6 July 2022
Our Ref: 22GCA0084 R01_0
Your Ref:

Attention: Hailey Page

Crystele Homes

Dear Hailey,

RE: 23A Epping Road, North Ryde – Acoustic Design Report

This report outlines the road traffic noise attenuation requirements for 23A Epping Road, North Ryde to comply with the indoor noise criteria outlined in *Development near Rail Corridors and Busy Roads – Interim Guideline*.

The assessment is based on the following information:

a. NSW Department of Planning *Development near Rail Corridors and Busy Roads – Interim Guideline*.

b. Australian Standard *AS3671:1989 Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction* (AS3671).

c. Noise modelling and analysis conducted by TTM.

d. Proposed building plans by *Crystele Homes* (refer to Appendix A).

1. Noise Criteria

Internal noise levels of the dwelling are to achieve those specified in *Development near Rail Corridors and Busy Roads – Interim Guideline.* Internal noise levels specified in the Guideline are expressed as L_{Aeq} levels and are reproduced in Table 1 below.

Table 1: Internal Noise Limits from *Development near Rail Corridors and Busy Roads – Interim Guideline*

Type of Occupancy	Residential Buildings	
	Design Sound Level, dB(A)	Applicable time period
Sleeping areas (bedroom)	35	Night 10pm to 7am
Other habitable rooms (excluding bathrooms)	40	At any time

2. Predicted Noise Levels

The site is located in proximity to a major road corridor (M2 Motorway) as defined by Clause 102 of the State Environmental Planning Policy (Infrastructure) 2007. Additionally, the site is adjacent to Epping Road which is also a significant vehicle carrying road. Both roads have been included in the noise assessment for completeness.

Based on traffic volumes obtained from TTM Data and the NSW Traffic Volume Viewer, SoundPLAN noise modelling was conducted considering a 10-year planning horizon to predict road traffic noise levels at façades of the proposed dwelling.

The predicted road traffic noise levels at habitable rooms of the dwelling are presented in Table 3. $L_{Aeq\ (1\ hour)}$ noise level corrections were taken from measured noise levels of roads with similar traffic flows to M2 Motorway and Epping Road.

Table 2: Predicted Road Traffic Noise Levels at the Dwelling

Facade	Floor	Rooms	Predicted Noise Level, dB(A) Façade Corrected		
			$L_{A10\ (18\ hour)}$	$L_{Aeq\ (1\ hour)\ Day}$	$L_{Aeq\ (1\ hour)\ Night}$
N (rear)	Ground	Living / Dining	59	59	57
	First	Lounge, Bedroom 3, Bedroom 4	62	62	60
E	Ground	Living / Dining	66	66	64
	First	Bedroom 2, Bedroom 3	69	69	67
S (front)	Ground	Entry, Theatre	75	75	73
	First	Bedroom 1 / Retreat	77	77	75
W	Ground	Kitchen	70	70	68
	First	Bedroom 4	72	72	70

3. Recommendations

Building treatments were determined by using the calculation methods detailed in Australian Standard *AS3671:1989 Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction*. Based on the architectural drawings, the recommended construction details are listed below.

3.1 Glazing Treatments

Table 3 presents the recommended glazing R_W performance specifications for the dwelling.

- The R_W rating relates to the full glazing system including the frame, seals and the glass. Where acoustic seals are necessary, glazing will require a Q-Lon seal or equivalent product.
- Alternative glazing may be used provided the specified R_W rating can be achieved and certified by the window manufacturer with a NATA report (on request). Generic reports should not be accepted.
- Depending on the type of window system, the framing can significantly reduce the performance. This should be investigated with the glazing supplier thoroughly (referring to NATA certified test report data) to ensure the minimum R_W is being achieved.
- It is imperative that the minimum R_W rating is achieved and that the presented glazing thickness is used as a guide only. If the glazing thickness does not comply with the R_w rating, thicker glass should be considered until the R_w rating is achieved.

