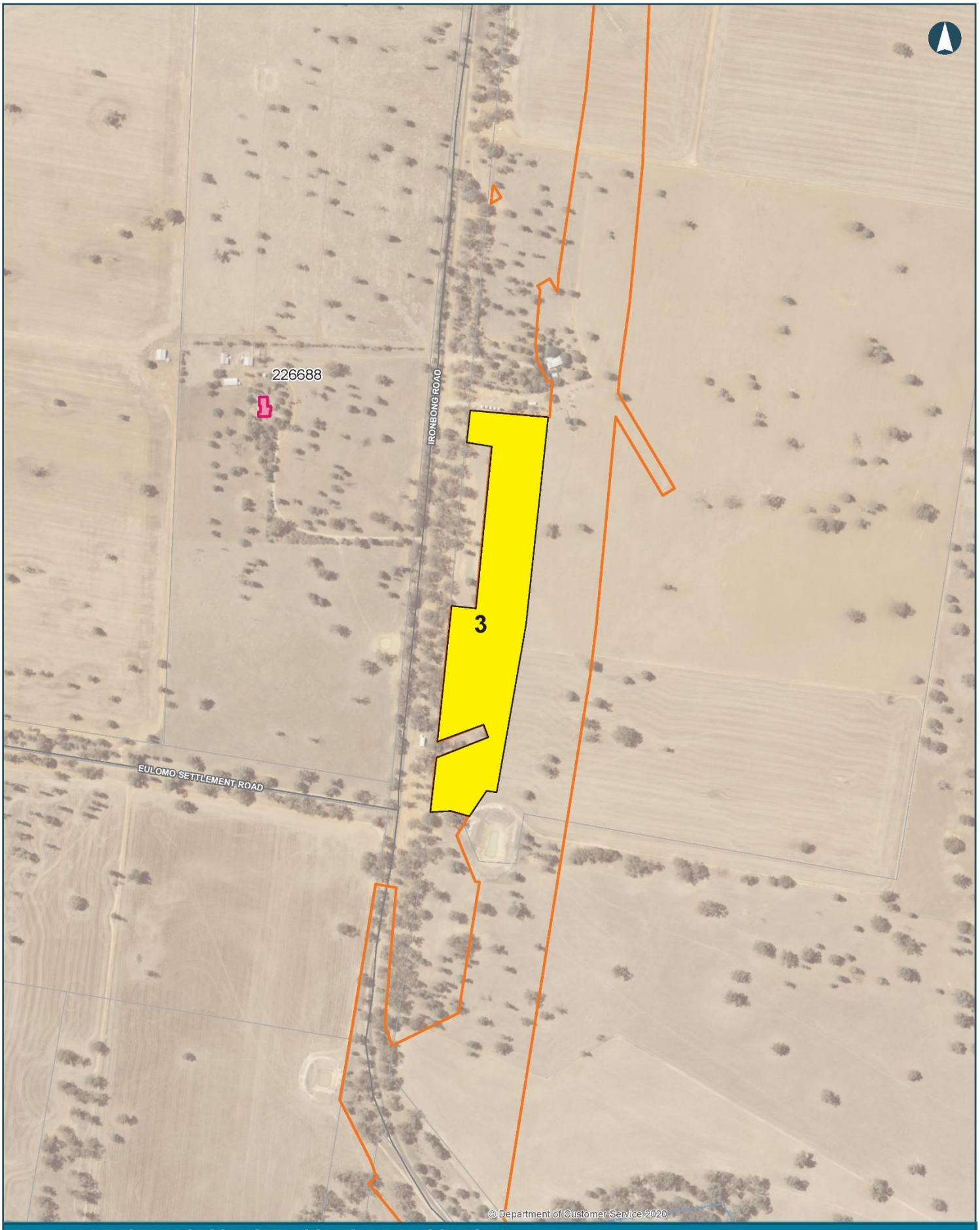

Figure 2-3 REVISED PROPOSAL SITE - COMPOUND 5 (LOCATION 3)

0 60 120 180 Meters

Coordinate System: GDA 1994 MGA Zone 55

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Date: 24/10/2023 Paper: A3
Author: IRDJV Scale: 1:5,000
Data Sources: IRDJV, ARTC, LPI

- Arterial and sub-arterial roads
- Minor Watercourse
- Cadastral Boundary
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- Updated Proposal Site Boundary
- Residential Receiver

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2.2 Noise and vibration criteria

2.2.1 Noise Management Levels

Noise criteria relevant to this assessment have been reproduced from the CNVIA in Table 2-1 and Table 2-2.

TABLE 2-1 NOISE MANAGEMENT LEVELS FOR RESIDENTIAL RECEIVERS

Time	RBL dBA[1]	Noise management level dBA Leq, 15 minute	Highly noise affected level dBA Leq, 15 minute
Standard hours[2]	35	45	75
Out of hours—Day[3]	35	40	N/A
Out of hours—Evening	30	35	N/A
Out of hours—Night	30	35	N/A

TABLE 2-2 NOISE MANAGEMENT LEVELS FOR NON-RESIDENTIAL SENSITIVE RECEIVERS

Land use	Noise management level dBA Leq, 15 minute
Educational	55[4]
Commercial (offices, retail outlets)	70
Commercial (industrial)	75
Active recreation	65
Passive recreation	60

2.2.2 Ground vibration criteria

Ground vibration criteria for the proposal are provided in the CNVIA. For the vibration-intensive equipment proposed, a maximum impact distance would be in the order of 100 m (for a large vibratory roller). As the nearest sensitive receiver to the updated proposal site is located at a distance of approximately 210 m, no change to the outcome of the ground vibration assessment is predicted and ground vibration has not been discussed further in this amended assessment.

2.3 Methodology

The amended noise assessment adopted two methods for determining the noise impact as a result of the changes to the proposal site. Where the revised proposal site generally moved:

- less than 70 m from the original proposal site (outlined in the CNVIA) a subjective noise assessment was followed. This was on the basis that the change in noise levels was anticipated to be less than 2 dB. Noise levels less than 2 dB are not discernable to the human ear.
- More than 70 m from the original proposal site (outlined in the CNVIA) potential noise impacts were modelled using the CONCAWE algorithm within SoundPLAN 8.2.

2.4 Noise assessment

The following section outlines the predicted construction noise levels presented in the CNVIA, and the updated results incorporating the changes to the proposal site.

Section 2.4.1 outlines the results of noise modelling that was conducted at locations 1–3 where the change in the proposal site is proposed to be substantially closer to a sensitive receiver. Receivers that are predicted to have a substantial (at least +/- 2dB) change in noise level are displayed.

[1] Background levels are below the minimum assumed rating background noise levels outlined in the Noise Policy for Industry (EPA, 2017) (NPfI) at all measurement locations along the proposed corridor, as such, they have been adjusted to 35dBA during the day period, and 30dBA during the evening and night periods in accordance with the NPfI (see CNVIS for detail on measurement of existing environment)
[2] Standard hours period defined as—Monday to Friday 7 am to 6 pm, Saturday 8 am to 1 pm, and no work on Sundays or public holidays
[3] An internal to external correction of +10 dB has been applied as per the ICNG
[4] An internal to external correction of +10 dB has been applied as per the ICNG

Section 2.4.2 presents the predicted change in noise level for locations where changes to the proposal site are less than 70 m from original proposal site.

2.4.1 Modelled noise results for the revised proposal site

2.4.1.1 Location 1

The predicted changes to construction noise at Location 1 are presented in Table 2-3. Updated noise contours are provided at Attachment A

The results indicate that for this location, an overall increase in noise level is expected to occur at four residential and one non-residential property (Stockinbingal Cemetery). At receiver 226954, these impacts have been modelled to potentially increase by up to 12 dB; however, increases at the other assessed receivers are lower, generally in the order of 2 to 5 dB.

The largest change is predicted during work stage SC02 (Utility relocation and property adjustments). A detailed overview of each construction scenario is provided in Table 4.2 of the CNVIA, which has been modelled conservatively at location 1.

Despite the small margin of increase in potential noise levels, several work stages may now exceed criteria during OOHW periods where no exceedance was previously predicted. The formatting within Table 2-3 indicates the following:

- The orange shaded sections show exceedances of the standard-hours day period (and therefore also incorporates all OOHW).
- The yellow shaded sections show exceedances of the out-of-hours day period (and therefore also incorporates out-of-hours evening and night periods).
- The green shaded sections show exceedances of the out-of-hours evening and night period only.

TABLE 2-3 PREDICTED CONSTRUCTION NOISE LEVELS (CNVIA AND UPDATED PROPOSAL SITE) LOCATION 1

	NML (dBA)			Construction work scenario noise level (dBA) (EIS noise level/updated noise level)					
Receiver	**Day**	**OOH day**	**OOH night**	**SC01**	**SC02**	**SC03a**	**SC03b**	**SC04**	**SC07**
CNVIA construction noise level/Updated construction noise level									
226954	45	40	35	50 / 62	51 / 62	62 / 74	55 / 65	50 / 62	48 / 60
320769	45	40	35	42 / 41	38 / 41	53 / 53	42 / 44	39 / 41	40 / 39
320770	45	40	35	40 / 42	37 / 42	52 / 54	43 / 45	40 / 42	38 / 40
321487	45	40	35	46 / 46	34 / 37	58 / 58	45 / 45	46 / 46	44 / 44
Stockinbingal Cemetery	60	N/A	N/A	43 / 47	38 / 47	55 / 59	46 / 50	43 / 47	41 / 45

2.4.1.2 Location 2

The predicted changes to construction noise at Location 2 are presented in Table 2-4. Updated noise contours are provided at Attachment A.2.

The updated proposal site has resulted in a moderate increase to noise levels predicted for the two residential receivers near the new location. Both receivers are now predicted to exceed their NMLs across most work stages.

The formatting within Table 2-4 indicates the following:

- The orange shaded sections show exceedances of the standard-hours day period (and therefore also incorporates all OOHW).
- The yellow shaded sections show exceedances of the out-of-hours day period (and therefore also incorporates out-of-hours evening and night periods).
- The green shaded sections show exceedances of the out-of-hours evening and night period only.

TABLE 2-4 PREDICTED CONSTRUCTION NOISE LEVELS (CNVIA AND UPDATED PROPOSAL SITE) LOCATION 2

	NML (dBA)			Construction work scenario noise level (dBA) (EIS noise level/updated noise level)				
Receiver	Day	OOH day	OOH night	SC01	SC02	SC03a	SC04	SC07
CNVIA construction noise level/updated construction noise level								
226722	45	40	35	40 / 52	39 / 52	52 / 64	38 / 50	40 / 40
226725	45	40	35	34 / 47	34 / 47	47 / 59	32 / 45	34 / 35

2.4.1.3 Compound 5

The predicted changes to construction noise at compound 5 are presented in Table 2-5. Updated noise contours are provided at Attachment A.3.

The updated proposal site has resulted in an overall minor increase to noise levels predicted for the residential receiver near the new location. This receiver is now predicted to exceed their NMLs across all work stages. Previous exceedances were predicted during work stages 1, 2, and 3a only. Additionally, exceedances may now occur during daytime works at Scenarios 4 and 7.

