# New Beith Subdivision Precinct B

Road Traffic and Rail Noise Impact Assessment

301050975

28 March 2025

Prepared for:

Frasers Property Australia

Prepared by:

Stantec Australia

301050975 – New Beith Subdivision Precinct B

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|---|---|---|---|---|
| 001 | For Issue | Paul Lonard | 28/03/2025 | Karen McMorrow |
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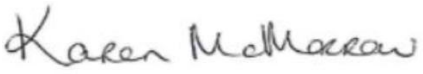
**Paul Lonard**

Approved by 
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**Karen McMorrow**

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# 1.0 INTRODUCTION

This noise impact assessment was conducted on behalf of Frasers Property Australia in relation to a proposed Reconfiguration of a Lot (ROL) application as part of the New Beith Subdivision (Frasers) Precinct A and B. The purpose of the report is to assess noise impacting the project from Flagstonian Drive Extension, the future North-South Arterial Road, and the railway corridor, determining any requirements for acoustic treatments. The assessment was conducted in accordance with the EDQ DA conditions referenced in Section 3.1.

## 1.1 SITE DESCRIPTION

The subject site location is shown in Figure 1.

**Figure 1 Site Location**

### 1.2 PROPOSAL DETAILS

The New Beith Subdivision is an emerging community divided into two precincts: Precinct A in the northern and Precinct B in the southern part of the development. Access to the subdivision will be provided via an extension to the existing Flagstonian Drive to the northwest. Both Precinct A and B will be part of the Greater Flagstone Urban Development Area (UDA) and must comply with the requirements of the Flagstone Development Scheme (FDS).

## 2.0 EXISTING NOISE ENVIRONMENT

### 2.1 ROAD TRAFFIC NOISE

As the Flagstonian Drive Extension and the future North-South Arterial Road are yet to be constructed, noise monitoring was not undertaken for the project. The site is located in a rural area with ongoing development typical of emerging communities. Once the surrounding roads are constructed, the site would be predominately affected by road traffic noise.

### 2.2 RAIL NOISE

The noise monitoring for this assessment was undertaken by SLR Consulting Australia (SLR ref: 620.013870.00001-R2-v2.0-20240611) to measure noise from the Brisbane-Sydney Rail Line. Rail noise monitoring was conducted between 30 March and 6 April 2022 at the location shown in Figure 2.

**Figure 2 Noise Monitoring Location**


The noise logger was placed in the free field with a microphone height of 1.5m above the existing ground level and was configured to measure rail noise levels as follows:

- 'A' weighting
- 'Fast' response
- Measurement descriptors $L_{Amax}$, $L_{Aeq}$, $L_{A1}$, $L_{A10}$, $L_{A90}$

Table 1 presents a summary of the equipment used for rail noise monitoring and the calibration results.

**Table 1 Summary of Rail Monitoring Equipment and Calibration**

| Equipment Type | Manufacturer and type | Serial Number | Pre-Calibration | Post-Calibration |
|---|---|---|---|---|
| Noise Logger | ARL Ngara | 878073 | 114.2 dB(A) | 114.2 dB(A) |

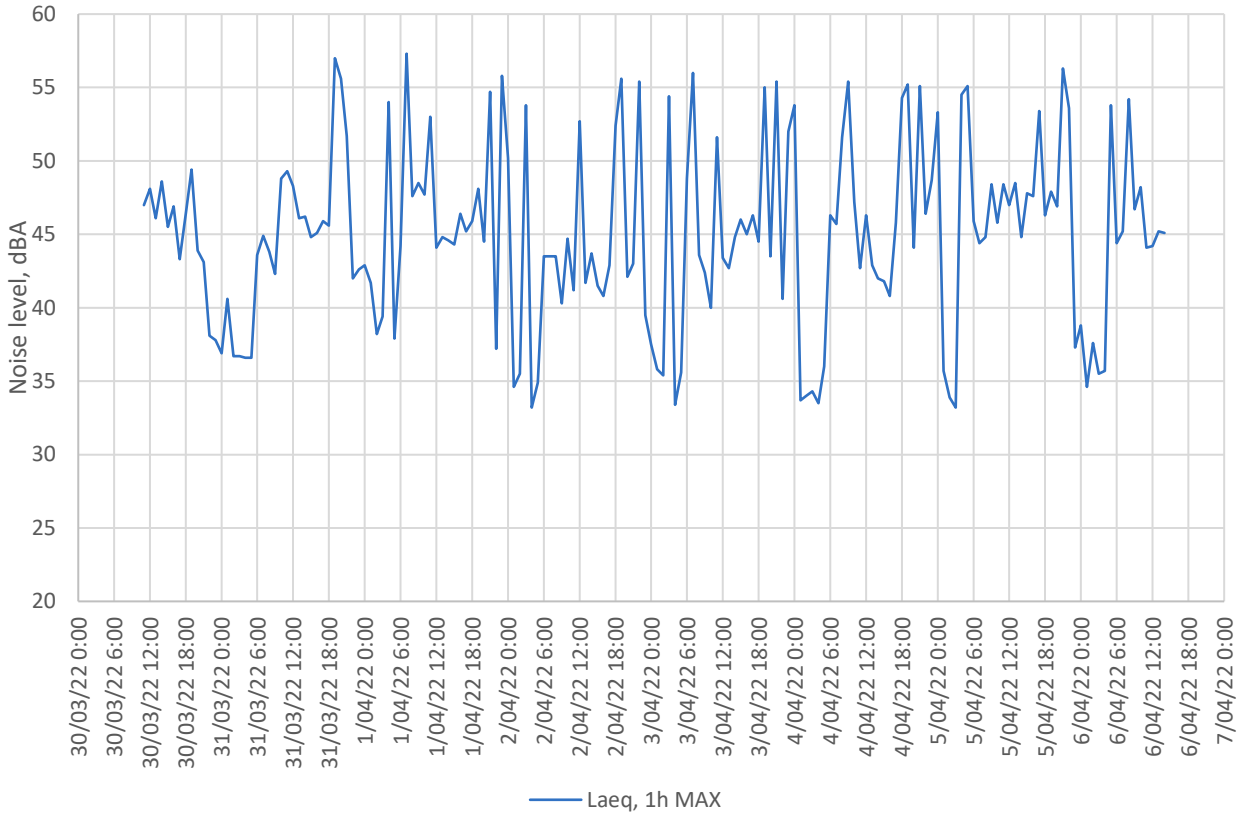
### 2.2.1 Measured Rail Noise Levels

The measured rail noise levels are presented in Table 2, with measured time traces presented in Figure 3.

