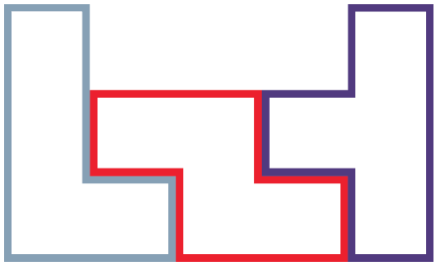
Westhaven Residential Development Fast-track Substantive Application

Noise Assessment

Acoustic





Powell Fenwick

Issue Authorisation

Issue	Description	Date
A	Noise Assessment – DRAFT	27 July 2026
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1. Introduction

1.1 Background

Powell Fenwick has been engaged by Carter Group Limited to provide a noise assessment related to the substantive application for the Rolleston West Residential Development Project (the Project), now referred to by the Applicant as Westhaven.

The Rolleston West Residential Development (Westhaven) is a listed project in Schedule 2 of the Fast-track Approvals Act 2024 (FTAA).

We have previously provided acoustic advice related to the site as part of a private plan change request (Private Plan Change request 73). We note the land is now zoned residential. We reference some of our previous acoustic advice in this report.

The blocks consist of the following lots:

+ Holmes Block (total ~85 Ha)
  - Sec 1 SO 608925 - 85 Ha
+ Westhaven Block (comprising of the Skellerup South Block (1st entry below), Skellerup Block (2nd entry), and the Brookside Block (final 4 entries)) (total ~210.9 Ha)
  - RS 25807 23614 - 28.4 Ha
  - PT LOT 4 PT RES 1342 PTS R S 31354 31356 BLOCK 111 LEESTON SD – 72.7 Ha
  - LOT 2 DP 72132 – 10 Ha
  - LOT 1 DP 72132 – 9.5 Ha
  - LOTS 3-4 DP 20007 BLKS III VII LEESTON SD – 46.3 Ha
  - LOT 1 DP 82068 BLK III LEESTON SD – 44 Ha

1.2 The Proposal

The proposed development consists of two blocks of land located west of Dunns Crossing Road, Rolleston. The first is referred to as the Holmes Block and is bordered by State Highway 1 to the north, Dunns Crossing Rd to the east and Burnham School Rd to the south. The second block is referred to as Westhaven Central and South (consisting of the Brookside, Skellerup and Skellerup South Blocks) and is located south of the Holmes Block. It is bordered by Brookside Rd to the north, Dunns Crossing Rd to the east, Edwards Rd (partially) to the west and Selwyn Rd (partially) to the south. A site plan of the two blocks is presented in Figure 1.1 and 1.2, respectively. The Holmes block is approximately 85 hectares and the Westhaven Block is approximately 211 hectares.

Both blocks are within the area identified as DEV-RO7 and are zoned General Residential Zone ('GRZ') as per the Partially Operative Selwyn District Plan ('POSDP' or 'District Plan'). The northern edge of the Holmes Block is within the State Highway Noise Control overlay and the Railway Network Noise Control overlay. The zoning as per the POSDP is depicted in Figure 1.3 for both blocks.

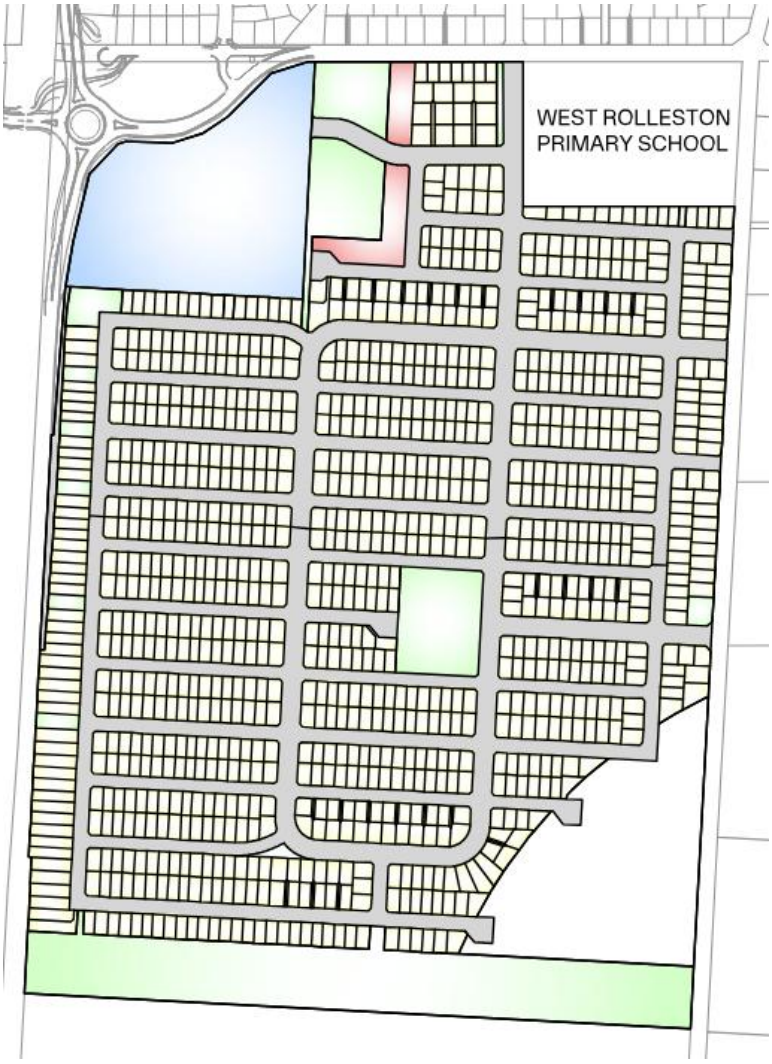


Figure 1.1: Holmes Block proposed layout. Yellow areas are medium density residential, red areas are higher density residential, blue areas are commercial areas and green areas are reserves.