A structure within the existing proposal site (approximately 75 m north of compound 5) will be demolished as part of the proposed works. This is likely to either occur during SC03a, or the demolition process itself is unlikely to be louder than the SC03a scenario.

The formatting within indicates the following:

- The orange shaded sections show exceedances of the standard-hours day period (and therefore also incorporates all OOHW).
- The yellow shaded sections show exceedances of the out-of-hours day period (and therefore also incorporates out-of-hours evening and night periods).
- The green shaded sections show exceedances of the out-of-hours evening and night period only.

TABLE 2-5 PREDICTED CONSTRUCTION NOISE LEVELS (CNVIA AND UPDATED PROPOSAL SITE) LOCATION 3

	NML (dBA)			Construction work scenario noise level (dBA) (EIS noise level/updated noise level)				
Receiver	**Day**	**OOH day**	**OOH night**	**SC01**	**SC02**	**SC03a**	**SC04**	**SC07**
CNVIA construction noise level/updated construction noise level								
226688	45	40	35	47 / 51	47 / 51	59 / 63	45 / 59	45 / 50

2.4.2 Qualitative assessment locations

For all other locations where changes to the proposal site are less than 70 m and typically in the order of 30 m. These differences will typically result in an increase (or decrease) in noise in the order of 1-2dB. Changes in noise levels of this magnitude are not discernable to the human ear and as such changes in noise impacts are likely to be minor as a result of these updates at these remaining locations.

Because of the sparsity of receivers and linear nature of the proposal site, the impact on a majority of the receivers outside of the Stockinbingal area would be unchanged from the CNVIA.

As outlined in Appendix C of the CNVIA, exceedances are predicted for a majority of receivers, particularly across construction scenario SC03 and SC06, where every receiver modelled exceeds criteria across a variety of time periods. The least impacted receivers reported in the CNVIA would still exceed OOH criteria if the overall construction work scenario noise level was decreased by 2 dB.

The final proposal site (and construction methodology) will be considered in detail during the detailed design phase and suitable noise mitigation measures will be identified.

2.5 Noise mitigation measures

Construction of the proposal would be subject to the full list of mitigation measures provided in Appendix B of the Response to Submissions Report. Effective noise mitigation would include measures such as:

- NV-1 - Location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods
- NV-2 - Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework
- NV-3 - A blast management strategy would be prepared in accordance with relevant guidelines
- NV-6 - Construction noise and vibration management plan would be prepared and implemented in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework

These existing mitigation measures are considered to be adequate to manage impacts of noise and vibration identified in this appendix. The above mitigation measures will be applied to mitigate the noise and vibration impacts resulting from the footprint change identified in this appendix.

3. Construction noise and vibration clarifications

3.1 Traffic noise impacts

In their submission, the EPA highlighted that the NSW Road Noise Policy (DECCW, 2011) (RNP) is applicable to the potential noise impacts generated by additional vehicles on roads as a result of construction activities and that this guideline contains a requirement to assess against Relative Increase Criteria (RIC); however, the CNVIA omitted reference to this type of road noise criteria.

In response to this, road traffic noise predictions have been updated in line with the RNP and to include additional assessment against the RIC. This assessment made no further changes to the traffic volumes in the EIS. Updated results are provided in Table 3-1 below. Changes from results presented in the CNVIA are present in BLUE font. Note that where predicted noise levels for the existing road traffic noise level is less than 30 dB LAeq,t, RNP deems that the existing noise level is 30 dB LAeq,t. Where this occurs, the predicted change relative to 30 dB LAeq,t is presented in brackets and also used to define compliance.

With the inclusion of the RIC assessment, potential exceedances of RNP criteria were identified at four haulage routes, during daytime only. One of these potential exceedances, at Troy Street, was already identified in the original assessment; however, Troy Street will no longer be needed as a diversion for construction traffic. Three additional potential exceedances have been identified for receivers on Ironbong Road, Retreat Road and Junee Reefs Road.

Given that construction impacts are a temporary impact, that overall levels of road noise are below the base criteria and that exceedances are restricted to daytime hours only, actual impacts are likely to be minimal. These impacts and suitable noise mitigation will be considered in more detail during the detailed planning stages of the proposal.

TABLE 3-1 UPDATED ROAD TRAFFIC NOISE

Road	Distance to closest receiver (m)	RNP classification	RNP management levels (ML)		Predicted noise level of base traffic		Predicted noise level of base traffic with construction traffic		Increase in noise level generated by construction traffic		Compliance?			
											Day1 Leq,15hr dB(A)		Night1 Leq,9hr dB(A)	
			Day1 Leq,15hr dB(A)	Night1 Leq,9hr dB(A)	Day1 Leq,15hr dB(A)	Night1 Leq,9hr dB(A)	Day1 Leq,15hr (dBA)	Night1 Leq,9hr dB(A)	Day1 dB(A)	Night1 dB(A)	RNP ML	RIC	RNP ML	RIC
Burley Griffin Way (East of Stockinbingal)	70	Arterial	60	55	50	43	52	44	1.6	0.7	YES	YES	YES	YES
Burley Griffin Way (West of Stockinbingal)	50	Arterial	60	55	52	46	54	46	1.4	0.5	YES	YES	YES	YES
Grogan Road	15	Sub-arterial	60	55	46	39	55	42	9.3	3.1	YES	YES	YES	YES
Hibernia Street	15	Arterial	60	55	56	49	59	49	3.1	0.4	YES	YES	YES	YES
Dudauman Road	20	Sub-arterial	60	55	47	40	57	44	10.5	4.0	YES	YES	YES	YES
Corbys Lane2	30	Local	55	50	38	22	38	28	0.1	6.9	YES	YES	YES	YES
Old Cootamundra Road	100	Sub-arterial	60	55	43	36	50	38	7.0	2.0	YES	YES	YES	YES
Dirnaseer Road (East of Ironbong Road)	50	Sub-arterial	60	55	39	33	49	39	10.0	5.8	YES	YES	YES	YES
Ironbong Road	190	Sub-arterial	60	55	28	22	45	29	16.9	7.4	YES	NO	YES	YES
Old Sydney Road2	700	Local	55	50	18	14	35	24	17.4	9.9	YES	YES	YES	YES
Olympic Highway (West of Bethungra)	45	Arterial	60	55	47	47	50	48	2.7	0.4	YES	YES	YES	YES
Retreat Road	30	Sub-arterial	60	55	33	33	46	39	13.5	6.8	YES	NO	YES	YES
Junee Reefs Road2	50	Local	55	50	33	22	46	29	13.5	7.8	YES	NO	YES	YES
Goldfields Way	20	Arterial	60	55	45	51	46	52	1.7	0.5	YES	YES	YES	YES
Stockinbingal Road	40	Sub-arterial	60	55	51	41	55	43	4.5	1.9	YES	YES	YES	YES

Note:
1 Day = 7am to 10pm, Night = 10pm to 7am.
2 Local roads are assessed against and predicted for Leq, 1hr peak trigger levels
3 Changes from results presented in the CNVIA are present in BLUE font

3.2 Blasting guidelines

NSW EPA has noted the Australian and New Zealand Environment and Conservation Council (ANZECC) (1990) guidelines should be used to assess blasting in accordance with the SEARs, instead of applying AS2187.2 Explosives – Storage and use, Part 2 Use of Explosives. Where the threshold levels in the ANZECC (1990) guidelines cannot be met, appropriate alternative thresholds must be justified and established in consultation with the potentially affected receivers.

The airblast overpressure assessment was calculated according to the method in AS 2187. Blasting guidelines are presented in ANZECC and AS 2187 as follows:

TABLE 3-2 RESPECTIVE BLAST GUIDELINES

Aspect	ANZECC guidelines	AS2187.2
Airblast overpressure	Recommended level of 115 dB (Lin Peak) during 95% of blasts No blast should exceed 120 dB (Lin Peak)	Recommended level of 115 dB (Lin Peak) during 95% of blasts No blast should exceed 120 dB (Lin Peak) unless agreement is reached with the occupier
Ground vibration	Recommended level of 5 mm/sec ppv1 during 95% of blasts No blast should exceed 10 mm/sec	Recommended level of 5 mm/sec ppv1 during 95% of blasts No blast should exceed 10 mm./sec unless agreement is reached with the occupier

3.2.1 Peak Particle Velocity

The assessment limits presented above and in the CNVIA are effectively the same in both guidelines and therefore the assessment in the CNVIA is consistent with the ANZECC guideline. It is noted that restrictions/ mitigation measures are provided within the ANZECC guidelines and the ARTC Construction Noise Vibration Management Framework (CNVMF), and these will be considered where potential impacts may occur.

Based on preliminary information of the location of required rock cuttings, a maximum charge size was provided for each proposed cut in Appendix F of the CNVIA. All locations complied with the ANZECC guideline criteria. The calculations are considered conservative, with the use of typical blasting factors and do not account for any topographical shielding or other blast controls.

4. Operational noise and vibration clarifications

NSW EPA raised concerns about the use of the Calculation of Road Traffic Noise (CoRTN) modelling algorithm to predict potential changes to operational road noise.

The SEARs contained no recommendation for the method of road noise modelling. CoRTN is an approved method within the NSW Road Noise Policy (RNP) for the prediction of road traffic noise in NSW and has been used almost exclusively for road noise assessments in the past in Australia.

4.1 Background

Road traffic noise models rely on a series of inputs to accurately predict levels of traffic noise. These include parameters such as road surface, speed and a breakdown of different vehicle types. CoRTN takes a relatively simple approach to this last parameter, with vehicle types being categorised as either Heavy or Light Vehicles. Recent developments in road noise modelling have led to the development of newer modelling algorithms, which consider road noise inputs in more detail and, as such, provide potential opportunities to improve the accuracy of road noise predictions. These models offer improvements in noise prediction by considering one or more of the following parameters in more detail:

- vehicle types
- acceleration/deceleration
- meteorological conditions
- road gradient/incline
- traffic control devices (such as ramps, stop signs, signals or roundabouts).

The CNVIA identified night-time heavy vehicle numbers on proposal roads forming up to 41 per cent of total traffic movements. Given the high proportion of heavy vehicles, further consideration of heavy vehicles, utilising the increased resolution available via implementation of newer noise models was undertaken.

To this end, ARTC has compared CoRTN with three widely researched road noise assessment methods, to assess whether there are changes to the number or location of receivers identified for noise mitigation in the CNVIA using other methods. The comparison found that, with the exception of CNOSSUS (which identified no exceedances), regardless of the method used, adversely affected receivers were consistently identified based on the level of available design information, to allow for subsequential consideration of mitigation eligibility. ARTC notes that in the detailed design phase, when features of road design and surrounding structures would be better defined, alternative methodologies such as TNM may provide greater resolution of impacts and efficacy of mitigations.

4.2 Summary of CNVIA

The CNVIA assessed operational road traffic noise for the realignment of Burley Griffin Way, using CoRTN to predict noise levels from the future realignment at the nearest noise sensitive receivers, assessed for Opening Years 2026 and Design Year 2036 in accordance with the RNP.