Table 3: Glazing Treatments

Habitable Room	Component	Min Rw	Indicative Glazing Thickness	Acoustic seals
Living / Dining / Kitchen	Sliding doors	28	5mm toughened	Yes
	Windows	28	5mm toughened	Yes
Theatre	Windows	38	14.38mm laminate	Yes
Bedroom 1	Windows (front)	40	12.5mm Viridian VLam Hush	Yes
	Windows (side)	35	10.38mm laminate	Yes
Bedroom 2	Windows	35	10.38mm laminate	Yes
Bedroom 3 and Bedroom 4	Windows (rear)	30	6.38mm laminate	Yes
	Windows (side)	38	14.38mm laminate	Yes
Lounge	Windows	24	4mm float	No

All remaining glazing not stated above should be installed with a minimum of 4mm float (R_W24) for windows and 5mm toughened (R_W25) for sliding doors.

It is recommended that a glazing certificate be obtained from the glazier demonstrating that the installed glazing meets the minimum weighted sound reduction index (R_W) requirements. The certificate should be retained for certification of the completed dwelling.

3.2 Wall Construction

Brick or masonry external walls with 10mm plasterboard internally and R1.5 cavity insulation will achieve a R_W57 acoustic rating without the need for further treatment.

Other wall systems may be used providing the system achieves the minimum acoustic rating.

3.3 External Penetrations

Penetrations through the walls/ceiling system to the outside shall be kept to a minimum to ensure the acoustic integrity of the system is maximised. Where penetrations must be made, they must be no larger than 10-15mm greater than the object passing through the wall. The gap shall be filled with Bostik Fireban 1 or equivalent product.

Large diameter services penetrations (greater than 50mm around the penetrating object) will require further detailed design to ensure the acoustic integrity of the wall system is not diminished. As a guide, using the plasterboard materials, close the gap to a maximum 10-15mm and generously fill the residual gap with a non-hardening fire-rated mastic.

All remaining penetrations with a gap of maximum 10-15mm around the penetrating object must be generously filled with a non-hardening fire-rated mastic.

Penetrations through noise affected walls may require specific design to provide adequate attenuation for internal compliance and should be reviewed by the acoustic consultant before final approval.

3.4 Roof/Ceiling Construction

Table 4 below details the minimum roof/ceiling constructions that are predicted to meet the required acoustic ratings.

Table 4: Recommended Roof/Ceiling Construction

Room	Roof / Ceiling Construction	Cavity Insulation	Minimum R_W
Lounge, Bedroom 2, Bedroom 3, Bedroom 4	• Pitched tiled roof with sarking under battens, • Cavity insulation as per table, • 1 x 13mm standard plasterboard internally.	Minimum R3.5 insulation batts	43
Bedroom 1	• Pitched tiled roof with sarking under battens, • Cavity insulation as per table, • 1 x 13mm sound-rated plasterboard internally.	Minimum R3.5 insulation batts	48

Other construction may be used provided it achieves the required R_W rating.

3.5 Entry Door

The entry door is required to achieve a minimum R_W33. We recommend consultation with a suitable manufacturer to determine a door system that can achieve the required rating. Alternatively, AS3671 recommends a solid-core 42mm thick plywood door, soft plastics gasket around sides and top, and a drop seal at the base. Glass planes should also achieve a minimum R_W33.

3.6 Alternative Ventilation

To achieve the required internal noise levels in noise affected habitable rooms, doors and/or windows would need to be closed. Therefore, it is recommended that consideration is given to the inclusion of alternative ventilation so that windows/doors can be closed to achieve the indoor sound levels.

Suitable forms of ventilation include air-conditioning, borrowed ventilation in accordance with the BCA, Silence Air or Aeropac noise ventilators. The plant should not reduce the acoustic performance of the building or cause intrusive noise at neighbouring properties.

4 Conclusion

The proposed dwelling at 23A Epping Road, North Ryde was designed in accordance with AS3671 to comply with the indoor sound levels stated in Section 1. Based on the inclusion of the recommendations in this report, the dwelling is predicted to comply with the relevant noise requirements.