**Table 2 Measured Rail Noise Levels (SLR, 2024)**

| Date | Measured $L_{Aeq\ 1h}$, Max |
|---|---|
| 30/03/2022 | 49 |
| 31/03/2022 | 57 |
| 1/04/2022 | 56 |
| 2/04/2022 | 56 |
| 3/04/2022 | 55 |
| 4/04/2022 | 56 |
| 5/04/2022 | 56 |

**Figure 3 Measured Rail Noise Levels, Time Trace**



# 3.0 NOISE ASSESSMENT CRITERIA

## 3.1 EDQ REQUIREMENTS

New Beith Precincts A and B are included in the Greater Flagstone Urban Development Area (UDA) and must comply with the Flagstone Development Scheme (FDS). According to the FDS Community Safety and Community Constraints, it is essential to shield residents and other sensitive uses from noise impacts originating from regional transport corridors. However, the document lacks specific objective criteria for evaluating these impacts.

The acoustic requirements currently enforced by Economic Development Queensland (EDQ) for several lots within the Flagstone UDA are specified in Condition 35 of the EDQ PDA development notice dated 4 April 2024, under reference DEV2012/403/128. Condition 35, which pertains to Acoustic Compliance, is detailed in Table 3. This report presumes that these conditions will be consistently applied to other New Beith roads with similar traffic volumes, as New Beith falls within the same PDA.

**Table 3 Precinct B Noise Requirements**

| Conditions | Reconfiguration of a lot | Timing |
|---|---|---|
| **35** | *a.* Except where identified in Condition 35A1, submit to EDQ Development Assessment DSDI for compliance assessment a Noise Mitigation Report, certified by a RPEQ, for *all lots within 100m from Flagstonian Drive Extension (excluding Lot 50021), the future North-South Arterial Road and 200m from the railway corridor achieving a ≤ 35dBA for 1 hour max, over a 24-hour period for all habitable rooms.*<br><br>Where a ≤ 35dBA for 1 hour max, over a 24-hour period for all habitable rooms cannot be achieved, the Noise Mitigation Report is to provide the proposed noise mitigation measures generally in accordance with QDC MP4.4 – Buildings in a Noise Transport Corridor. If any noise barriers are proposed, the detailed design/construction plans certified by a RPEQ are to be provided including how passive surveillance of the streetscape can be maintained.<br><br>Note: For lots fronting Flagstonian Drive (excluding Lot 50021), the acoustic fence must be no higher than that specified in the approved plan of development. | a. Prior to the commencement of site works for the relevant sub-stage. |

| Conditions | Reconfiguration of a lot | Timing |
|---|---|---|
| | Note: an acoustic report may address the acoustic needs of multiple stages/sub-stages in one report. | |
| | b. Construct barrier(s) works generally in accordance with the certified plans submitted under part a) of this condition. | b. Prior to survey plan endorsement for each relevant sub-stage. |
| | c. Submit to EDQ IS 'as constructed' plans, certified by a RPEQ, an asset registers in a format acceptable to Council and 'Issued For Construction' plans for noise barriers within the relevant sub-stage. | c. Prior to survey plan endorsement for each relevant sub-stage. |
| Note 1: Condition 35A is in relation to the certification of noise walls specific to sub-stages 3G, 3Fi, 3H, 5Ai, 5Aii, 5Bi, 5Bii, 5C, 5D, 5Ei, 5Eii, 5Eiii, 5F, 5G, 5H, 5Ki, 5Kii, 5L, 5M, 5Qii, 5R and 5S. Therefore, it is not considered further. | | |

It is assumed the 35dB(A) for 1 hour max, over a 24-hour period is equivalent to the maximum $L_{Aeq, 1h}$ over a 24 hour period. The SLR report further notes that they were advised by EDQ that:

> *EDQ consider the acceptable forms of building construction in MP4.4 as appropriate noise mitigation measures referenced in Condition 31. MP4.4 does not provide internal noise criteria but the minimum building constructions in MP4.4 would typically achieve an internal transport noise level of approximately 35 dB(A) within habitable rooms.*

Refer to Section 3.2 for a review of QDC MP 4.4 requirements.

## 3.2 QUEENSLAND DEVELOPMENT CODE (QDC) MP 4.4 – BUILDINGS IN A TRANSPORT NOISE CORRIDOR

Residential dwellings constructed near designated transport corridors (i.e. the North South Truck Connector, Flagstonian Drive, New Beith Road and the Sydney to Brisbane Rail Line) are required to comply with Queensland Development Code Mandatory Part 4.4 - Buildings in a Transport Noise Corridor (QDC MP 4.4).