Predicted noise levels were compared to criteria from the NSW Road Noise Policy (EPA, 2011) (RNP), and the assessment was undertaken in accordance with guidance provided in the NSW Noise Criteria Guideline (Roads and Maritime, 2017) (NCG) and NSW Noise Mitigation Guideline (Roads and Maritime, 2017) (NMG).

The CNVIA found that noise criteria were satisfied for the proposal opening year, without the need for noise mitigation.

For the assessment period 10 years post-opening, one residential receiver (Lot 12 DP758928) was identified for further noise treatment. Recommendations for noise mitigation have been provided in line with the RNP, NCG and NMG, and would be confirmed and finalised at the detailed design phase of the proposal.

4.3 Alternative modelling method comparison

4.3.1 Overview

A simplified noise model of the proposal area (removing two non-proposal road sections to the east of the proposal) was assessed for the 2036 Build and No Build scenarios and the results from each new modelling method were calculated. The original CoRTN model was re-run and the results from each of the four models were compared.

4.3.2 Modelling algorithms

The following road noise algorithms were run through SoundPlan 8.2 noise modelling software:

- CoRTN
- NORD2000
- TNM 3.0
- CNOSSOS.

4.4 Results

Table 4-1 presents a summary of the receivers identified to qualify for noise mitigation treatment using each algorithm. It also provides an overview in the change in noise level relative to the CORTN method reported over the proposal area for each method.

TABLE 4-1 SUMMARY OF CHANGES TO NOISE MITIGATION OUTCOMES USING ALTERNATIVE MODELLING METHODS

Parameter	CoRTN	TNM	NORD2000	CNOSSUS
Number of properties qualifying for treatment	1 (ID: 321056)	1 (ID: 321056)	1 (ID: 321056)	Nil
Average difference in predicted noise level (relative to CORTN, across all assessed receivers)	N/A	- 5.5dB	- 4.4dB	- 5.8dB

The results show that the three alternative algorithms on average predict lower noise impacts than CoRTN at this location, by an approximate margin of -5 dB, and there appears to be fundamental differences to how noise propagation is modelled between the algorithms. However, this does not substantially change the outcome of the assessment when compared to the CNVIA, with only one receiver (ID: 321056) triggered for all alternative methods except CNOSSUS, which predicts a marginally smaller increase in noise, resulting in the single receiver no longer qualifying for treatment.

Predicted differences between each model at each receiver were generally similar for both the day and night-time period and Build / No Build scenarios.

Predicted noise levels using TNM were found to decrease the fastest, and in some areas show significant reductions at more distant receivers, when compared to CoRTN. The primary reason for the reduction in noise transmission appears to be due to different levels of screening by structures and buildings.

It appears that all four methods predict similar noise levels at locations close to the proposal alignment; however, TNM, NORD200 and CNOSSUS appear to implement a higher level of noise screening from buildings and structures and, as such, predicted noise levels decrease at a greater rate under these models. Predicted road noise levels at properties behind these structures are generally lower under these methods than CoRTN. CORTN provides a worst case, conservative road traffic noise prediction.

Both CNOSSUS and NORD2000 are observed to model impacts under the proposed bridge differently, with noise levels in this area being marginally lower than those predicted by CoRTN and TNM.

This assessment has shown that CoRTN predicts the highest base noise levels and as such represents the most conservative approach for noise propagation modelling at the proposal site. As such, it is considered that the findings of the CNVIA are valid.

With the exception of CNOSSUS, all methods of modelling identify the same receiver as qualifying for noise treatment. Under CNOSSUS, this receiver no longer qualifies.

This review suggests that the use of alternative algorithms will make the model less conservative but ultimately results in no change to the number of sensitive receivers triggering the consideration of noise mitigation, given that properties closest to the source of noise drive impacts and mitigation requirements. The NVIA is therefore considered appropriate for the EIS.

APPENDIX F

Noise and Vibration Assessment Clarifications

Attachment A Noise contours for updated proposal site

ILLABO TO STOCKINBINGAL RESPONSE TO SUBMISSIONS

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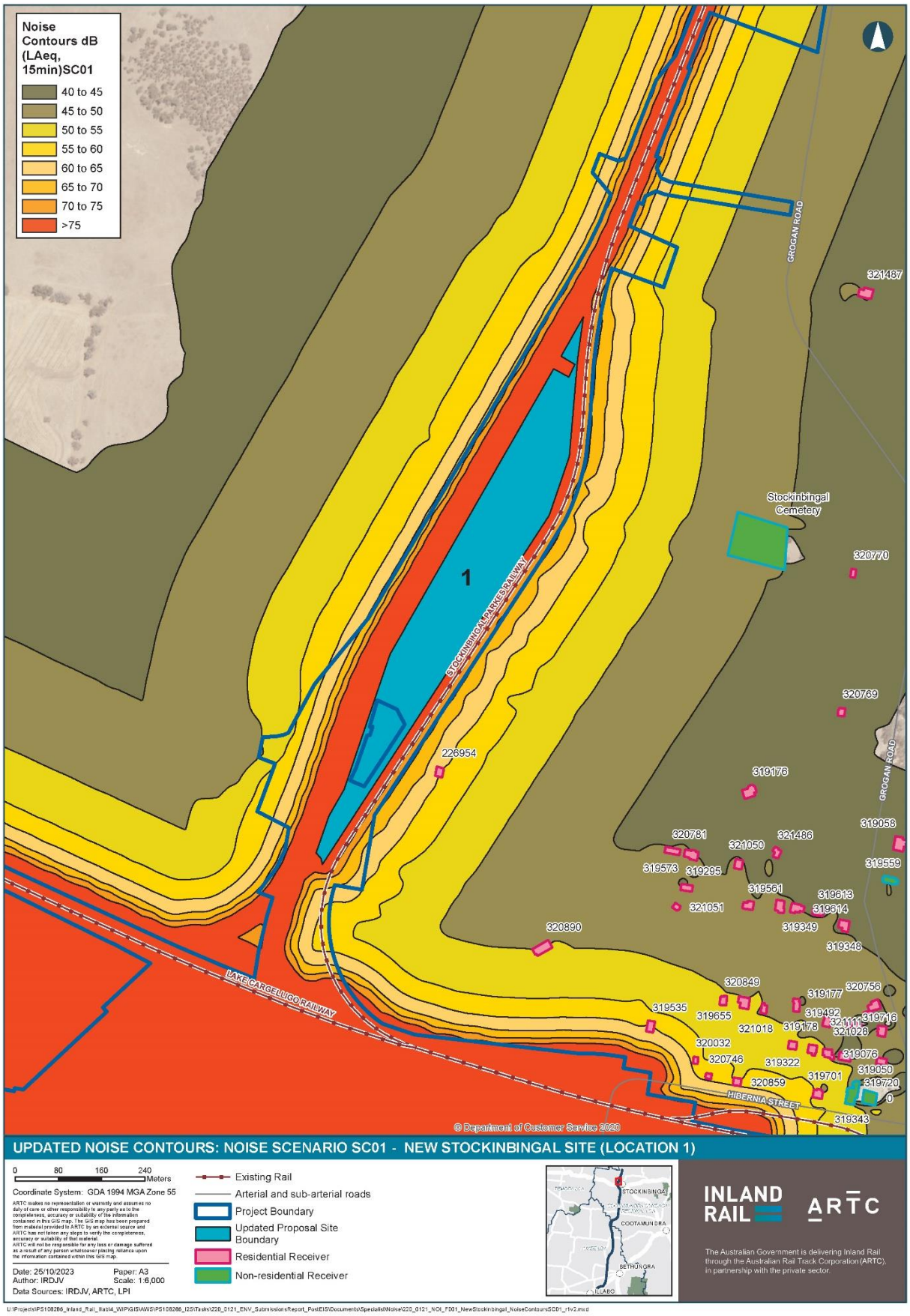
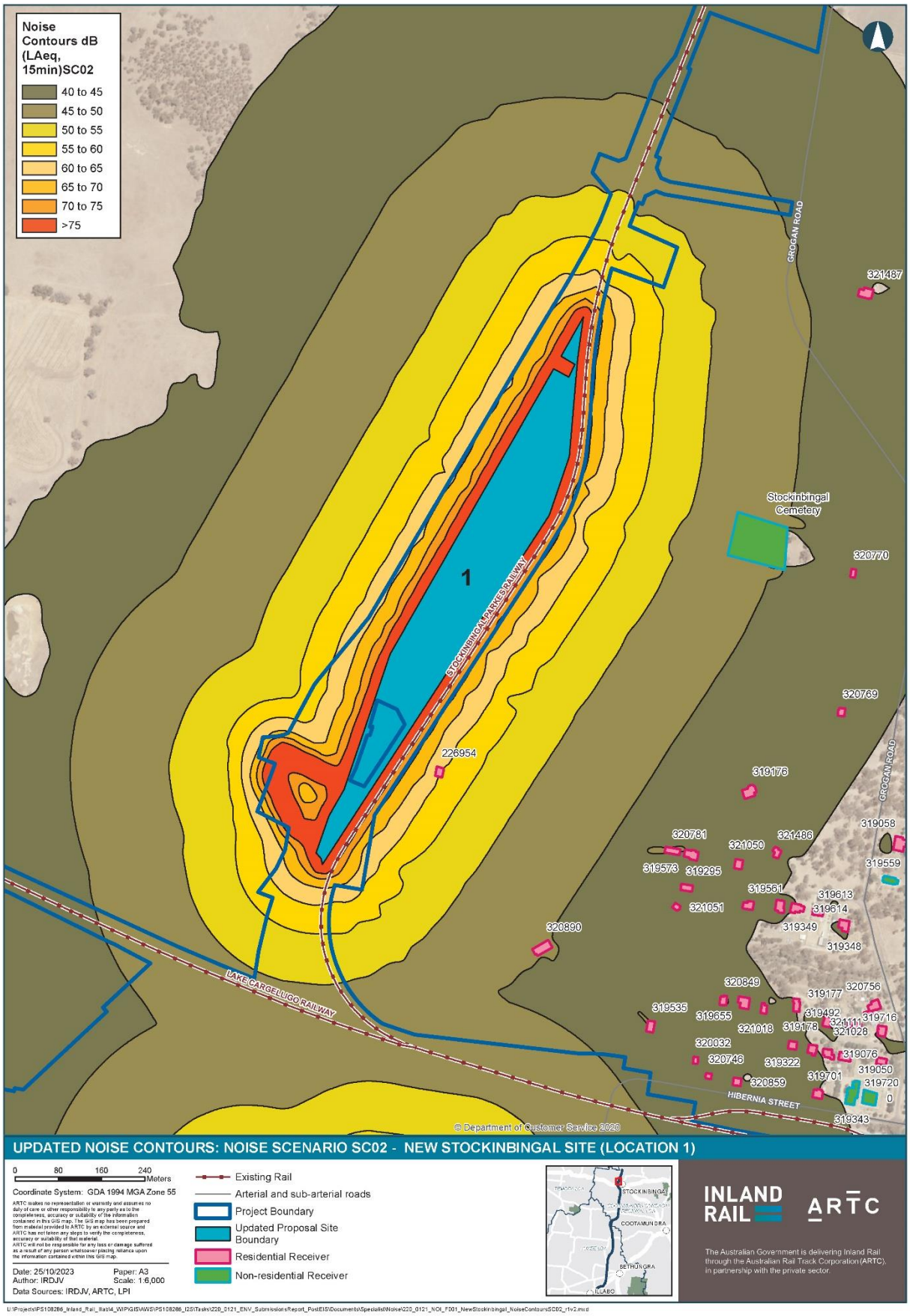
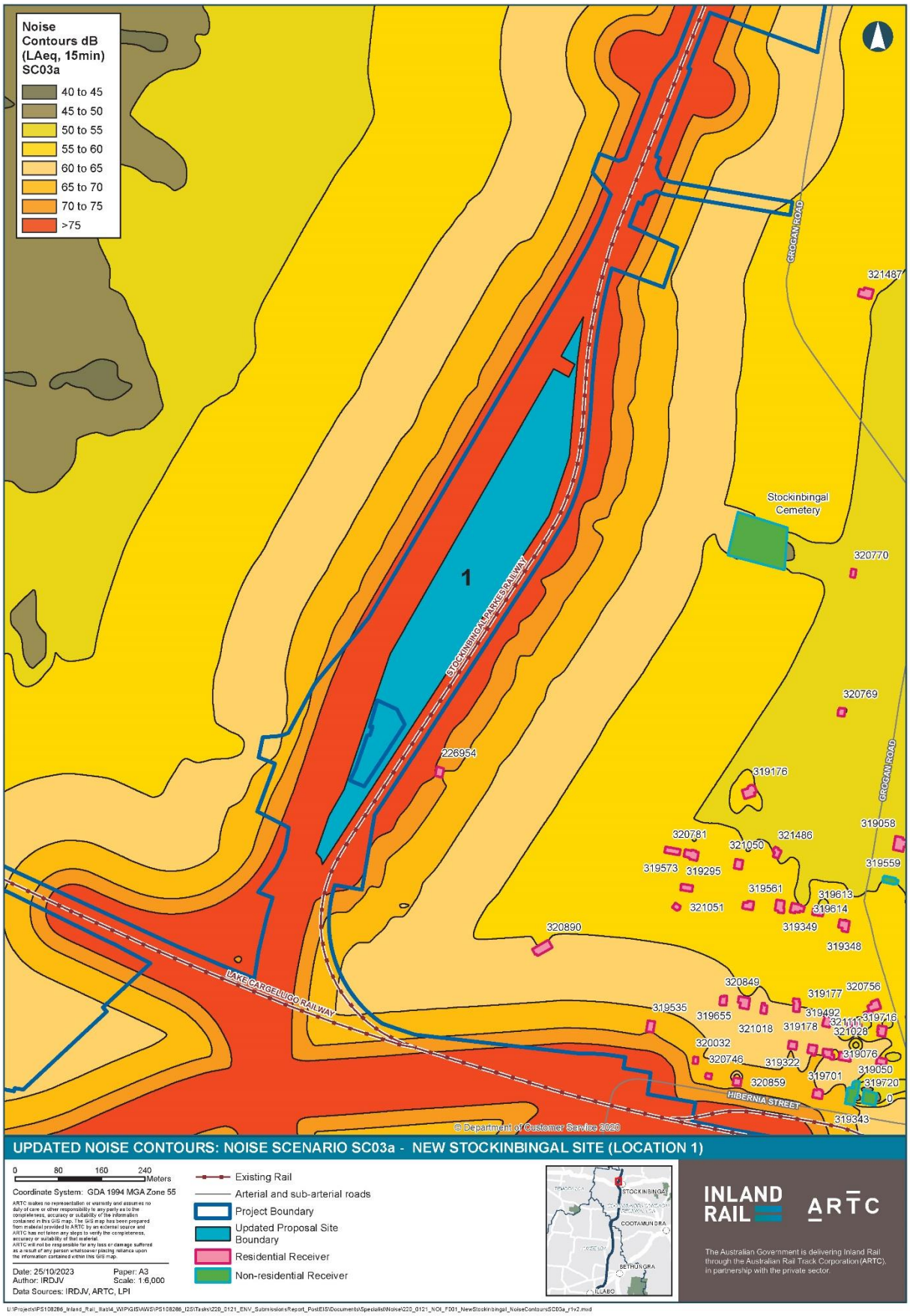