This assessment does not imply that road traffic noise will be inaudible within a living or sleeping area.

We trust this information meets with your current requirements. Should you have any queries please do not hesitate to contact TTM.

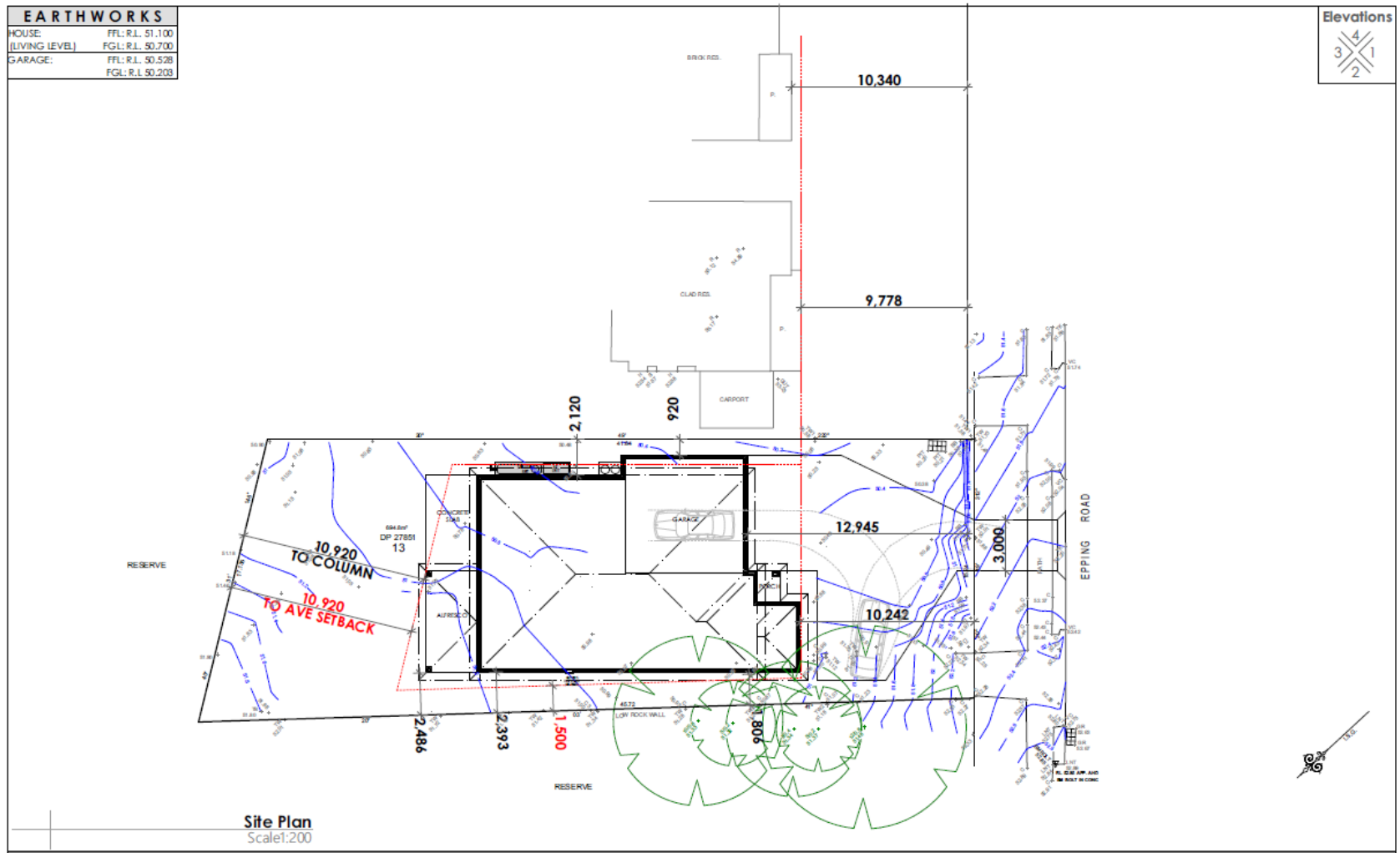
Yours sincerely,

Jason Fox
Principal Consultant
TTM Consulting Pty Ltd

Appendix A – Development Plans

EARTHWORKS	
HOUSE:	FFL: R.L. 51.100
(LIVING LEVEL)	FGL: R.L. 50.700
GARAGE:	FFL: R.L. 50.528
	FGL: R.L 50.203

Elevations



Site Plan
Scale1:200

Karaplan
INNOVATIVE HOME DESIGNS

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ABN 66 602 010 659