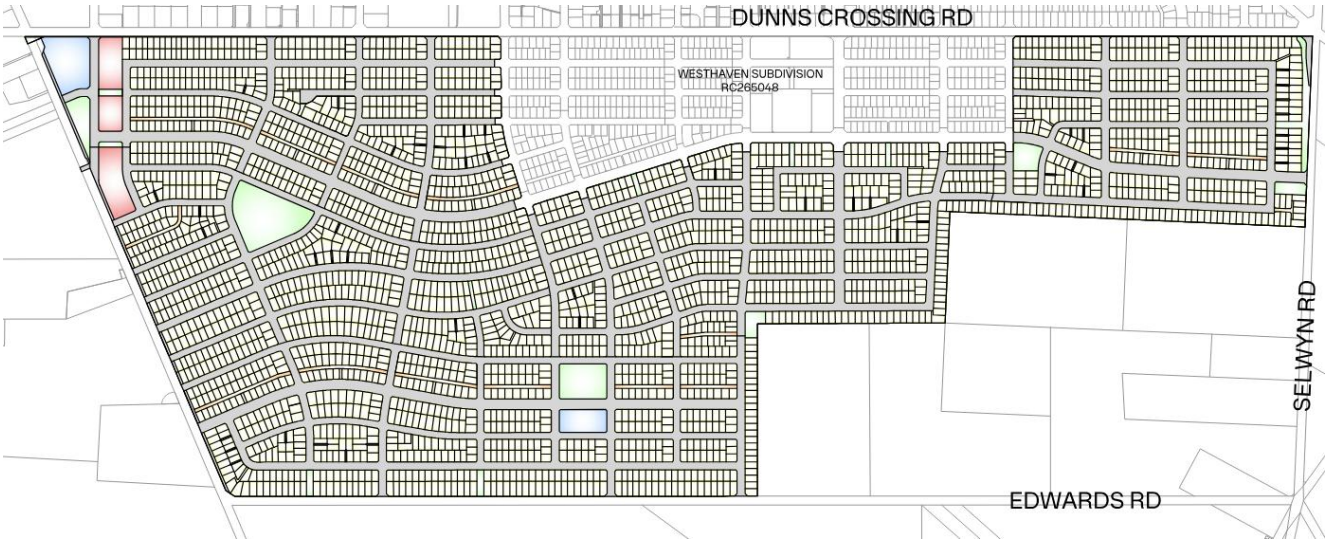


Figure 1.2: Westhaven Block proposed layout. Yellow areas are medium density residential, red areas are high density residential, blue areas are commercial areas and green areas are reserves. Note that there is a portion of this Block (stage 1) which is excluded from the Fast-track application, that being the whitened area shown which is along Dunns Crossing Road, approximately between Jean Archie Drive and Jed Way.



Figure 1.3: District Plan zoning for the Holmes Block. The orange hashed area shows the Rail Network Noise Control Overlay and the State Highway Noise Control Overlay (left) and the Westhaven Block (right). North is up the page.

The Project represents a comprehensively planned urban extension to Rolleston within the area of land identified as DEV-RO7 in the POSDP. The Project seeks to provide for approximately 4134 residential lots, providing for medium and higher-density residential development. The Project also includes three commercial centres, as well as supporting infrastructure and green space.

1.3 Noise Considerations

Considerations related to noise that are investigated in this report are:

1. Reverse sensitivity effects related to the establishment of residential activities within the vicinity of State Highway 1 and the railway line.
2. Reverse sensitivity effects related to establishing residential activities within the vicinity of existing roads, specifically Dunns Crossing Rd, Burnham School Rd, Brookside Rd, Edwards Rd and Selwyn Rd.
3. Reverse sensitivity effects related to establishing residential activities adjacent to established local services, specifically the Pines Waste Water Treatment Plant, Pines Resource Recovery Park, West Rolleston Substation, West Rolleston Primary School and West Rolleston School Pump Track.

This report firstly looks into relevant POSDP planning direction and rules, then describes the surrounding existing noise environment including as it relates to noise surveys undertaken. Each acoustic consideration above is then addressed, and a summary is provided. Appendices are included at the rear of the report.

1.4 Author

The principal author of this report, Sam Jackson, is a Senior Acoustic Engineer within the Acoustic Team at Powell Fenwick. Sam completed a Bachelor of Engineering with Honours and a PhD from the University of Canterbury in 2013 and 2017, respectively.

Sam has nine years experience in acoustics, including four years in product design at Dyson Technology in the UK and five years in consulting for Powell Fenwick. Relevant areas of experience include:

+ Measurement and assessment of environmental noise
+ Prediction of noise from road and rail sources
+ Interpretation of District Plan and other planning rules, and New Zealand Standards
+ Peer review of noise reports accompanying applications, on behalf of Councils

Sam is a Member of the Acoustical Society of New Zealand and a Chartered Professional Engineer with Engineering New Zealand in the field of acoustics.

All measurements, data processing and writing of this report has been undertaken by Sam. The report findings and conclusions have been reviewed by Mark Lewthwaite, Head of Department of the Powell Fenwick acoustic team.

This assessment has been prepared in accordance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. The authors have complied with that Code in preparing this report and confirm that the opinions expressed are within their respective areas of expertise, except where reliance has been placed on information or opinions provided by others.

2. Criteria

2.1 Partially Operative Selwyn District Plan

The following objectives, policy and rules from the District Plan relate to reverse sensitivity of noise from the state highway and designated railway and are of use as a framework to the following assessment.