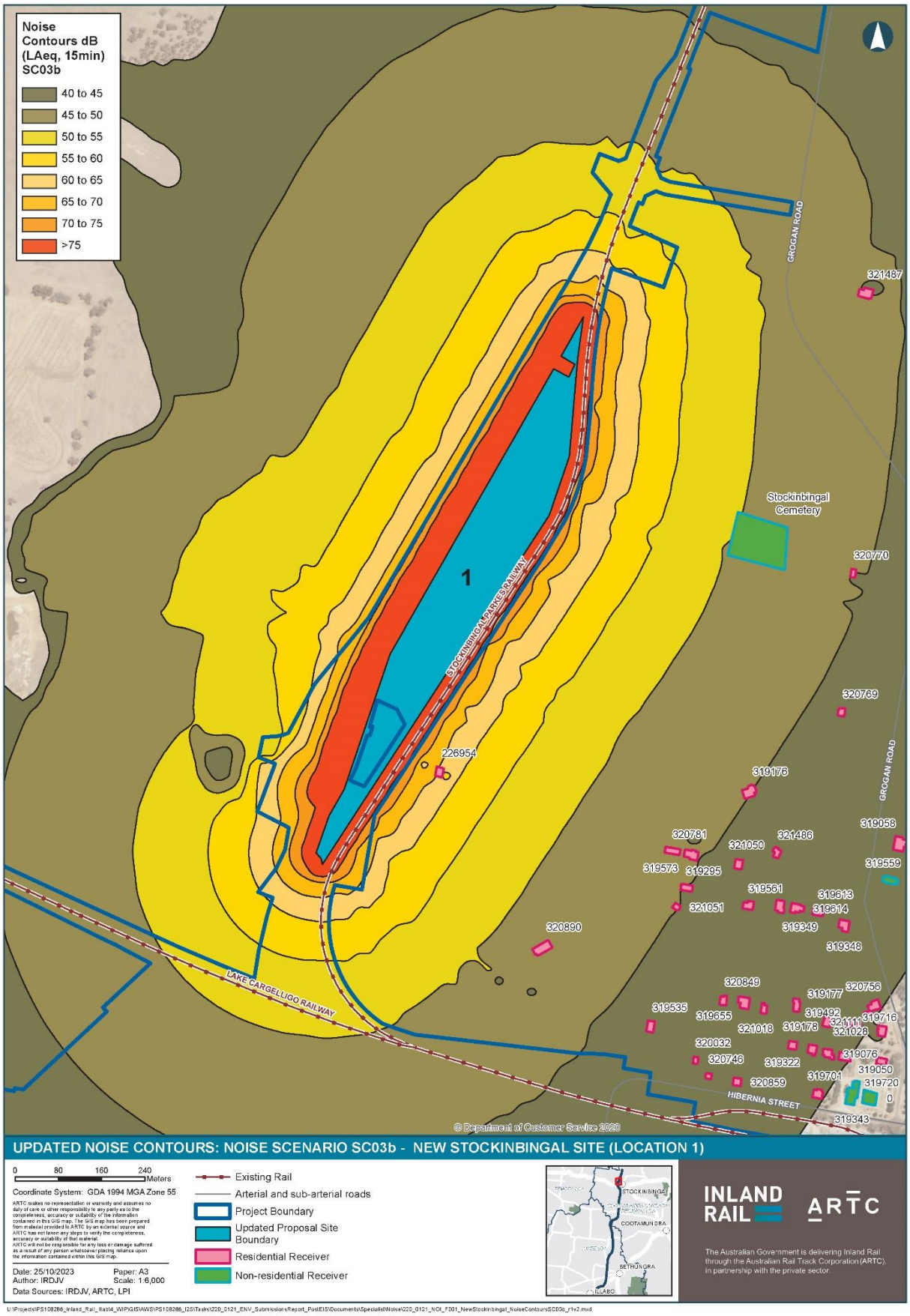
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC01—NEW STOCKINBINGAL SITE



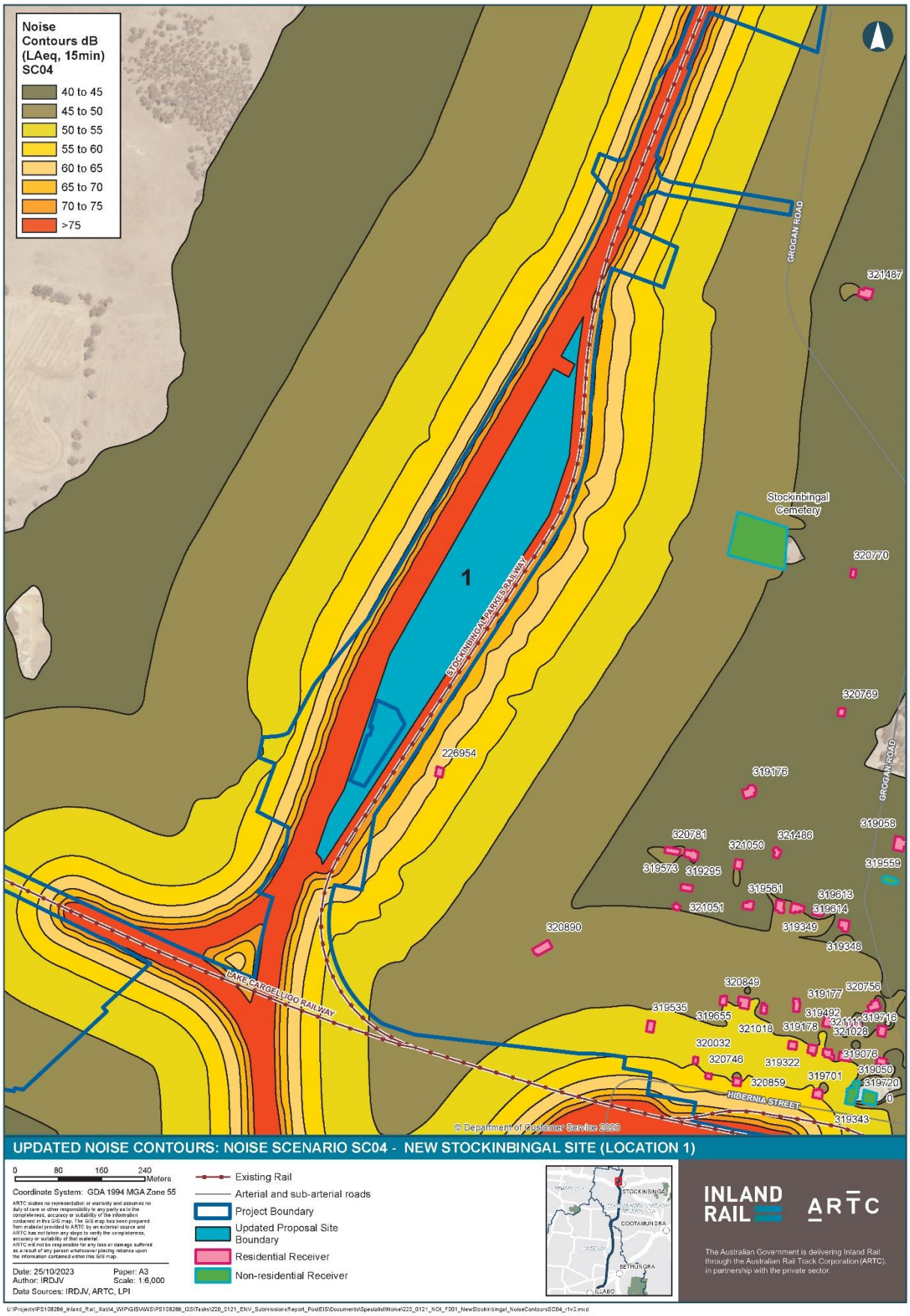
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC02—NEW STOCKINBINGAL SITE