**Table 4 QDC MP4.4 Noise Category Levels**

| Noise Category | Level of transport noise * (LA10, 18hr) for State controlled roads and designated local government roads | Single event maximum noise* (LAmax) for railway land |
|---|---|---|
| Category 4 | ≥ 73 dB(A) | > 85 dB(A) |
| Category 3 | 68 – 72 dB(A) | 80 – 84 dB(A) |
| Category 2 | 63 - 67 dB(A) | 75 – 79 dB(A) |
| Category 1 | 58 - 62 dB(A) | 70 – 74 dB(A) |
| Category 0 | ≤ 57 dB(A) | ≤ 69 dB(A) |

## 3.3 AUSTRALIAN STANDARDS AND RELEVANT DESIGN GUIDELINES

AS 2107 - Australian / New Zealand Standard AS/NZS 2107:2016 – Acoustics – *Recommended design sound levels and reverberation times for building interiors*

AS 3671 - Australian / New Zealand Standard AS/NZS 3671:1989 – Acoustics – *Road traffic noise intrusion – Building siting and construction*

AS 1055 - Australian / New Zealand Standard AS/NSZ 1055:1997 – Acoustics – *Description and measurement of environmental noise*

CoP Vol 1 – Queensland Department of Transport and Main Roads (DTMR) – *Transport Noise Management: Code of Practice 2013, Volume 1 – Road Traffic Noise*

CoP Vol 3 - Queensland Department of Transport and Main Roads (DTMR) – *Transport Noise Management: Code of Practice 2013, Volume 3 – Operational Railway Noise and Vibration (Interim Guideline)*

# 4.0 NOISE ASSESSMENT METHODOLOGY

SoundPLAN 9.0 computer modelling software was used to predict noise levels from the local road network impacting the subject site and to predict noise levels from the Brisbane-Sydney rail corridor impacting the proposed subdivision. Road traffic data has been used to generate computer noise models for the ultimate planning horizon (year 2041), which has been assessed in accordance with the relevant criteria.

SoundPLAN 9.0 uses Calculation of Road Traffic Noise (CoRTN) algorithms developed by the UK Department of Transport (Welsh Division) in 1988, and Background Material for the Nordic Rail Traffic Noise Prediction Method (Kilde Report 67/130).

The EDQ DA conditions referenced in the SLR assessment require compliance with an internal limit of 35 dBA for 1 hour.

- within 100m of Flagstonian Drive Extension and the future North-South Arterial Road.
- within 200m of the rail corridor.

A previously approved Stantec assessment in the same PDA with the same DA condition assessed this limit as an $L_{Aeq,\ 1hour}$ max (EDQ ref: DEV2018/988). QDC MP4.4 Noise Categories have been applied for the design of future dwellings to comply with this limit.

## 4.1 ROAD NOISE MODEL INPUTS AND ASSUMPTIONS

### 4.1.1 General Model Input Data

Table 5 details the sources of information used in the prediction of road traffic noise levels.

**Table 5: Road Traffic Noise Inputs and Assumptions**

| Input Parameter | Source Reference |
|---|---|
| Ground elevation geometry | Provided by Colliers. |
| Traffic volumes and %Heavy vehicles | Refer to section 4.1.2. |
| Speed Limits | Refer to section 4.1.2. |
| Road Surface Type | Modelling has assumed a pavement surface of Dense Grade Asphalt – DGA indicating a correction factor of 0 dB(A) (with reference to Queensland Department of Transport and Main Roads' *Transport Noise Management Code of Practice* (TMR TNM CoP2013) to be applied to all road traffic noise modelling. |
| Ground absorption | 0% over hard surfaces and 100% for soft (i.e. vegetated) surfaces |
| Correction to CoRTN for Australian Conditions | - 0.7 dB(A) CoRTN correction for Australian conditions (for free field receiver points)<br>- 1.7 dB(A) CoRTN correction for Australian conditions (for facade corrected receiver points located within 1 metre of a receiver building) |
| Façade correction | + 2.5 dB(A) |

| Input Parameter | Source Reference |
|---|---|
| Receiver height | Dwellings will be typical slab on ground construction, as opposed to elevated "Queenslander" or flood plain type homes. Therefore, receiver height will be 1.8m above ground level for ground floor level receivers and 4.6m above ground level for first floor level receivers.<br>Receiver heights will be 1.5m above ground level for private open spaces. |

### 4.1.2 Road Traffic Volumes

The future year 2041 traffic volumes are taken from the New Beith, Precinct A, Stage 1, 2 and 3a – Transport Noise Intrusion Assessment (SLR Project No.: 620.v013870.00001) prepared by SLR Consulting Australia.

**Table 6: Future Year 2041 Traffic Volumes**

| Road | Road Segment | Vehicles per Day | 18hr Traffic Volume | %Heavy Vehicles | Posted Speed, Km/h |
|---|---|---|---|---|---|
| North South Trunk Connector | NS1 | 8,691 | 8,170 | 2 | 70 |
| | NS2 | 9,050 | 8,507 | 2 | 70 |
| | NS3 | 12,480 | 11,731 | 4 | 70 |
| | NS4 | 16,700 | 15,698 | 4 | 70 |
| Mountain Ridge Road (Trunk Road) | TR1 | 12,046 | 11,323 | 5.3 | 60 |
| | TR2 | 10,688 | 10,047 | 5.3 | 60 |
| | TR3 | 4,239 | 3,985 | 1.2 | 60 |
| Road traffic on internal local roads has not been considered. This can be expected to cause minimal impact compared to other roads carrying much larger traffic volumes. Thus, they do not warrant noise treatment, noting that it is not possible to apply noise mitigation in front of these roads due to the presence of driveways. | | | | | |

### 4.1.3 Predicted Road Traffic Noise Levels 2041

Predicted road traffic noise levels and applicable Noise Categories for the ground and first floor levels are presented in Table 7. As lot numbering is yet to be formalised, receiver numbering has been designated by Stantec as presented in Figure 4.