2.1.1 Objectives

The objectives relevant to the development from the POSDP are reproduced below.

NOISE-O1

The health and wellbeing of people and communities and their amenity values are protected from adverse noise effects, consistent with the anticipated outcomes for the receiving environment.

NOISE-O2

Important infrastructure which generates noise is protected from reverse sensitivity effects.

2.1.2 Policies

The policy relevant to the development from the POSDP are reproduced below.

NOISE-P2

Protect the State Highway and the designated railway network from reverse sensitivity effects by avoiding noise sensitive activities locating near to the State Highway or designated railway network unless specified noise and vibration limits are met or noise mitigation is incorporated.

2.1.3 Rules

The rules relevant to the development from the POSDP are reproduced below.

NOISE-R3

Rule NOISE-R3 presents performance standards for the establishment of noise sensitive activities adjacent to the State Highway and Railway designations. The associated State Highway Noise Control Overlay and Railway Noise Control Overlays extend on to the northern end of the Holmes block (the Rail Noise Control Overlay sits wholly within the State Highway Noise Control Highway on the site). This rule is therefore relevant to the Holmes block, which borders State Highway 1 and the Main South Railway line. Compliance with the provisions of NOISE-R3 as they apply to the State Highway Noise Control Overlay and the Rail Noise Control Overlay are assessed separately in Sections 4.1 and 4.2 of this report.

NOISE-R3 Noise Sensitive Activities within the State Highway and Railway Network Noise Control Overlays

State Highway Noise Control Overlay	**Activity status: PER** 1. The establishment of any building for a noise sensitive activity 2. Any addition or alteration to an existing building which creates a new habitable room or will be occupied by a noise sensitive activity **Where:** a. to manage noise in the outdoor environment, either: i. there is a noise barrier consisting of a solid building, fence, wall or landform at	**Activity status when compliance not achieved:** 3. When compliance with any of NOISE-R3.1 or NOISE-R3.2 is not achieved: DIS

	least 3m high which blocks the line-of-sight to the state highway road surface from all points 1.5m above ground level within the notional boundary of any new building and/or addition to any existing building; or ii. external road noise levels are less than 57 dB LAeq (24h) at all points 1.5m above ground level within the notional boundary of any new building and/or addition to an existing building. **Advisory note:** 1. To demonstrate compliance, a design report (including calculations) prepared by a suitably qualified acoustic engineer shall be submitted to the Council with the application for Building Consent. In the design report, external road noise levels shall be based on measured or predicted noise levels plus 3 dB.	
State Highway Noise Control Overlay **Rail Network Noise Control Overlay**	**Activity status: PER** 4. The establishment of any building for a noise sensitive activity 5. Any addition or alteration to an existing building which creates a new habitable room or will be occupied by a noise sensitive activity Where: a. to manage noise in the indoor environment, the building is: i. at least 50m from any state highway or railway network, and is designed so that a noise barrier consisting of a solid building, fence, wall or landform blocks the line-of-sight from all parts of doors and windows to the state highway road surface and/or to all points above 3.8m of the railway tracks; or ii. designed, constructed and maintained to achieve indoor design noise levels not exceeding the maximum values in NOISE-TABLE1 Road and Railway Indoor Design Noise Levels; b. for habitable rooms for residential activity, if windows must be closed to achieve the design noise levels in NOISE-TABLE1 Road and Railway Indoor Design Noise Levels, the building shall be designed, constructed and maintained with a mechanical ventilation system that achieves the following requirements: i. provides mechanical ventilation to satisfy clause G4 of the New Zealand Building Code; and	**Activity status when compliance not achieved:** 6. When compliance with any of NOISE-R3.4 or NOISE-R3.5 is not achieved: DIS

ii. is adjustable by the occupant to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour; and

iii. provides relief for equivalent volumes of spill air; and

iv. provides cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C; and

v. does not generate more than 35 dB $L_{Aeq(30s)}$ when measured 1m away from any grille or diffuser;

c. for spaces other than habitable rooms, if windows must be closed to achieve the design noise levels in NOISE-TABLE1 Road and Railway Indoor Design Noise Levels, the building shall be designed, constructed and maintained with a ventilation system as determined by a suitably qualified and experienced person;

d. any building that is closer than 30m to any state highway boundary or closer than 60m to any railway network, shall be designed, constructed and maintained to achieve road and rail vibration limits not exceeding 0.3mm/s (Class C criterion Maximum Weighted Velocity, Vw,95);

e. compliance with the relevant provisions of NOISE-R3.4.a.ii, NOISE-R3.4.b, NOISE-R3.4.c, NOISE-R3.4.d, NOISE-R3.5.a.ii, NOISE-R3.5.b, NOISE-R3.5.c and NOISE-R3.5.d shall be demonstrated by way of a design report prepared by a suitably qualified acoustic specialist and submitted to the Council with the application for the relevant building consent. In the design report:

i. railway noise shall be assumed to be 70 LAeq(1h) at a distance of 12m from the railway network and shall be deemed to reduce at a rate of 3 dB per doubling of distance up to 40m and 6 dB per doubling of distance beyond 40m; and

ii. road noise shall be based on measured or predicted noise limits plus 3 dB.

NOISE-TABLE1 Road and Railway Indoor Design Noise Levels

	Maximum Road Noise Limit $L_{Aeq(24h)}$	Maximum Railway Noise Limit $L_{Aeq(1h)}$
Residential Activity and Visitor Accommodation		
Bedrooms	40 dB	35 dB

All other habitable rooms except bedrooms	40 dB	40 dB

2.2 World Health Organization

The World Health Organisation (WHO) publishes noise level guidance, including for residential properties to protect against annoyance and sleep disturbance. Table 4.1 from *Guidelines for Community Noise* published in 1999 is reproduced in Table 2.1 below.