Crystele HOMES

GENERAL NOTES:

1. DO NOT SCALE FROM DRAWING
2. ALL DIMENSIONS TO BE CHECKED ON SITE
3. DISCREPANCIES TO BE REPORTED TO THE AUTHOR
4. DIMENSIONS TAKE PREFERENCE
5. BOUNDARIES TO BE VERIFIED BY SURVEYOR.
6. OTHER CONSULTANT DRAWINGS TAKE PREFERENCE.
7. DRAINAGE TO COUNCIL'S REQUIREMENTS AND AS3500

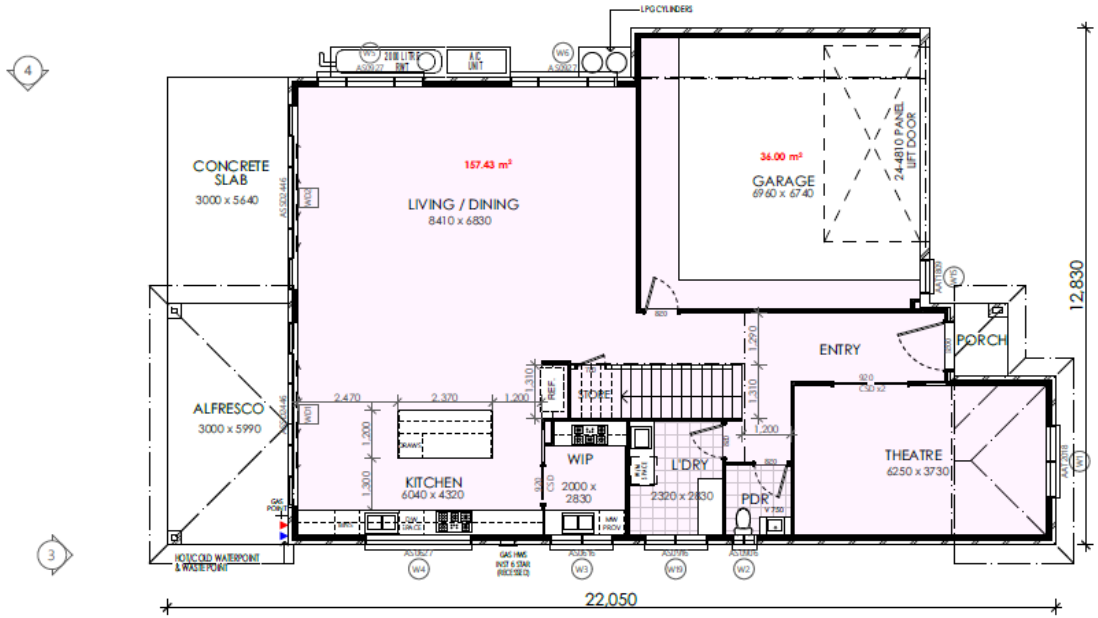
NORTH POINT:

LODGEMENT: DA ONLY
COUNCIL : RYDE
DESIGN: CUSTOM
DATE: 19/05/2022
DRAWN BY: JK

DRAWING TITLE : Site Plan
DP No: 27851
SITE ADDRESS : LOT 13, NO.23A EPPING ROAD NORTH RYDE
CLIENT NAMES : CRYSTELE HOMES