**Figure 4: Stantec designated receiver numbering – Road Traffic Noise**

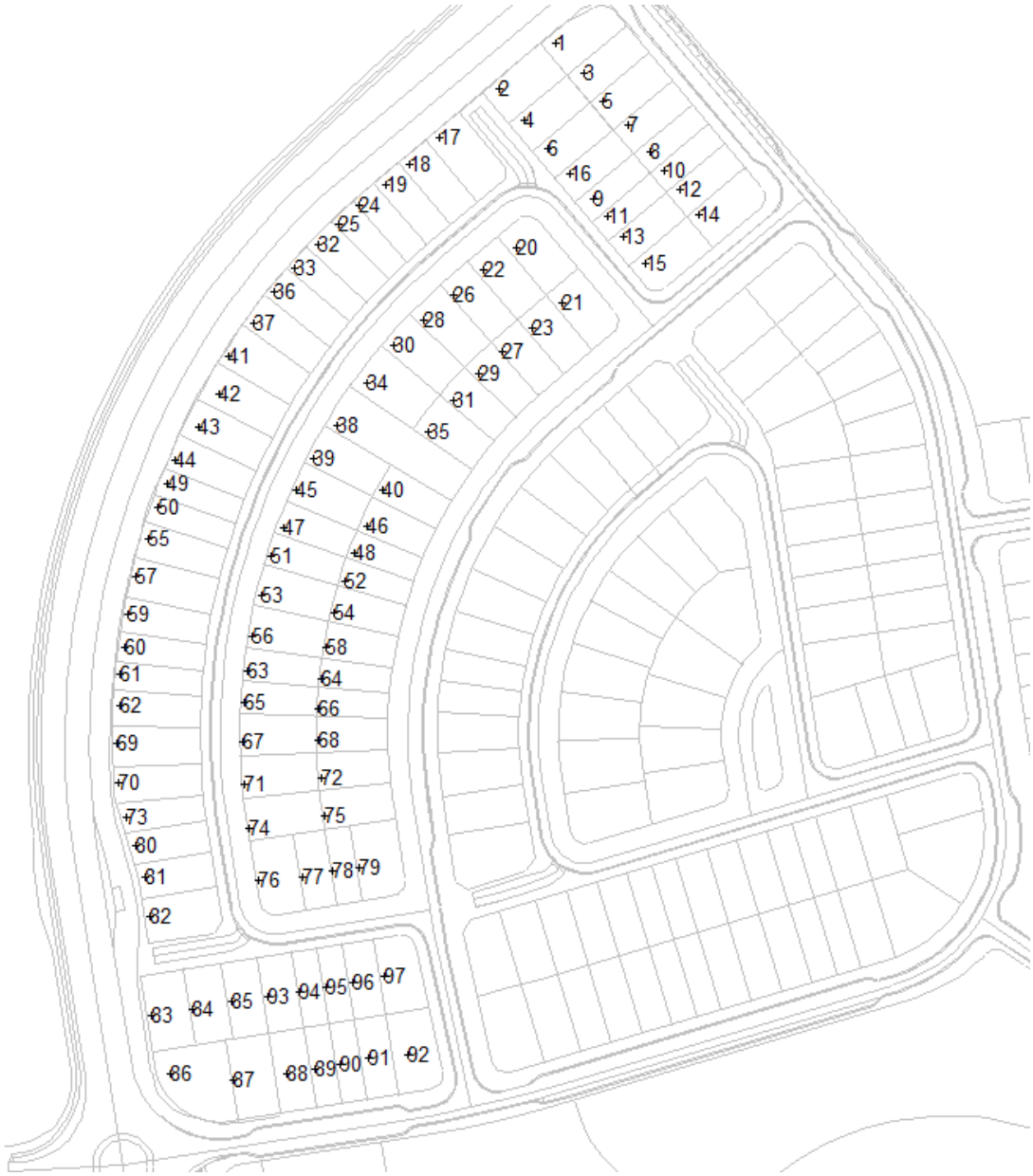


**Table 7: Predicted Road Traffic Noise Levels**

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| 1 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 2 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 3 | Ground | 56 | 0 |
| | First | 60 | 1 |
| 4 | Ground | 56 | 0 |
| | First | 60 | 1 |
| 5 | Ground | 56 | 0 |
| | First | 58 | 1 |
| 6 | Ground | 55 | 0 |
| | First | 57 | 0 |
| 7 | Ground | 55 | 0 |
| | First | 57 | 0 |
| 8 | Ground | 53 | 0 |
| | First | 55 | 0 |
| 9 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 10 | Ground | 53 | 0 |
| | First | 54 | 0 |
| 11 | Ground | 53 | 0 |
| | First | 55 | 0 |
| 12 | Ground | 53 | 0 |
| | First | 54 | 0 |
| 13 | Ground | 53 | 0 |
| | First | 54 | 0 |
| 14 | Ground | 52 | 0 |
| | First | 53 | 0 |
| 15 | Ground | 52 | 0 |
| | First | 53 | 0 |
| 16 | Ground | 54 | 0 |
| | First | 56 | 0 |
| 17 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 18 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 19 | Ground | 59 | 1 |

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| | First | 66 | 2 |
| 20 | Ground | 54 | 0 |
| | First | 56 | 0 |
| 21 | Ground | 53 | 0 |
| | First | 54 | 0 |
| 22 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 23 | Ground | 53 | 0 |
| | First | 54 | 0 |
| 24 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 25 | Ground | 59 | 1 |
| | First | 66 | 2 |
| 26 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 27 | Ground | 54 | 0 |
| | First | 54 | 0 |
| 28 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 29 | Ground | 54 | 0 |
| | First | 54 | 0 |
| 30 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 31 | Ground | 54 | 0 |
| | First | 54 | 0 |
| 32 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 33 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 34 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 35 | Ground | 54 | 0 |
| | First | 54 | 0 |
| 36 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 37 | Ground | 60 | 1 |
| | First | 65 | 2 |

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| 38 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 39 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 40 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 41 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 42 | Ground | 60 | 1 |
| | First | 65 | 2 |
| 43 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 44 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 45 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 46 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 47 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 48 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 49 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 50 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 51 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 52 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 53 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 54 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 55 | Ground | 60 | 1 |
| | First | 65 | 2 |
| 56 | Ground | 55 | 0 |