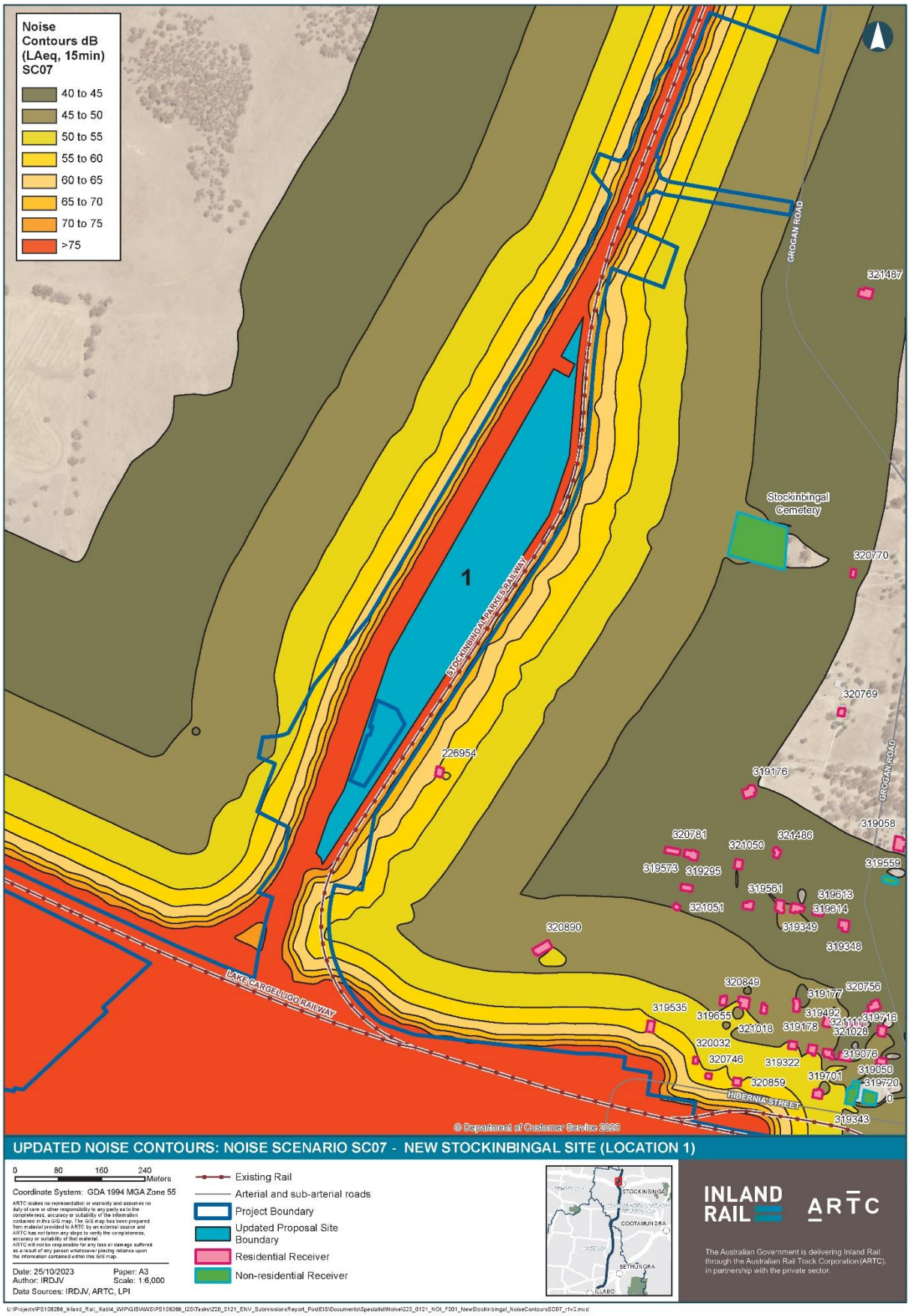
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC03A—NEW STOCKINBINGAL SITE



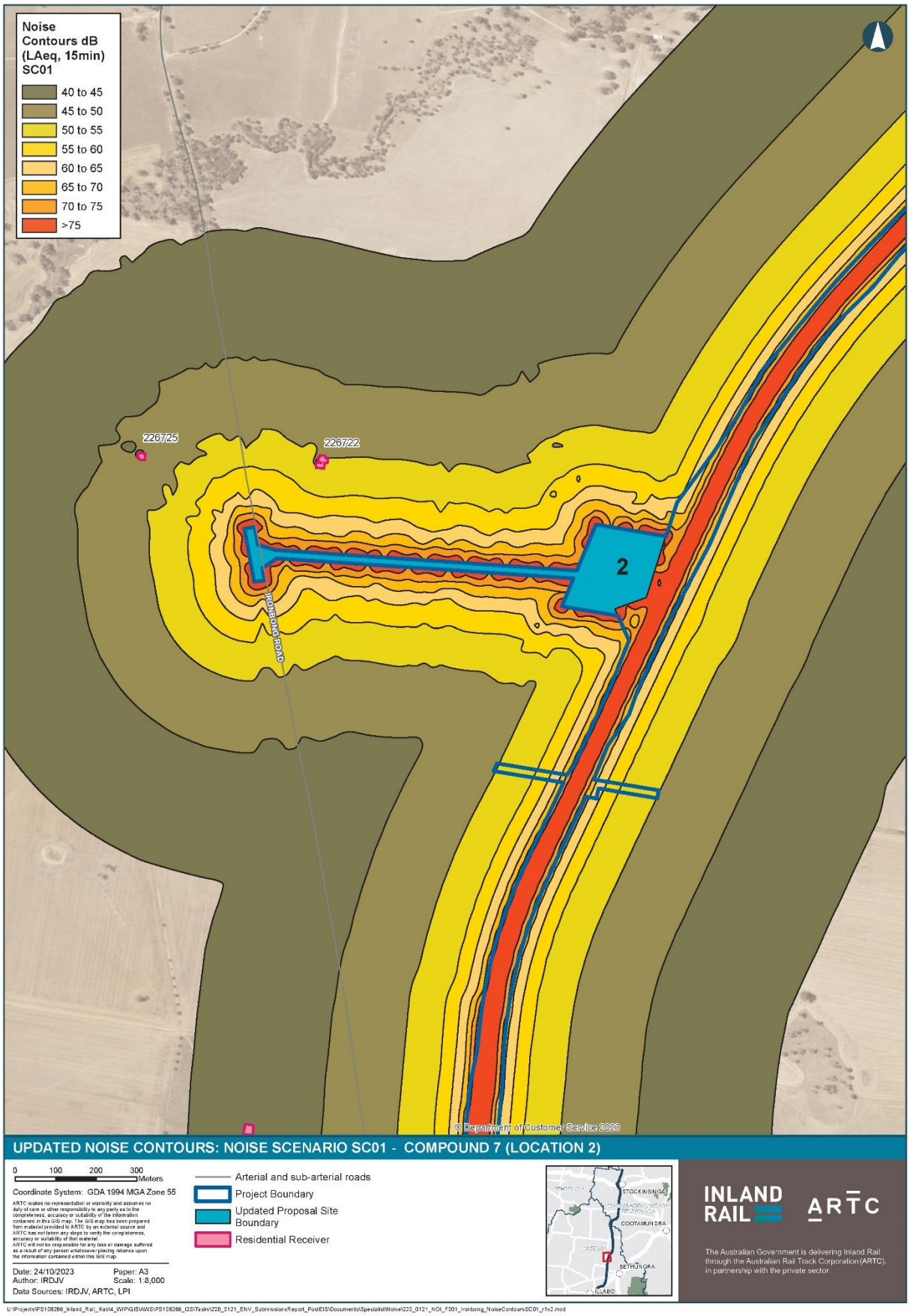
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC03B—NEW STOCKINBINGAL SITE



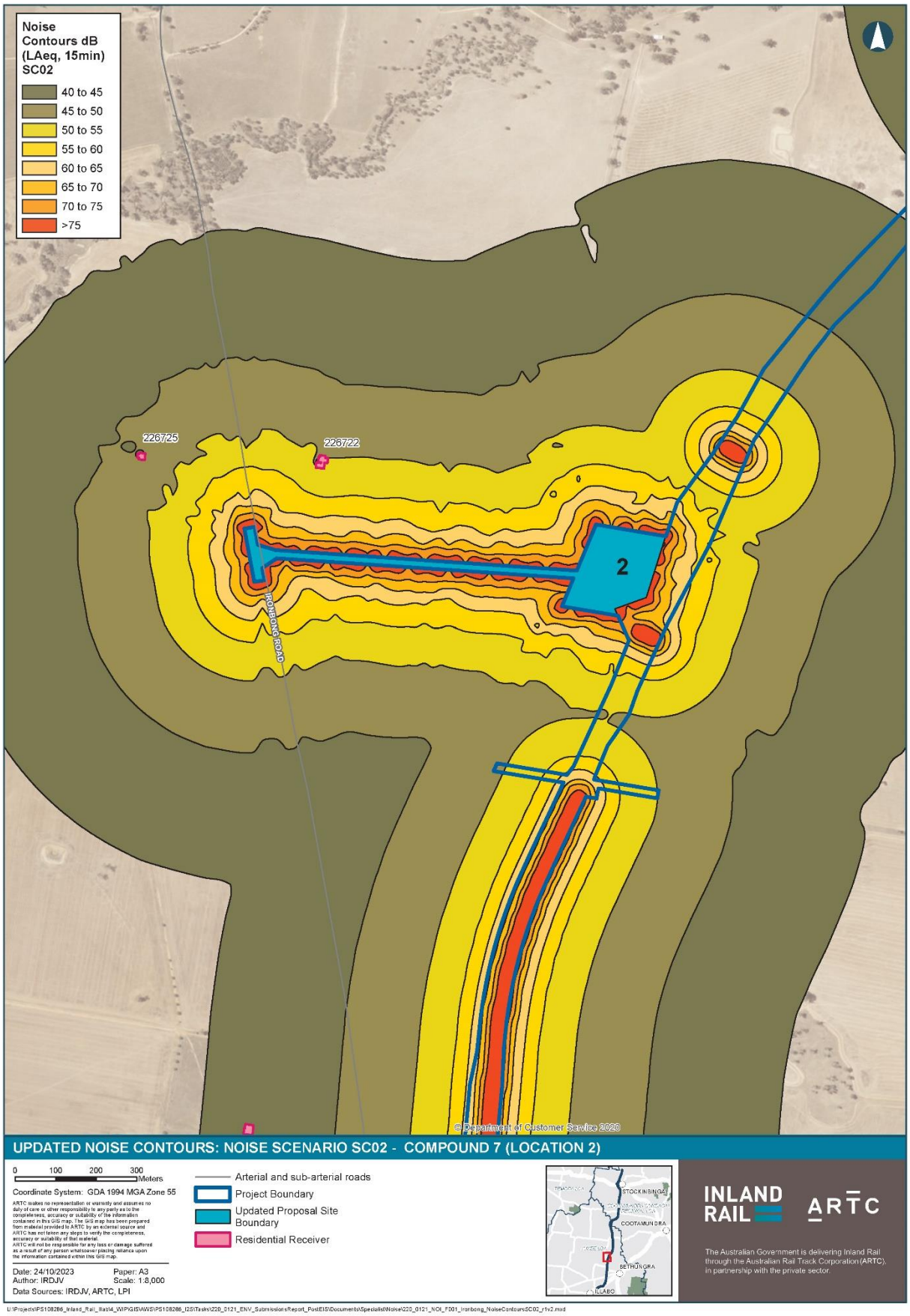
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC04—NEW STOCKINBINGAL SITE