JOB No: KP22-119
DRWG No: 002
VERSION No: SK4
Scale: 1:200, 1:100

Elevations



Ground Floor Plan

Scale1:100

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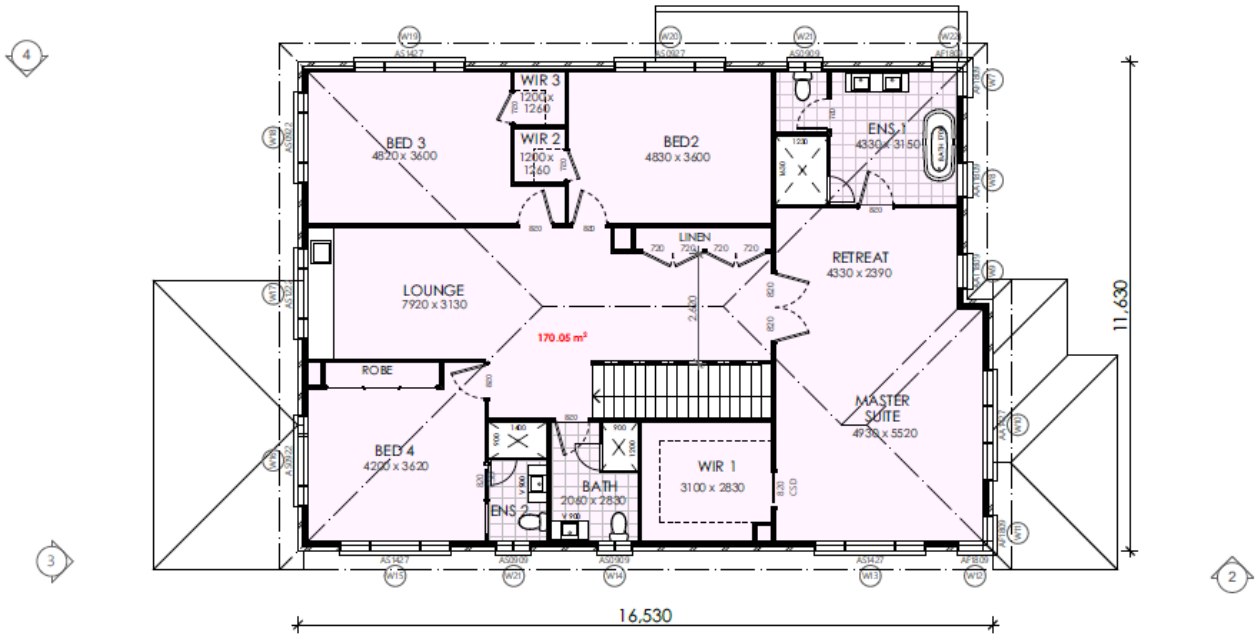
NORTH POINT:

LODGEMENT:
DA ONLY
COUNCIL :
RYDE
DESIGN:
CUSTOM
DATE:
19/05/2022
DRAWN BY:
JK

DRAWING TITLE :
Ground Floor Plan
DP No:
27851
SITE ADDRESS :
LOT 13, NO.23A EPPING ROAD NORTH RYDE
CLIENT NAMES :
CRYSTELE HOMES

JOB No.:
KP22-119
DRWG No:
003
VERSION No:
SK4
Scale:
1:100

Elevations



First Floor Plan
Scale1:100

Karaplan INNOVATIVE HOME DESIGNS
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NORTH POINT:

LODGEMENT: DA ONLY
COUNCIL: RYDE
DESIGN: CUSTOM
DATE: 19/05/2022
DRAWN BY: JK

DRAWING TITLE: First Floor Plan
DP No: 27851
SITE ADDRESS: LOT 13, NO.23A EPPING ROAD NORTH RYDE
CLIENT NAME: CRYSTELE HOMES

JOB No: KP22-119
DRWG No: 004
VERSION No: SK4
Scale: 1:100