Table 2.1: WHO guideline noise levels for residential activities

Specific Environment	**Critical health effect(s)**	**LAeq [dB]**	**Time base [hours]**	**LAmax, fast [dB]**
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	45
Inside bedrooms	Sleep disturbance, night-time	30	8	
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

To achieve quality outcomes in line with WHO guidelines, it is desirable to reduce noise levels to be below 45 dBA outside of bedrooms and below 50 dBA outside of other habitable spaces to protect against annoyance and sleep disturbance for the majority of people in the habitable space. This allows for a 15 dB reduction in noise through partially open windows to reach the target of 30-35 dBA internally. Noise levels would still be audible, particularly when there is low background noise inside the habitable space and 35 dBA in a bedroom could cause nuisance. There is also the assumption that the buildings rely upon natural ventilation.

3. Existing Noise Environment

3.1 Noise Sources

Existing sources of noise that could impact future residential dwellings within the Project area were identified for further investigation. Identified sources of noise are as follows:

+ Road traffic noise from State Highway 1: This will be a continuous source of noise to future dwellings along the northern edge of the Holmes block.
+ Main South Railway Line: Noise from trains passing on the Main South Line will be an occasional noise source to future dwellings along the northern edge of the Holmes block.
+ Pines Resource Recovery Park and Pines Waste Water Treatment Plant: These are major infrastructure assets to the southwest of the Holmes block. We note that this is a negligible noise
+ Burnham School Rd: This road has relatively high heavy vehicle traffic particularly associated with waste trucks accessing the Pines Resource Recovery Park. This will be a continuous source of noise to future dwellings along the southern edge of the Holmes block.
+ West Rolleston substation: This is a newly constructed substation adjacent to the southeast corner of the Holmes block. Substations can generate an electrical hum that could impact directly adjacent future dwellings on the Holmes block.
+ West Rolleston Primary School: The school was established in 2016 and is adjacent to the southeast corner of the Holmes block. Future dwellings will be subject to noise from children in outdoor play areas during school hours, particularly from the use of the sports field. There is also a pump track associated with the school which will be a source of noise when in use.

There are no major existing sources of noise adjacent to the Westhaven block (consisting of the Brookside, Skellerup and Skellerup South Blocks). Existing roads adjacent to the block, specifically Dunns Crossing Rd, Brookside Rd, Edwards Rd and Selwyn Rd are low traffic roads (less than 2000 averaged annual daily traffic)

Identified sources of noise are shown in Figure 3.1.



Figure 3.1: Identified noise sources adjacent to the Holmes block.

3.2 Noise Survey

Environmental noise measurements were undertaken from 21 to 22 July 2026. Measurements were taken at two locations to capture noise from State Highway 1 and Burnham School Rd. Measurements were taken using Convergence Instruments NRST_mk4 noise loggers, which were set to log continuously and record L_{Aeq} and L_{AFmax} levels at 15 minute intervals. The meters were located approximately 30 m from State Highway 1 and approximately 5 m from Burnham School Rd, respectively.

In addition to the logged measurements, spot measurements were taken using an NTi XL2-TA sound level meter adjacent to West Rolleston Primary School. Measurements were taken in two locations to the west of the School to capture noise from children using the outdoor sports fields.

The locations of the loggers and spot measurement locations are shown in Figure 3.2.



Figure 3.2: Location of noise measurements.

Throughout the survey period the weather was typically clear with low wind and no rain. General measurement practice was in accordance with NZS 6801:2008.

The sound level meters and data loggers were calibrated before and after each survey period. No significant calibration drift was observed. The equipment used for the survey is presented in Table 3.1 below. Full calibration records can be provided upon request.

Table 3.1: Measurement Equipment

Item	Manufacturer	Model	Serial No.	Calibration Date.
Sound Level Meter	NTi	XL2-TA	A2A-15282-E0	04 Dec 2024
Data logger	Convergence Instruments	NRST_MK4	CIN0jPWQ2d83gJtSyyDRID	23 Nov 2025
Data logger	Convergence Instruments	NRST_MK4	CPNeh10SU3c1gDHwyyBZHD	23 Nov 2025
Calibrator	Svantek	SV-33a	58057	12 Mar 2026

4. Assessment of Effects

4.1 Road Traffic Noise – SH1

Road traffic noise from State Highway 1 is a significant source of noise to the Holmes block that will require mitigation. Measured time-average noise levels over a 24 hour period are presented in Figure 4.1. The measurement location is approximately 30 m from the edge of State Highway 1. The measurements will include noise from train movements as well, however road traffic is the dominant noise source.