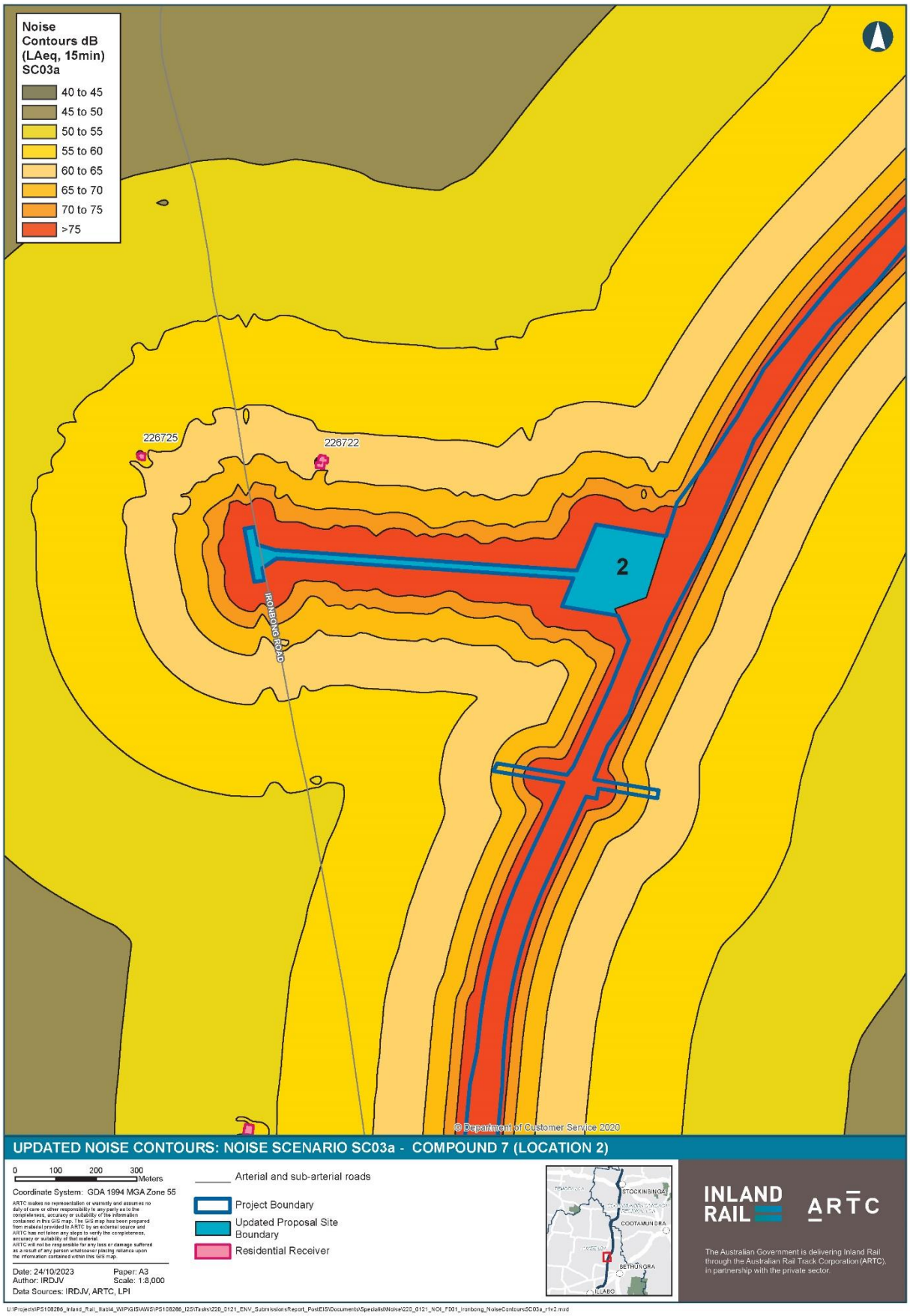
A.1 UPDATED NOISE CONTOURS: NOISE SCENARIO SC07—NEW STOCKINBINGAL SITE



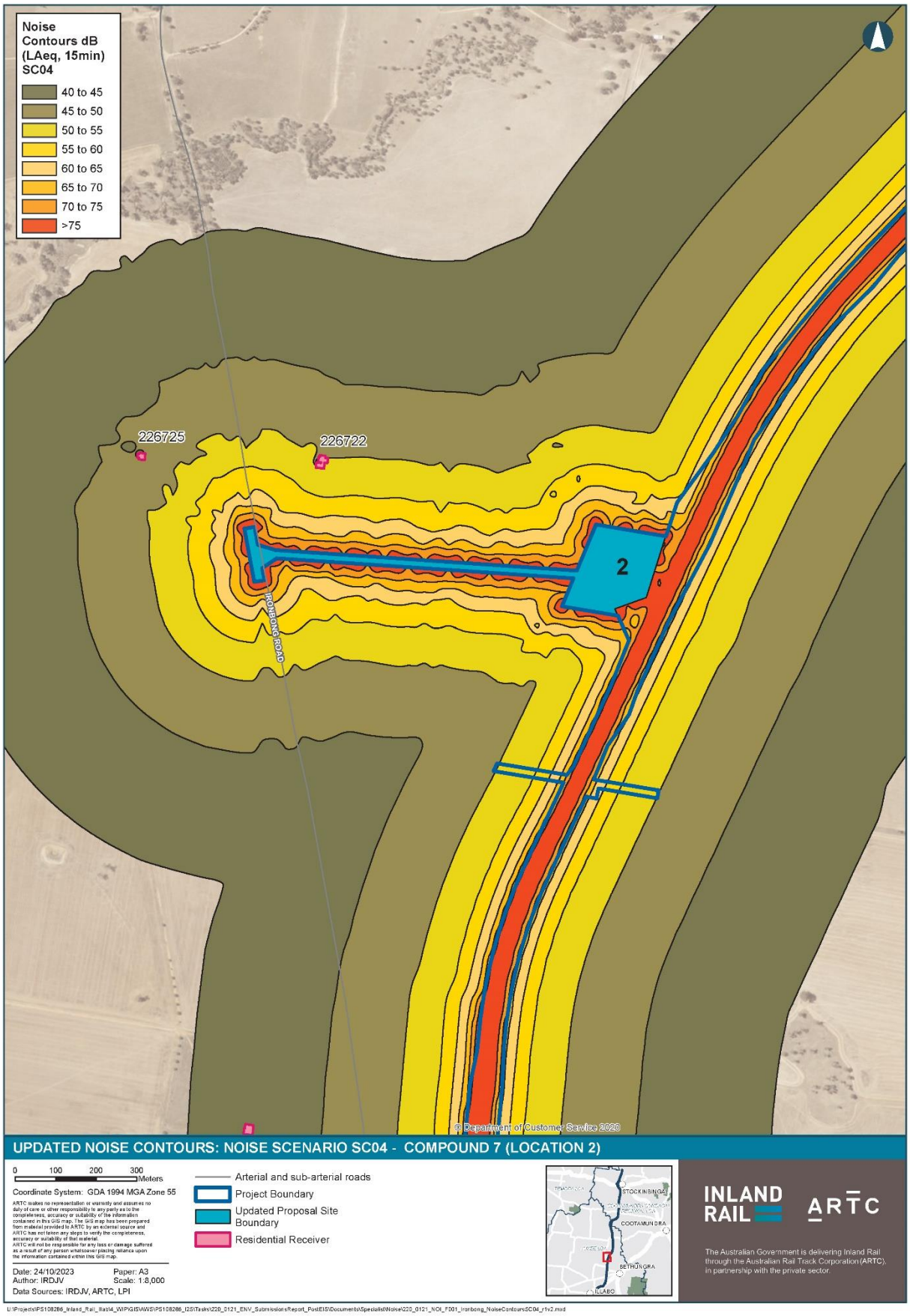
A.2 UPDATED NOISE CONTOURS: NOISE SCENARIO SC01—COMPOUND 7



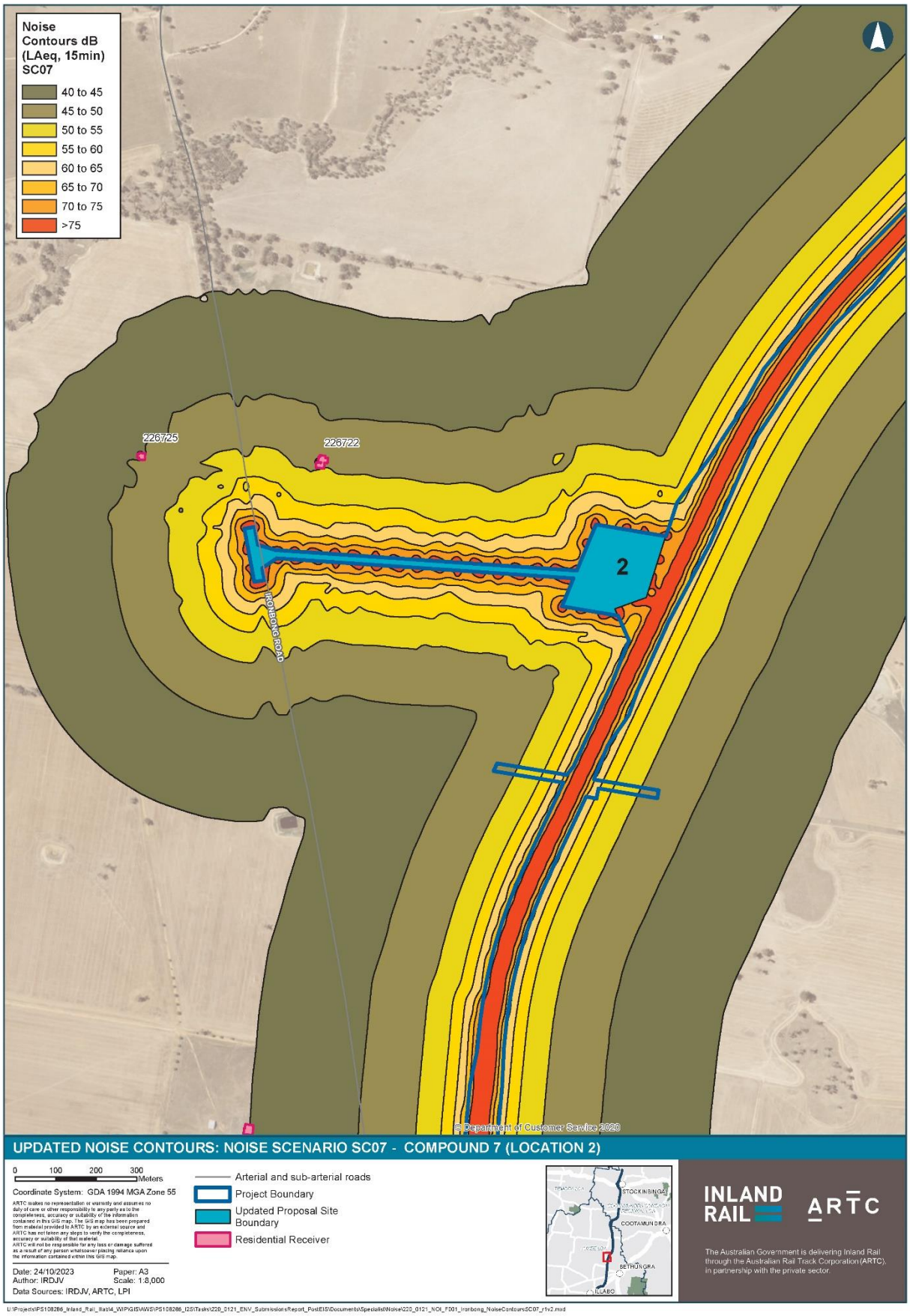
A.2 UPDATED NOISE CONTOURS: NOISE SCENARIO SC02—COMPOUND 7