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| | First | 56 | 0 |
| 57 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 58 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 59 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 60 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 61 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 62 | Ground | 60 | 1 |
| | First | 66 | 2 |
| 63 | Ground | 55 | 0 |
| | First | 57 | 0 |
| 64 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 65 | Ground | 55 | 0 |
| | First | 57 | 0 |
| 66 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 67 | Ground | 56 | 0 |
| | First | 57 | 0 |
| 68 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 69 | Ground | 61 | 1 |
| | First | 67 | 2 |
| 70 | Ground | 61 | 1 |
| | First | 67 | 2 |
| 71 | Ground | 56 | 0 |
| | First | 57 | 0 |
| 72 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 73 | Ground | 61 | 1 |
| | First | 66 | 2 |
| 74 | Ground | 56 | 0 |
| | First | 57 | 0 |

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| 75 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 76 | Ground | 56 | 0 |
| | First | 57 | 0 |
| 77 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 78 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 79 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 80 | Ground | 61 | 1 |
| | First | 66 | 2 |
| 81 | Ground | 60 | 1 |
| | First | 65 | 2 |
| 82 | Ground | 60 | 1 |
| | First | 65 | 2 |
| 83 | Ground | 61 | 1 |
| | First | 66 | 2 |
| 84 | Ground | 59 | 1 |
| | First | 62 | 1 |
| 85 | Ground | 58 | 1 |
| | First | 60 | 1 |
| 86 | Ground | 63 | 2 |
| | First | 67 | 2 |
| 87 | Ground | 57 | 0 |
| | First | 61 | 1 |
| 88 | Ground | 57 | 0 |
| | First | 59 | 1 |
| 89 | Ground | 56 | 0 |
| | First | 58 | 1 |
| 90 | Ground | 55 | 0 |
| | First | 57 | 0 |
| 91 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 92 | Ground | 54 | 0 |
| | First | 55 | 0 |
| 93 | Ground | 57 | 0 |

| Receiver number | Floor | Predicted traffic noise level, L10(18h), dB(A) | QDC MP4.4 Noise Category |
|---|---|---|---|
| | First | 58 | 1 |
| 94 | Ground | 56 | 0 |
| | First | 57 | 0 |
| 95 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 96 | Ground | 55 | 0 |
| | First | 56 | 0 |
| 97 | Ground | 54 | 0 |
| | First | 55 | 0 |

Based on inclusion of the barrier recommended in Section 5.1, the predicted noise levels result in noise categories 1 or 2 applying at up to 40 allotments. Refer to Section 5.2 for recommendations regarding acoustic treatment.

## 4.2 RAIL NOISE ASSESSMENT

### 4.2.1 General Model Input Data

Table 8 details the sources of information used in the prediction of railway noise levels.

**Table 8 Rail Noise Modelling Inputs and Assumptions**

| Input Parameter | Source Reference |
|---|---|
| Ground elevation geometry | Provided by Frasers Property Australia PTY LTD |
| Rail alignment | Current rail alignment verified by aerial photography |
| Rail volumes | Refer to Section 4.2.2 |
| Rail traffic speeds | 80 km/h/100km/h |
| Ground absorption | Predominately soft ground |
| Façade reflections | +2.5 dBA |
| Receiver height | Dwellings will be typical slab on ground construction, as opposed to elevated "Queenslander" or flood plain type homes. Therefore, receiver height will be 1.8m above ground level for ground floor level receivers and 4.6m above ground level for first floor level receivers.<br>Receiver heights will be 1.5m above ground level for private open spaces. |

### 4.2.2 Rail Volumes

Current daily rail volumes were obtained from the SLR Consulting Australia (SLR ref: 620.013870.00001-R2-v2.0-20240611).

**Table 9 Pre-existing rail volumes**

| Train Type | Noise Emission | Modelled Speed | Train per 24-hour |
|---|---|---|---|
| XPT | 95 dBA SEL | 100 km/h | 2 |
| Locomotive (notch 8) | 86 dBA SEL | 80 km/h | 6 |
| Freight wagons (1,000m) | 90 dBA SEL | 80 km/h | 6 |

### 4.2.3 Modelled Scenarios

2041 traffic noise predictions were modelled for single and two storey receivers using the SoundPLAN 9.0 computer noise model. Detailed noise contour maps were produced to identify lots affected by rail noise based on relevant assessment criteria. Lots deemed to exceed the assessment criteria were further reviewed to investigate appropriate mitigation measures to control noise exceedance. The highest noise category predicted onto the lot at the ground floor and first floor is conservatively reported.

The Kilde Railway noise prediction methodology was applied to calculate the railway noise levels in SoundPLAN.

To assess railway noise impact to the proposal, the following model scenarios were prepared:

- **Model Verification:** Existing rail noise model based on the modelling inputs supplied for 2022 provided by SLR.
- **Predicted Rail Noise Impacts, No Barriers**: Current rail volumes were used to determine the predicted rail noise impacts at ground and first floor receiver locations.

## 4.3 MODEL VERIFICATION- SCENARIO 1

Verification of the SoundPLAN 9.0 modelling program was undertaken prior to the prediction of rail noise impacts. An iteration of the model was developed using current rail volumes and site conditions to predict the $L_{Aeq,\ 1\ hour\ max}$ for comparison to the measured $L_{Aeq,\ 1\ hour\ max}$.

**Table 10 Model Verification Results**

| Measured Noise Level dB(A) $L_{Aeq, 1\ hour\ max}$ | Predicted Noise Level, dB(A) $L_{Aeq, 1\ hour\ max}$ | Difference $L_{Aeq, 1\ hour\ max}$ |
|---|---|---|
| 57.0 | 58.1 | 1.1 |

The SoundPLAN 9.0 rail noise model is over predicting by 1.1 dB(A), which is within the allowable tolerance of +/- 2.0 dB(A).

## 4.4 PREDICTED RAILWAY NOISE IMPACTS, NO MITIGATION – SCENARIO 2

Predicted rail noise levels and applicable Noise Categories for the ground and first floor levels are presented in Table 11. As lot numbering is yet to be formalised, receiver numbering has been designated by Stantec as presented in Figure 5.