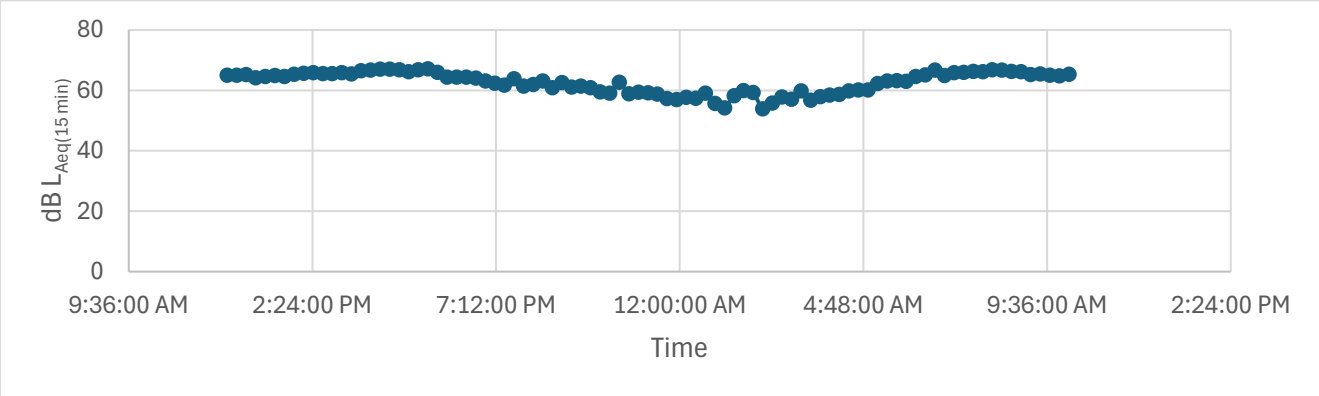


Figure 4.1: Time averaged noise levels (15 minute) from State Highway 1 road traffic.

Proprietary software package SoundPLAN has been used to model the variation in road traffic noise levels across the site. SoundPLAN implements the principles of the Calculation of Road Traffic Noise 1988 (CRTN). We have adapted the UK standard to NZ roads using NZTA's Specification for road-traffic noise prediction Version 1.0 2026.

We have used the following parameters for State Highway 1:

+ AADT: 21,975, 10.5% heavy;
+ Road Surface: Two-coat chipseal grade 3/5 (adjustment +6.0 dB)
+ Speed: 100 km/h

We have compared the calculated noise level from the SoundPLAN model to the measured 24 hour level and the difference was found to be less than 1 dB. On this basis we have proceeded with the CRTN model unchanged for this assessment.

Rule NOISE-R3(1)(a) of the POSDP (refer to Section 2.1.3) requires that either:

i. a noise barrier consisting of a solid building, fence, wall or landform at least 3 m high blocking line-of-sight to the state highway road surface from all points 1.5 m above ground level within the notional boundary of any new building by constructed; or

ii. or that the external road noise levels are less than 57 dB $L_{Aeq\ (24\ h)}$ at all points 1.5 m above ground level within the notional boundary of any new building.

We recommend that a bund and fence of total height 3 m be constructed along the northern boundary of the Holmes block where residential lots are proposed. Additionally, the fence should turn in at each end and extend into the block 60 m to ensure line-of-sight is blocked to all parts of the State Highway to all proposed residential lots within the State Highway Noise Control Overlay. We note that the exact extent of the bund and fence may change as the design progresses. This is acceptable provided that line-of-sight is blocked to all parts of the State Highway for residential lots that are within the State Highway Noise Control Overlay. The indicative extent of the bund and fence is depicted in Figure 4.2. The bund and fence should have the following properties:

+ The bund should be solid earth with no gaps and be of an even height. Culverts are allowable as required provided they are designed so as to not impact the acoustic efficacy of the bund.
+ The fence on top of the bund would could be either masonry or timber construction with a minimum surface mass of 10 kg/m^2. If timber, the fence could be 19 mm overlapping timber paling, board and batten or other approved construction. There must be no gaps between the panels or at the base of the fence.

– We note that undercuts to fences will be required in some areas to allow for overland flow floodwater. Where this is required, fences can be designed and constructed with hinged flaps at the base that will allow floodwater through when needed and will maintain the acoustic integrity of the fence.



Figure 4.2: Indicative extent of proposed bund and fence along the northern edge of the Holmes block (red line)

Calculated noise exposure from State Highway 1 with the proposed bund and fence is shown in Figure 4.3. Resultant noise would be above the 57 dB $L_{Aeq\,(24\,h)}$ recommended in the District Plan rule and above the WHO recommended guidance limit of 55 dB $L_{Aeq(16\,h)}$ to avoid serious annoyance in outdoor living areas, however the requirements of Rule NOISE-R3(1)(a)(i) would be met through the provision of the proposed noise barrier. Thus, any resulting noise related effects will be of a level considered to be acceptable under the provisions of the POSDP.

Noise to outdoor areas of proposed future dwellings on the northern boundary of the Holmes block would be equivalent to that for existing dwellings to the northeast that are a similar distance from SH1 and protected by a bund and fence. For example, existing properties on Lignite Dr and Fairfield Way within Rolleston.