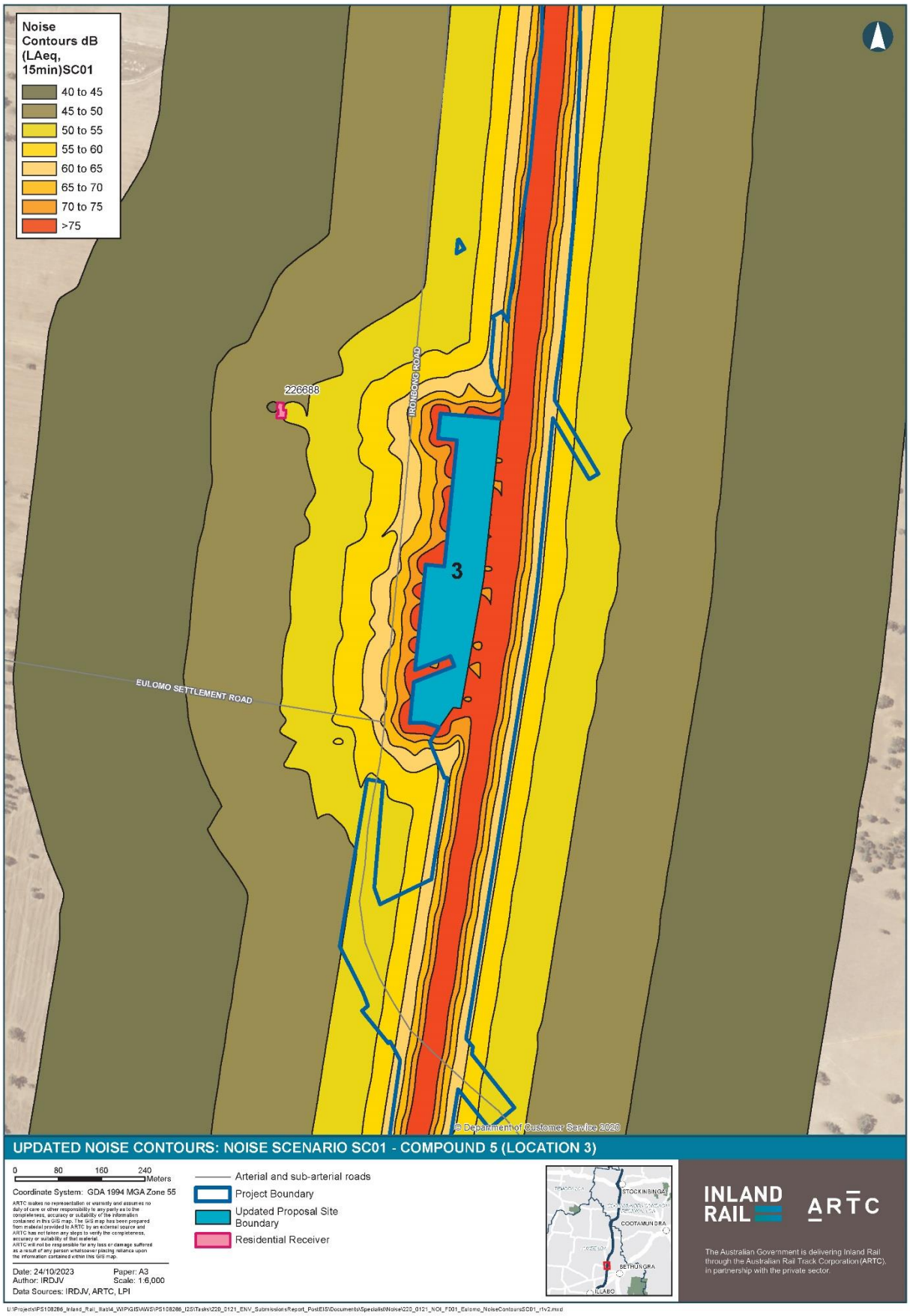
A.2 UPDATED NOISE CONTOURS: NOISE SCENARIO SC3A—COMPOUND 7



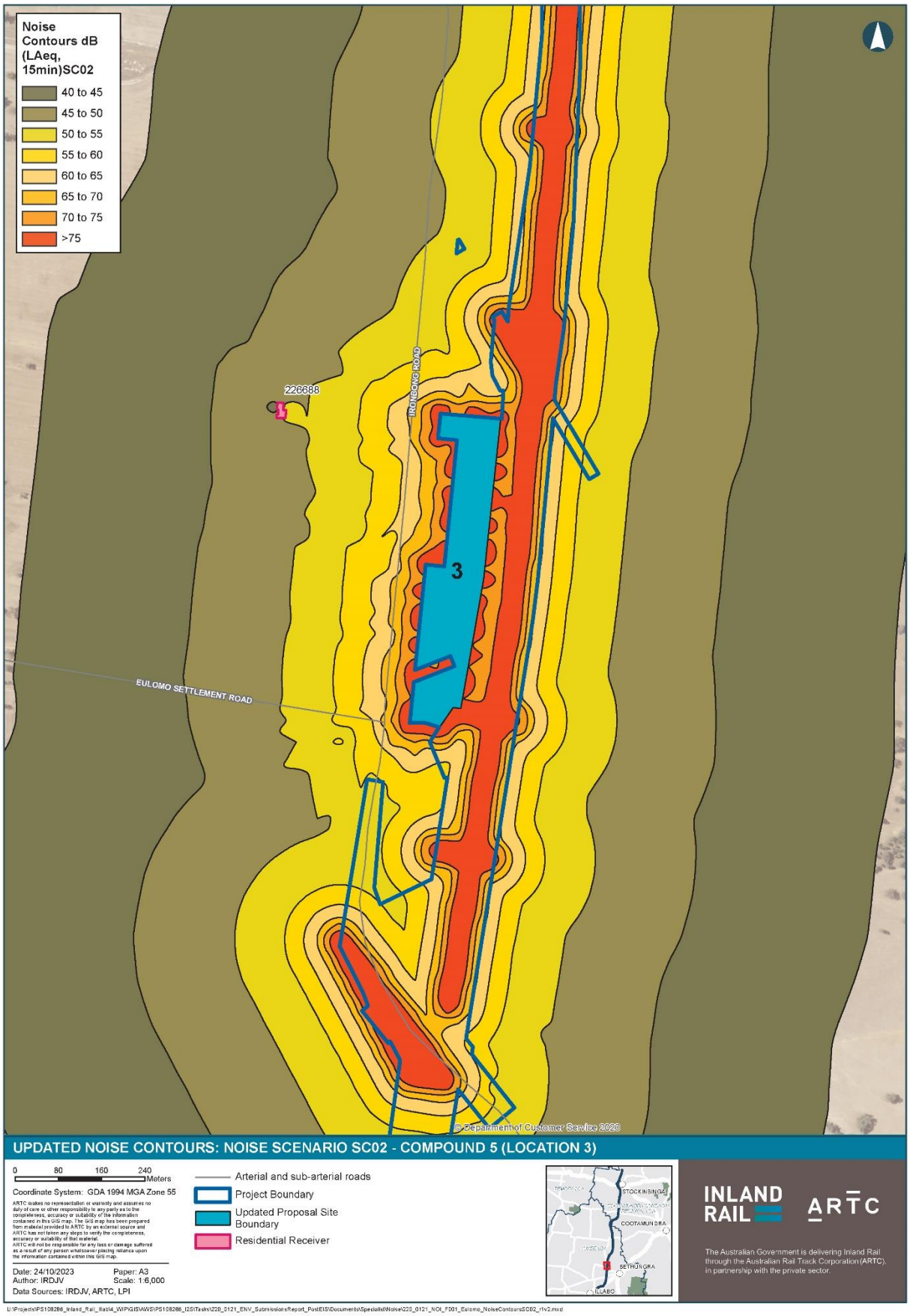
A.2 UPDATED NOISE CONTOURS: NOISE SCENARIO SC04—COMPOUND 7



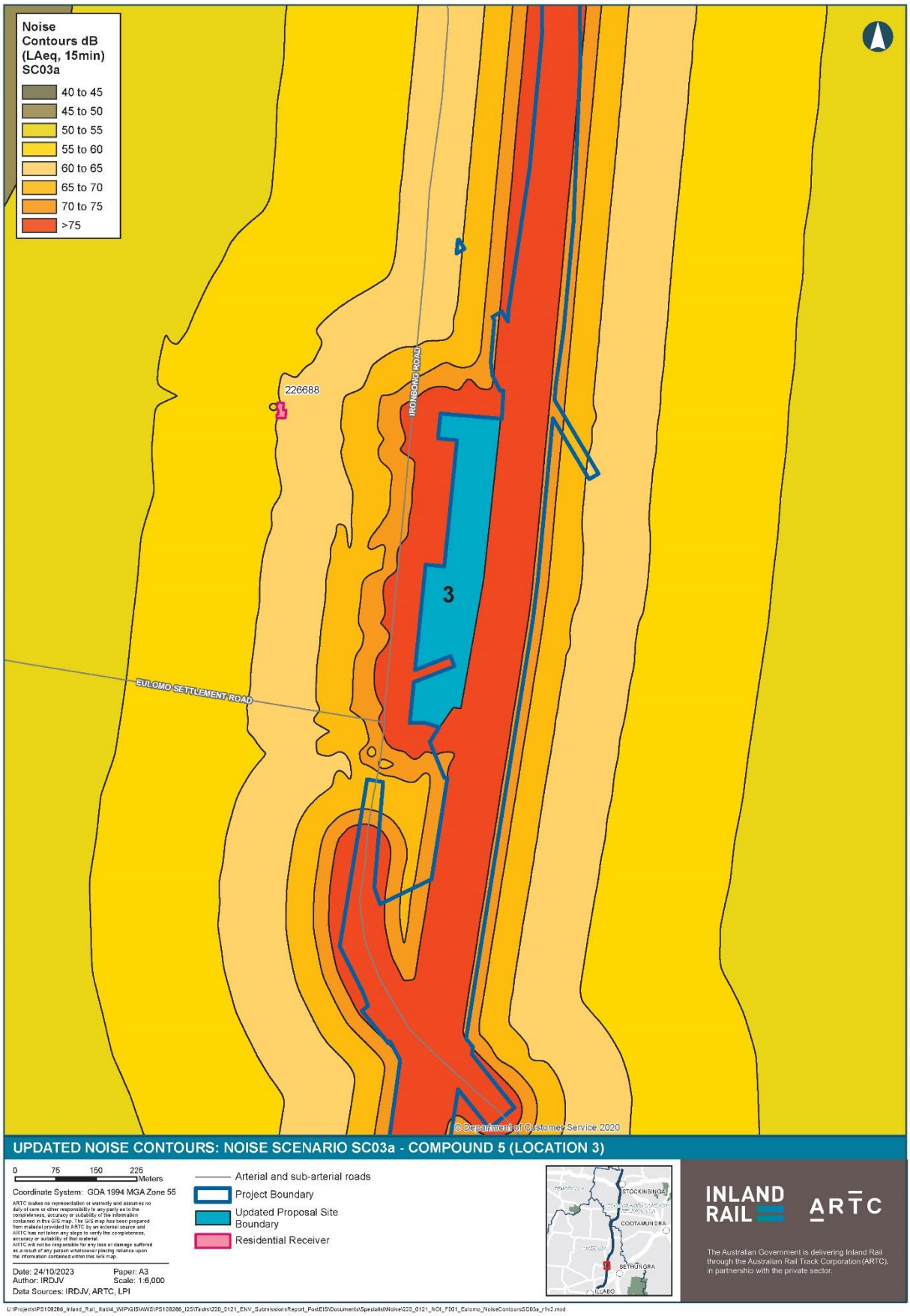
A.2 UPDATED NOISE CONTOURS: NOISE SCENARIO SC07—COMPOUND 7



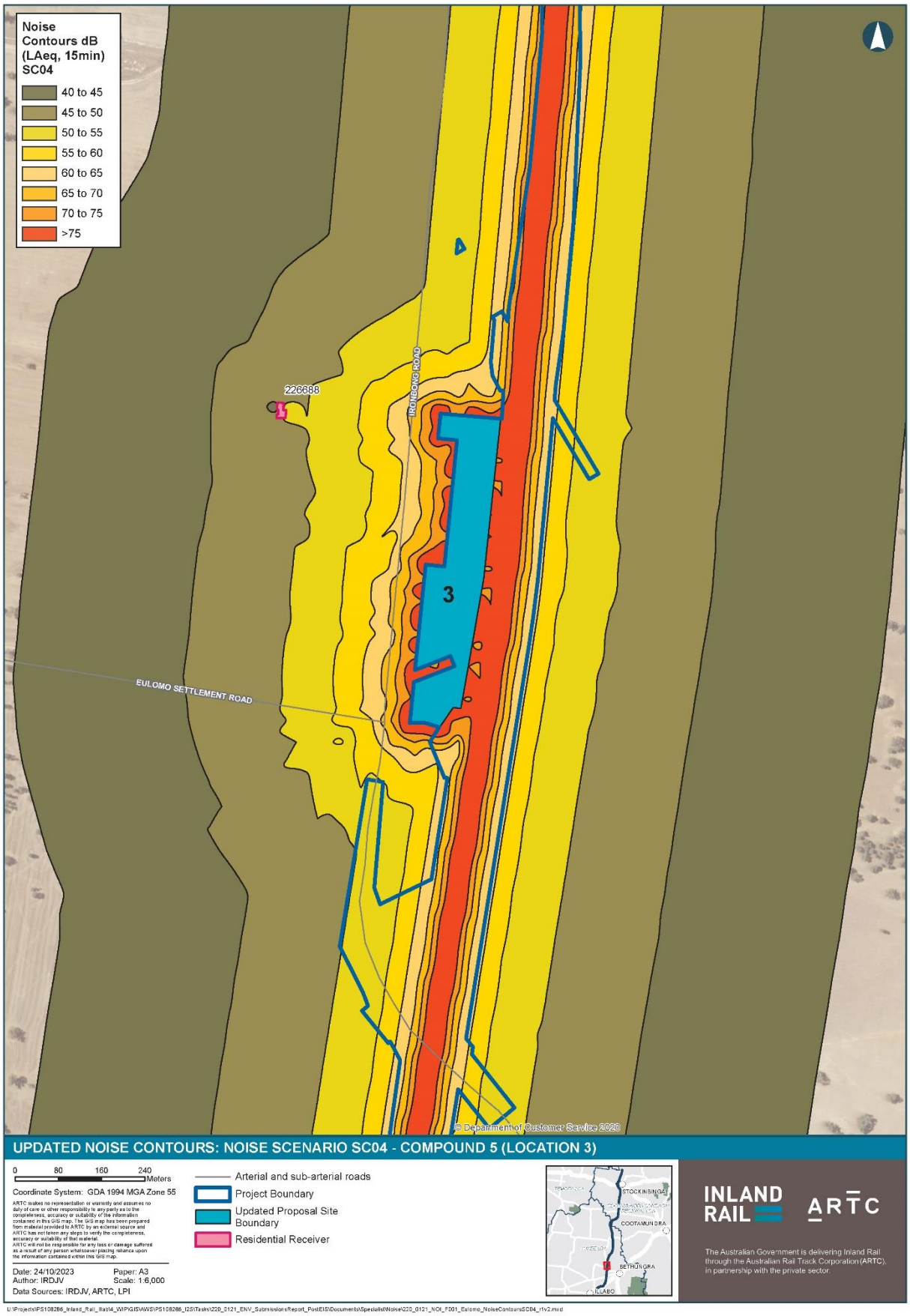