**Figure 5: Stantec designated receiver numbering – Rail Noise**

**Table 11: Predicted rail noise levels**

| Receiver number | Floor | Predicted Rail Noise Level, $L_{eq\ 1h}$ MAX dB(A) | Predicted Transport Noise Reduction Required for habitable rooms | (1) QDC MP4.4 Noise Category |
|---|---|---|---|---|
| 101 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 102 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 103 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 104 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 105 | Ground | 60 | 25 | 1 |
| | First | 61 | 26 | 2 |
| 106 | Ground | 60 | 25 | 1 |
| | First | 61 | 26 | 2 |
| 107 | Ground | 60 | 25 | 1 |
| | First | 61 | 26 | 2 |
| 108 | Ground | 61 | 26 | 2 |
| | First | 62 | 27 | 2 |
| 109 | Ground | 62 | 27 | 2 |
| | First | 63 | 28 | 2 |
| 110 | Ground | 62 | 27 | 2 |
| | First | 63 | 28 | 2 |
| 111 | Ground | 63 | 28 | 2 |
| | First | 64 | 29 | 2 |
| 112 | Ground | 58 | 23 | 1 |
| | First | 59 | 24 | 1 |
| 113 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 114 | Ground | 60 | 25 | 1 |
| | First | 61 | 26 | 2 |
| 115 | Ground | 61 | 26 | 2 |
| | First | 62 | 27 | 2 |
| 116 | Ground | 59 | 24 | 1 |
| | First | 60 | 25 | 1 |
| 117 | Ground | 60 | 25 | 1 |
| | First | 62 | 27 | 2 |
| 118 | Ground | 58 | 23 | 1 |
| | First | 60 | 25 | 1 |
| 119 | Ground | 59 | 24 | 1 |
| | First | 61 | 26 | 2 |
| 120 | Ground | 58 | 23 | 1 |

| Receiver number | Floor | Predicted Rail Noise Level, $L_{eq\ 1h}$ MAX dB(A) | Predicted Transport Noise Reduction Required for habitable rooms | [1] QDC MP4.4 Noise Category |
|---|---|---|---|---|
| | First | 59 | 24 | 1 |
| 121 | Ground | 59 | 24 | 1 |
| | First | 61 | 26 | 2 |
| 122 | Ground | 57 | 22 | 1 |
| | First | 59 | 24 | 1 |
| 123 | Ground | 58 | 23 | 1 |
| | First | 60 | 25 | 1 |
| 124 | Ground | 58 | 23 | 1 |
| | First | 60 | 25 | 1 |
| 125 | Ground | 58 | 23 | 1 |
| | First | 59 | 24 | 1 |
| 126 | Ground | 57 | 22 | 1 |
| | First | 59 | 24 | 1 |
| 127 | Ground | 57 | 22 | 1 |
| | First | 59 | 24 | 1 |
| 128 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 129 | Ground | 57 | 22 | 1 |
| | First | 59 | 24 | 1 |
| 130 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 131 | Ground | 56 | 21 | 1 |
| | First | 58 | 23 | 1 |
| 132 | Ground | 56 | 21 | 1 |
| | First | 58 | 23 | 1 |
| 133 | Ground | 58 | 23 | 1 |
| | First | 60 | 25 | 1 |
| 134 | Ground | 58 | 23 | 1 |
| | First | 59 | 24 | 1 |
| 135 | Ground | 57 | 22 | 1 |
| | First | 59 | 24 | 1 |
| 136 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 137 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 138 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 139 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 140 | Ground | 57 | 22 | 1 |
| | First | 58 | 23 | 1 |
| 141 | Ground | 57 | 22 | 1 |

| Receiver number | Floor | Predicted Rail Noise Level, $L_{eq\ 1h}$ MAX dB(A) | Predicted Transport Noise Reduction Required for habitable rooms | (1) QDC MP4.4 Noise Category |
|---|---|---|---|---|
| | First | 57 | 22 | 1 |

*Notes:*
*(1). Noise categories for rail noise are based on the minimum transport noise reduction in to achieve the internal noise objective.*

The predicted noise levels result in noise categories 1 or 2 applying at up to 41 allotments. Refer to Section 5.2 for recommendations regarding acoustic treatment.