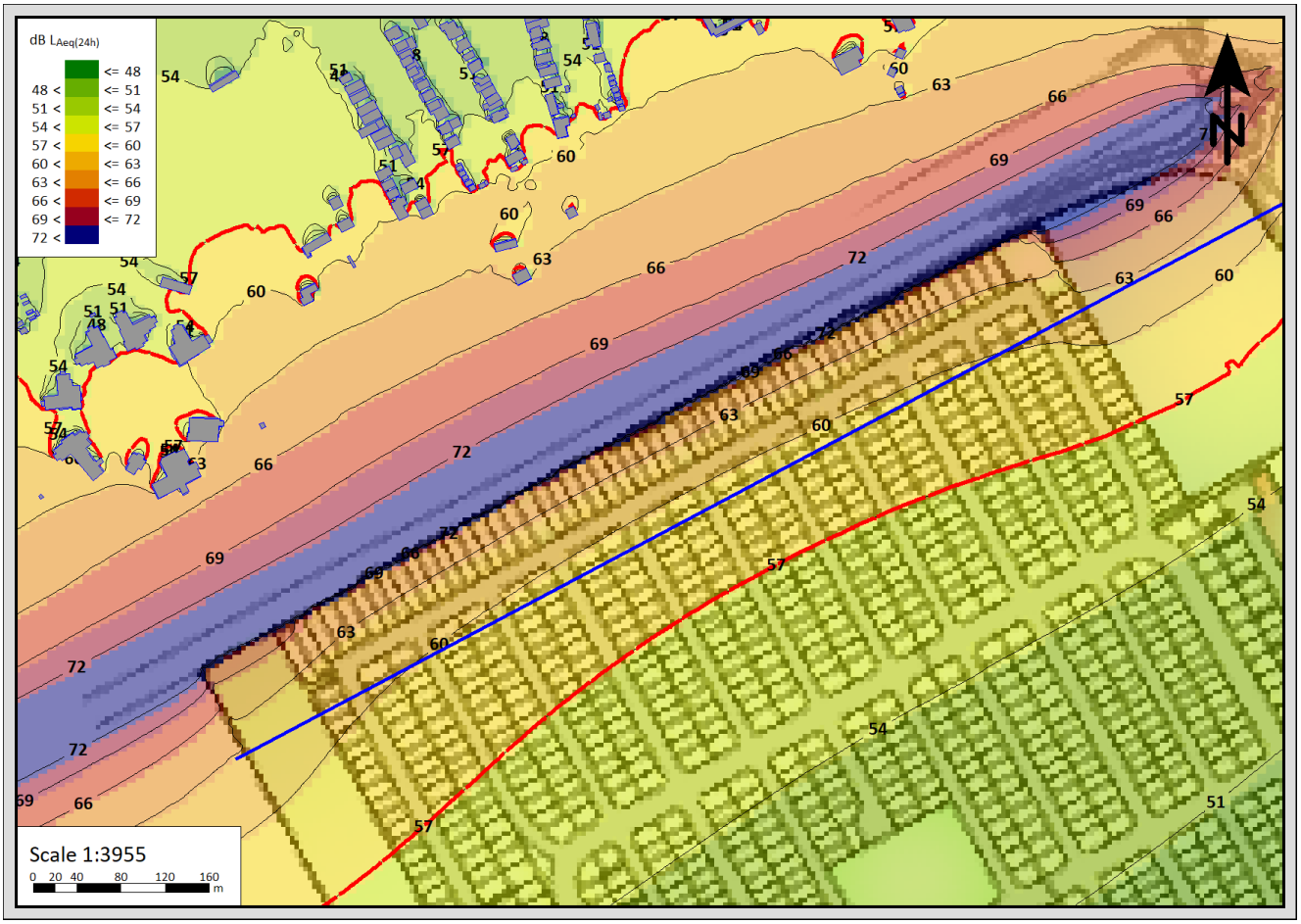


Figure 4.3: Noise contour plot of road traffic noise from State Highway 1 overlaid on the proposed layout of the Holmes block. The red line is the 57 dB $L_{Aeq(24\,h)}$ contour and the blue line is the extent of the State Highway Noise Control Overlay.

With the proposed bund and fence in place, there is no minimum setback for residential lots or new dwellings from the State Highway to manage noise in the outdoor environment of the respective lots. However, the indoor noise standards for State Highway 1 noise will continue to apply, and further assessment will be required for individual dwellings in the following circumstances:

+ NOISE-R3(4)(a)(ii) requires that any new dwellings constructed within 50 m of the State Highway will need to be designed to meet the internal noise level requirements of rule NOISE-TABLE1 at building consent application accompanied by an acoustic assessment prepared by a suitably qualified acoustic engineer (see NOISE-R3(4)(e)).
+ NOISE-R3(4)(d) requires that any new dwellings constructed within 30 m of the State Highway boundary will need to be designed to meet the vibration limits of rule NOISE-TABLE1.

Considering the moderate airborne noise exposure levels, any mitigation determined to be required for a dwelling within 50 m of State Highway 1 will be modest. Such mitigation may include specification of laminate double glazing in a standard aluminium frame, and lining walls/ceiling with one or two layers of high density plasterboard (GIB Noiseline). Should any future dwelling be constructed within 30 m of the State Highway, vibration isolation may need to be built into the foundation, for which there are isolation systems available in the market. In any event, a further assessment would be undertaken at that time.

4.2 Rail Noise – Main South Line

The northern edge of the Holmes block will be exposed to elevated noise from the Main South Railway Line. Train movements are an intermittent, but are a high noise source. We expect approximately one train pass per hour on average, noting that trains may pass more frequently during the day and less frequently during the night. While a train movement may momentarily generate more noise to proposed residential lots, road traffic noise will be the dominant source of noise for the majority of the time.

We have modelled 1 hour time averaged noise exposure from rail movements using the modelling methodology stipulated in rule NOISE-R3(4)(e)(i) of the POSDP (refer to Section 2.1.3) to analyse absolute noise exposure and to compare to road traffic noise exposure from the State Highway. The bund and fence described in Section 4.1 above has been incorporated into our assessment. Calculated rail noise exposure is presented in Figure 4.4, and road noise exposure from the State Highway is presented in Figure 4.1 in Section 4.1.