A.3 UPDATED NOISE CONTOURS: NOISE SCENARIO SC01—COMPOUND 5



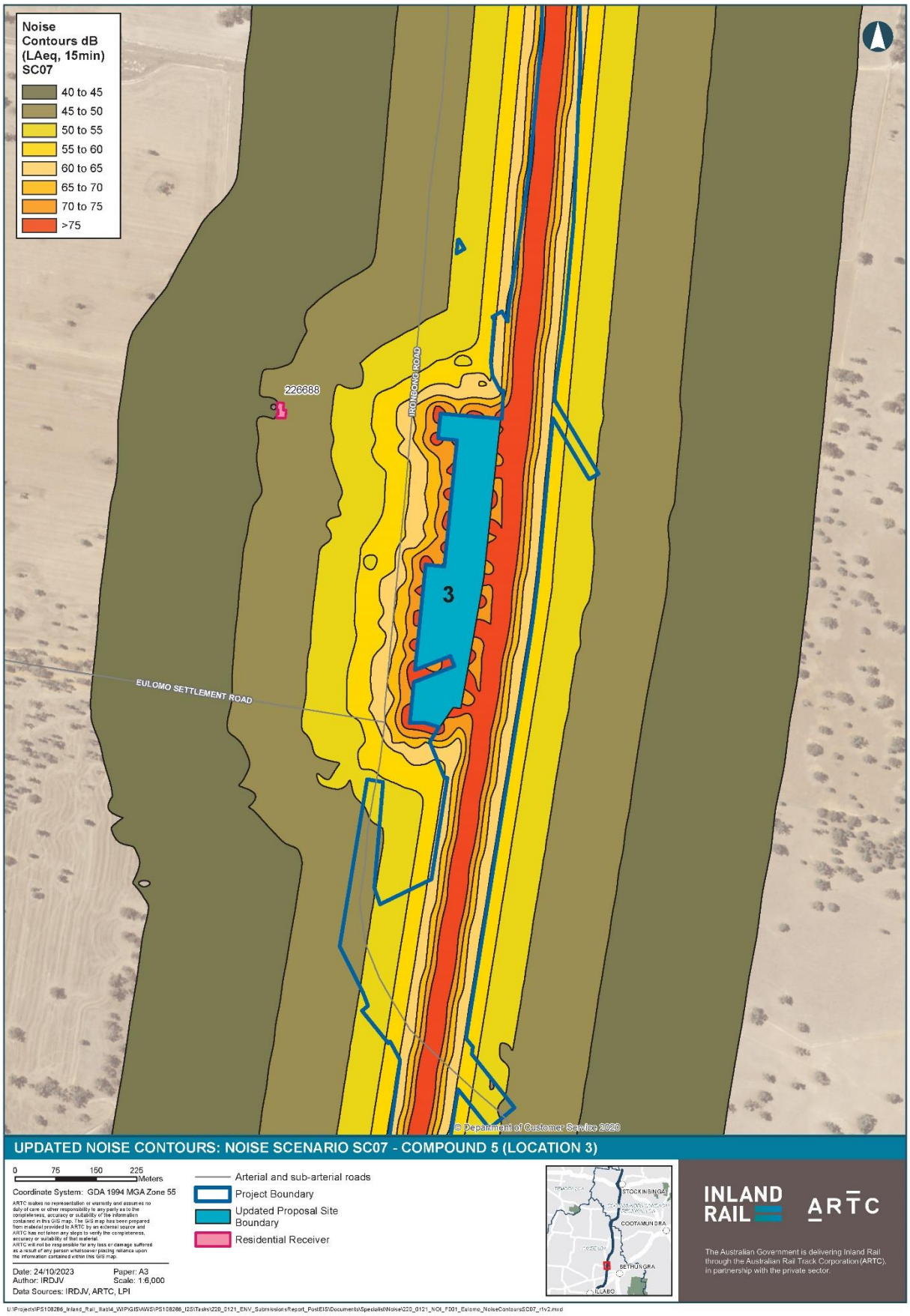
A.3 UPDATED NOISE CONTOURS: NOISE SCENARIO SC02—COMPOUND 5



A.3 UPDATED NOISE CONTOURS: NOISE SCENARIO SC3A—COMPOUND 5



A3 UPDATED NOISE CONTOURS: NOISE SCENARIO SC04—COMPOUND 5



A.3 UPDATED NOISE CONTOURS: NOISE SCENARIO SC07—COMPOUND 5