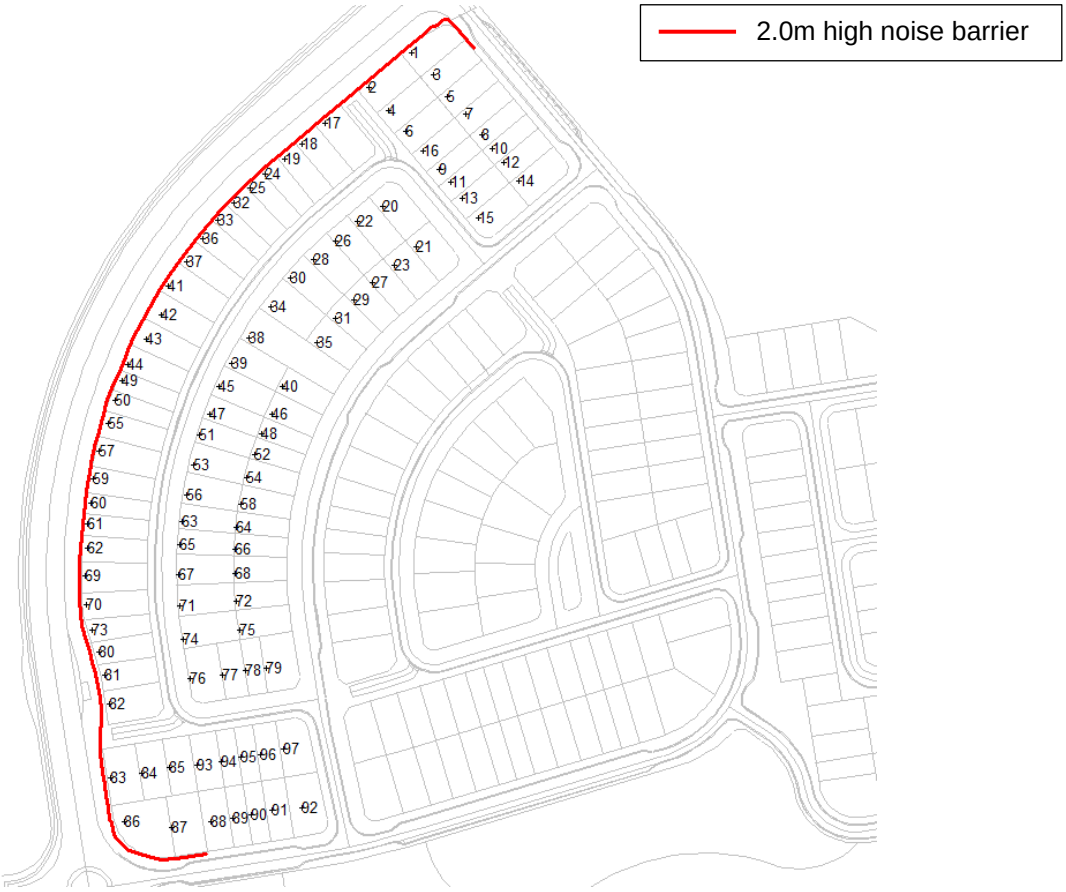
# 5.0 RECOMMENDATIONS

## 5.1 TRAFFIC NOISE BARRIERS

To reduce road traffic noise levels, we recommended the construction of a 2 metre high noise barrier as detailed in Figure 6. The design and construction of the noise barriers should be free of gaps or holes, including along the base of the barrier. The selected barrier material should achieve a minimum surface density of 12.5 kg/m$^2$. Small drainage holes may be present at the base, provided the openings do not exceed 1% of the total surface. Suitable materials may include the following:

- Toughened safety glass
- Overlapped timber palings with a 40mm overlap
- Concrete
- Masonry
- Fibre cement sheet
- Earth mounding
- A combination of the above.

**Figure 6: Recommended noise barrier**



## 5.2 QDC MP4.4 NOISE CATEGORY REQUIREMENTS

The building treatments provided in Sections 5.2.1 to 5.2.4 are in accordance with QDC MP 4.4.

### 5.2.1 Glazing

Based on the recommended noise categories nominated in in Section 4.1.3, QDC MP 4.4 nominates glazing treatments as presented in Table 12.

**Table 12: QDC MP 4.4 Acceptable Glazing**

| Noise Category | Rw Requirement | QDC Acceptable Glazing | Acoustic Seals? |
|---|---|---|---|
| 2 | **35** (where total area of glazing for a habitable room is greater than 1.8m$^2$) | 10.38mm Laminate | Yes |
| | **32** (where total area of glazing for a habitable room is less than or equal to 1.8m$^2$) | 6.38mm Laminate | Yes |
| 1 | **27** (where total area of glazing for a habitable room is greater than 1.8m$^2$) | 4mm Float | Yes |
| | **24** (where total area of glazing for a habitable room is less than or equal to 1.8m$^2$) | 4mm Float | No |
| 0 | N/A | N/A | N/A |

### 5.2.2 External Walls

Based on the recommended noise categories presented in in Section 4.1.3, QDC nominates acceptable wall treatment as presented in Table 13.

**Table 13: QDC MP 4.4 Acceptable Wall Construction**

| Noise Category | Rw Requirement | QDC Acceptable Wall Construction |
|---|---|---|
| 2 | 41 | Two leaves of clay brick masonry at least 110mm thick with cavity not less than 50mm between leaves<br>OR<br>Single leaf of clay brick masonry at last 110mm thick with:<br>(i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and<br>(ii) mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m3 positioned between studs; and<br>(iii) One layer of plasterboard at least 10mm thick fixed to outside face of studs<br>OR<br>Single leaf of brick masonry at least 110mm thick with at least 13mm thick render on each face<br>OR<br>Concrete brickwork at least 110mm thick<br>OR<br>In-situ concrete at least 100mm thick<br>OR |

| Noise Category | Rw Requirement | QDC Acceptable Wall Construction |
|---|---|---|
| | | Precast concrete at least 100mm thick and without joints. |
| 1 | 35 | Single leaf of clay brick masonry at last 110mm thick with:<br>(i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and<br>(ii) One layer of plasterboard at least 10mm thick fixed to outside face of studs<br>OR<br>Minimum 6mm thick fibre cement sheeting or weatherboards or plank cladding externally, minimum 90mm deep timber stud or 92mm metal stud, standard plasterboard at least 13mm thick internally. |
| 0 | N/A | N/A |

Note that alternative systems are acceptable provided they meet the minimum Rw requirement.

### 5.2.3 Roof/Ceiling

Based on the recommended noise categories presented in in Section 4.1.3, QDC MP4.4 nominates acceptable roof/ceilings treatments as presented in Table 14.

**Table 14: QDC MP 4.4 Acceptable Roof/Ceiling Construction**

| Noise Category | Rw Requirement | QDC Acceptable Roof/Ceiling Construction |
|---|---|---|
| 2 | 38 | Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity, mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m$^3$. |
| 1 | 35 | Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity. |
| 0 | N/A | N/A |

Note that alternative systems are acceptable provided they meet the minimum Rw requirement.

### 5.2.4 External Doors

Based on the recommended noise categories presented in Section 4.1.3, QDC MP4.4 nominates acceptable external door treatments as presented in Table 15.