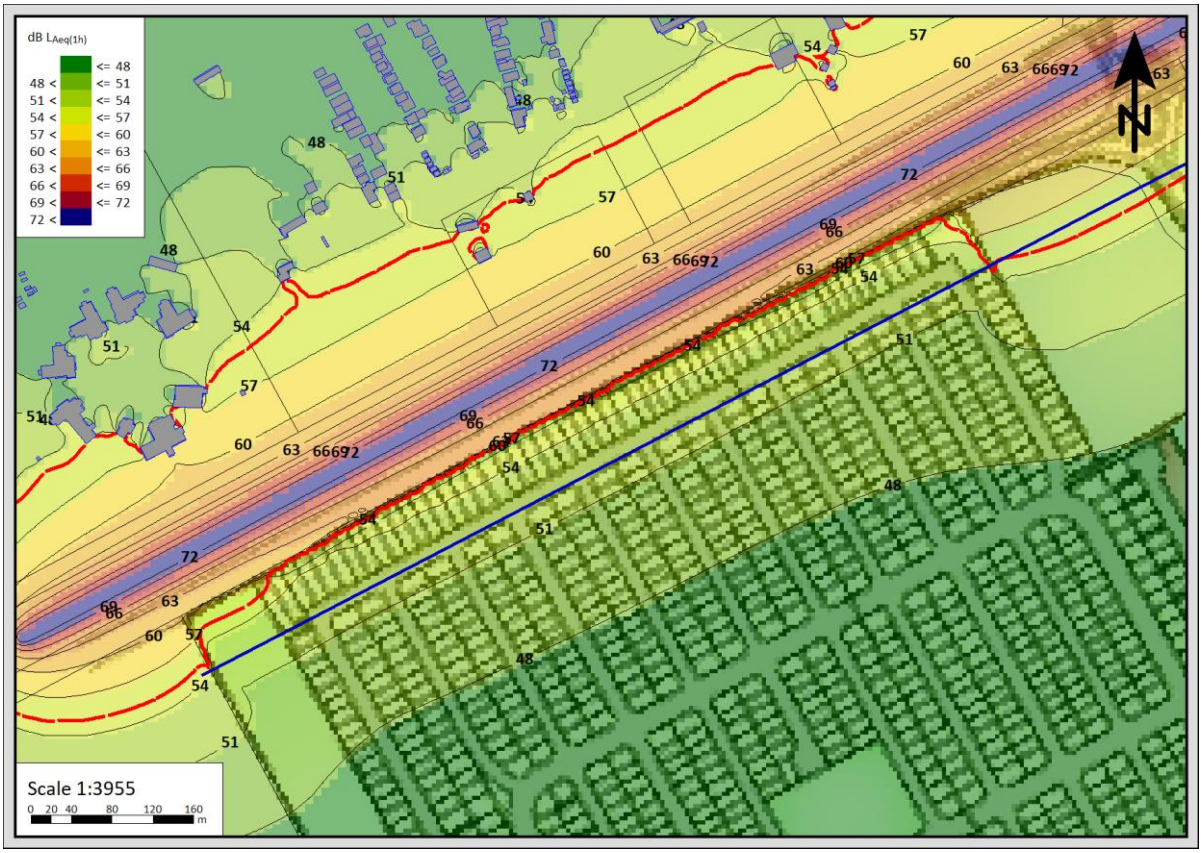


Figure 4.4: Noise contour plot of rail noise from the Main South Line overlaid on the proposed layout of the Holmes block. The red line is the 55 dB $L_{Aeq(1\ h)}$ contour and the blue line is the extent of the Rail Network Noise Control Overlay.

Calculated rail noise time averaged over 1 hour is significantly lower than road traffic noise exposure from the State Highway averaged over a 24 hour period. Rail noise is less than 55 dB $L_{Aeq(1\ hr)}$ to all areas of the Holmes block.

The northern boundary of the Holmes block is greater than 50m from the Main South railway line.

For all single storey dwellings, assuming the tops of external windows and doors are no more than 2.6 m above the level of the railway (which would be the typical maximum height of windows and doors for a typical single storey residential dwelling), no further acoustic assessment will be required as all parts of doors and windows will have line-of-site screening to all parts 3.8 m above the railway in accordance with rule NOISE-R3(4)(a)(i) of the POSDP with the proposed bund and fence in place. Therefore, compliance with NOISE-R3(4)(i) can be achieved in relation to single storey dwellings.

Where NOISE-R3(4)(a)(i) cannot be achieved, the following situations would require further assessment for individual dwellings:

+ Any new dwelling is constructed within the Rail Network Noise Control where windows and doors are more than 2.6 m above the level of the railway shall be designed to meet the internal noise level requirements of rule NOISE-TABLE1 and accompanied by an acoustic assessment prepared by a suitable qualified acoustic engineer (see NOISE-R3(4)(e)). This is because multi-storey dwellings, or non-standard single-storey dwellings will not have line-of-site screening to all parts of the railway and therefore will not comply with NOISE-R3(4)(a)(i).

To achieve the required 35 dB $L_{Aeq(1\ hr)}$ noise level inside bedrooms of multi-storey dwellings would require a façade performance of around 20 dB $D_{tr,2m,nT,w} + C_{tr}$, which is readily achieved with standard lightweight constructions without enhancements.

Lots along the norther boundary of the Holmes block would reasonably be expected to be constructed on the southern portion of the site, with outdoor livings areas to the north. We therefore expect all residential dwellings will be greater than 60 m from the Main South railway line, and therefore vibration is not expected to need assessment for any new dwellings (and therefore, the railway network aspect of NOISE-R3(4)(d) should not be relevant).

4.3 Resource Recovery Park and Pines Waste Treatment Plant

While setting up the noise logger along the southern boundary of the Holmes block, observations were made of the existing noise environment. No noise was observable from the resource recovery or waste treatment plants during set up or collection of the logger. Both plants were operational on both occasions. The dominant source of background noise was road traffic on Burnham School Rd as well as State Highway 1.

We do not consider there to be any noise effects on proposed future dwellings from the operation of the Pines Resource Recovery Park and Pines Waste Water Treatment Plant.

4.4 West Rolleston Substation

While setting up the noise logger along the southern boundary of the Holmes block, observations were made of the West Rolleston substation. No observable noise was apparent from the substation on either the 21 or 22 of July 2026, however it was not clear if the substation was under full operational load during this time.

The substation is directly adjacent to an existing residential dwelling, 75 Burnham School Rd. The substation would have needed to have been constructed and operated so as to not generate excessive noise to this existing dwelling. Proposed future dwellings on the Holmes block would be located a similar distance or greater from the substation compared to 75 Burnham School Rd, and would therefore be subject to noise equal to or less than the existing dwelling.

Noise effects from the West Rolleston substation should be effectively controlled and no further mitigation is required.

4.5 West Rolleston Primary School

Noise from West Rolleston Primary School was measured to be 62 dBA approximately 8 m from the boundary and directly adjacent to the sports field. This level is based on a brief 5 minute measurement taken during a period of heavy use of the sports field. Noise from children playing is an inherently variable source, however the measurement period appeared to be a peak period.

Noise from children playing is above the WHO recommended maximum level of 55 dB L_{Aeq} to avoid annoyance in outdoor areas. We note however that the WHO recommended level is averaged over the entire daytime period of 16 hours, whereas elevated noise from the school will only occur during school hours (typically 0900 h to 1500 h Monday to Friday) and perhaps concentrated during break periods.

The School pump track was not in use when measurements were undertaken, but can be expected to generate elevated noise levels when in use.

The District Plan does not include any specific acoustic insulation requirements for residential development within proximity to schools or education activity. Notwithstanding, we recommend that solid fencing be constructed along the western boundary of the school, where the sports field and the pump track directly border future residential dwellings. A standard 1.8 m high overlapping timber paling fence would be suitable. A standard paling fence should noticeably reduce noise from the school and is consistent with typical screening that would be constructed between a school and residential dwellings.

The sports fields and pump track are not flood-lit and therefore would not be expected to be used outside daytime hours.

4.6 Road Traffic Noise – Local Roads

Both the Holmes block and the Westhaven block (consisting of the Brookside, Skellerup and Skellerup South Blocks) are bounded by local roads. Dunns Crossing Rd has low traffic levels of 2000 ADT and a speed limit

of 50 km/h. Brookside Rd, Edwards Rd, Selwyn Rd and Burnham School Rd have very low (<1000 ADT) traffic levels and a current speed limit of 100 km/h.

While these roads will be a source of environmental noise to proposed future residential dwellings, the POSDP does not require dwellings to be insulated from road traffic noise with the exception of State Highways. Any resulting noise from these roads will therefore be of a level considered acceptable under the existing planning framework of the POSDP.

We understand the speed limits on Brookside Rd, Edwards Rd, Selwyn Rd, and Burnham School Rd are likely to be reduced to 50 km/h adjacent to the Westhaven block as part of the development proposal. This reduction in vehicle speed will significantly reduce noise exposure to proposed future dwellings.

5. Summary and Proposed Conditions

In this report we have assessed reverse sensitivity noise effects as related to the proposed development of the Westhaven subdivision. The site is zoned General Residential under the POSDP and is anticipated to be developed for residential activity.

The northern edge of the Holmes block is directly adjacent to State Highway 1 and the Main South Rail line. To mitigate noise to future dwellings in line with rule NOISE-R3 of the POSDP, we recommend that a bund and fence is constructed along the northern boundary of the Holmes block, refer to Section 4.1 for further detail.

Noise from the sports fields of West Rolleston Primary School has the potential to cause annoyance to future residential dwellings directly adjacent. Whilst the POSDP does not seek to control this noise, we recommend a standard 1.8 m high overlapping timber paling fence be constructed along the western boundary of the school, where the sports field and the pump track directly border future residential dwellings. A standard paling fence should noticeably reduce noise from the school and is consistent with typical screening that would be constructed between a school and residential dwellings.

All other identified potential sources of noise, including the Pines Resource Recovery Park, Pines Waste Water Treatment Plant, West Rolleston Substation and local roads will not result in adverse noise effects of future residential dwellings, or will have impacts no greater than existing subdivisions within Rolleston.

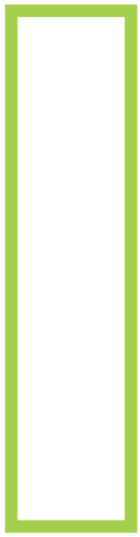
We conclude that with the proposed mitigations, the noise environment of the Westhaven Residential Development will be suitable for residential activities.

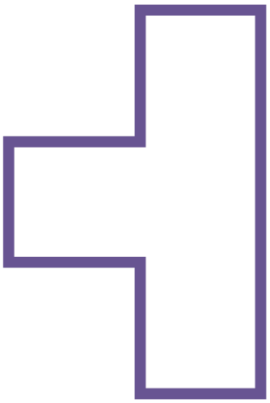
5.1 Proposed conditions

We recommend the following conditions of consent as relates to noise.

+ A bund and fence must be constructed along the northern edge of the Homes block to screen noise from State Highway 1 and the Main South Rail line. The bund and fence must be designed to meet the following requirements.
  - The bund should be solid earth with no gaps and be of an even height. Culverts are allowable as required provided they are designed so as to not impact the acoustic efficacy of the bund.
  - Any fence on top of the bund should be either masonry or timber construction with a minimum. surface mass of 10 kg/m^2. If timber, the fence could be 19 mm overlapping timber paling, board and batten or other approved construction. There must be no gaps between the panels or at the base of the fence.
    - Undercuts to fences will be required in some areas to allow for overland flow floodwater. Where this is required, fences shall be designed and constructed with hinged flaps at the base that will allow floodwater through when needed and will maintain the acoustic integrity of the fence.
  - The total height of the bund and fence shall be minimum 3 m above the level of State Highway 1.
  - The extent of the bund and fence shall be such that for all residential lots within the State Highway Noise Control Overlay, all points 1.5 m above ground level shall have line-of-sight to all points of the state highway road surface blocked.

Powell Fenwick







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