**Table 15: QDC MP 4.4 Acceptable External Door Construction**

| Noise Category | Rw Requirement | QDC Acceptable External Door Construction |
|---|---|---|
| 2 | 33 | Fixed so as to overlap the frame or rebate of the frame by not less than 10mm, fitted with full perimeter acoustically rated seals and constructed of – |

| Noise Category | Rw Requirement | QDC Acceptable External Door Construction |
|---|---|---|
| | | (i) solid core, wood, particleboard or blockboard not less than 45mm thick; and/or<br>(ii) (ii) acoustically laminated glass not less than 10.38mm thick. |
| 1 | 28 | Fixed so as to overlap the frame or rebate of the frame, constructed of -<br>(i) Wood, particleboard or blockboard not less than 33mm thick; or<br>(ii) Compressed fibre reinforced sheeting not less than 9mm thick; or<br>(iii) Other suitable material with a mass per unit area not less than 24.4kg/m2; or<br>(iv) Solid core timber door not less than 35mm thick fitted with full perimeter acoustically rated seals. |
| 0 | N/A | N/A |

Note that alternative systems are acceptable provided they meet the minimum Rw requirement.

### 5.2.5 Alternative Ventilation

Facade glazing will need to be closed in order to exclude noise. Therefore, provision of mechanical ventilation such as air conditioning or alternative ventilation may be required for habitable rooms with Noise Category 1 and 2 construction.

# 6.0 CONCLUSION

A full rail and road traffic noise assessment for the proposed subdivision located at Precinct B New Beith was conducted. Provided the recommendations in Section 5.0 are implemented, compliance with the criteria in Section 3.0 are predicted to be achieved.

2.0m high acoustic barriers were recommended along road frontages to reduce QDC MP4.4 noise category requirements for future dwellings. This has resulted in the worst affected lots being designated with noise category 2 construction.

Rail noise was assessed in order to meet the internal noise objectives nominated in Section 3.1. QDC MP4.4 noise categories were specified on the basis of predicted transport noise reduction required to achieve compliance with this limit.

# APPENDIX A NOISE CONTOUR CHARTS

**Figure 7: Predicted Road Traffic Noise Levels – Ground Floor Level**

**Figure 8: Predicted Road Traffic Noise Levels – First Floor Level**

**Figure 9: Predicted Rail Noise Levels – Ground Floor Level**

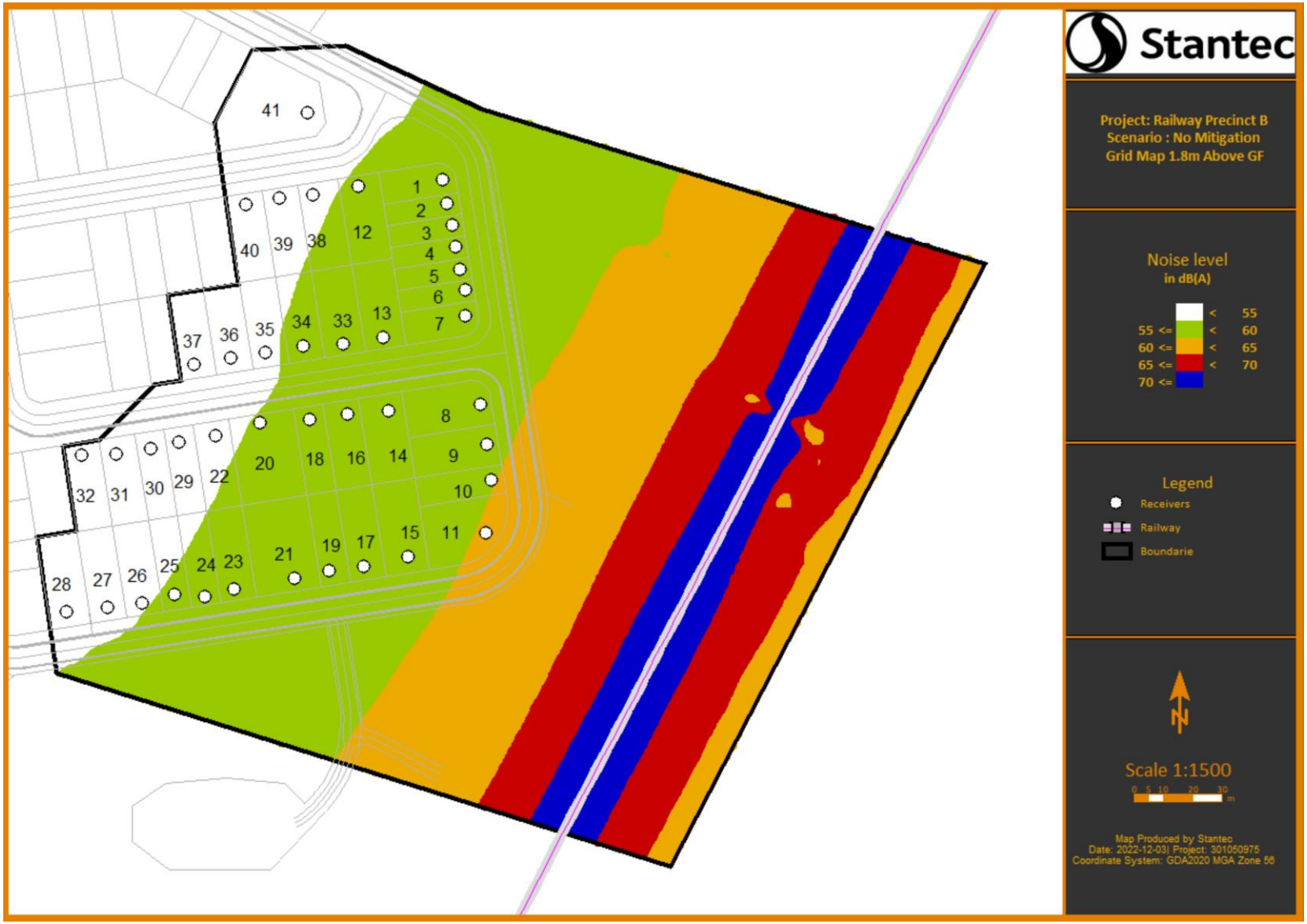


**Figure 10: Predicted Rail Noise Levels – First Floor Level**