

Nicola Edward
T.H.E Architecture & Planning
24 North Silver Street
Aberdeen
AB10 1RL

Our ref 376821/CC/001
Telephone 0141 341 5226
E-mail ccloy@envirocentre.co.uk

5 August 2022

Dear Nicola

**Deveron Road, Huntly
Noise Mitigation Review – Plots 20 to 34**

A review of noise mitigation measures for Plots 20 to 34 at the above development has been carried out as a result of site design changes since submission of the previous Noise Impact Assessment (NIA) carried out by RMP in August 2019¹, and subsequent NIA and Noise Mitigation Review carried out by EnviroCentre in October 2019². The site location is shown in Drawing No. 376821-GIS001, in the Appendix. The recommendations in this review supersede those presented for Plots 20 to 34 in the previous review of the noise mitigation for the site.

Since submission of the above reports, the following site design changes have been carried out;

- Re-orientation and reconfiguration of the layout & elevations of the apartment block closest to the corner between A96 and A920; Plots 20 to 27;
- Re-orientation and reconfiguration of layout at houses at north of site looking towards A920; Plots 28 to 34. The re-orientation of the houses has resulted in the rear gardens of the properties now backing directly onto the A920.

The revised site layout is shown in Drawing No. DEV-THE-ZZ-XX-DR-A-90006 Rev P01, in the Appendix.

This noise mitigation review for Plots 20 to 34 considers road traffic noise impacts only. Car Wash and Petrol Station Delivery Noise were previously assessed^{1,2} at the closest residential receptors to these sources and found to be within target criteria. As the site design changes

¹ Robin Mackenzie Partnership (RMP), Deveron Road, Huntly, Noise Impact Assessment. Technical Report No. R-8453B-GH-RGM, dated 17th August 2019

² EnviroCentre Ltd, Deveron Road, Huntly, Noise Impact Assessment and Mitigation Review. Letter Report Reference 373077/CC/001, dated 3rd October 2019.

do not change the location of the closest receptors, or bring them into closer proximity to these noise sources, no further assessment is required.

Road Traffic Noise Modelling

A 3D digital noise propagation modelling exercise of road traffic noise across the development site has been carried out using CadnaA software. The modelling utilised publicly available 24 hour AADT (annual average daily) traffic count data for the A96 and A920 for 2019, which has been factored to 18 hour AAWT (annual average weekly – i.e weekdays only) data for the purpose of the assessment, as presented in Table 1. The use of 2019 data is considered to be a conservative approach as traffic flows are generally yet to return to pre-covid pandemic levels.

The modelling outputs have been validated and calibrated against on-site measurements taken by RMP in 2019 as part of the submitted NIA for the site, with no variation between measured and modelled levels for both day and night-time.

Table 1: Traffic Data for A96 & A920

Road	24 hour AADT	18 hour AAWT	% HGV
A96	10305	10810	7
A920	3709	3891	1

Daytime (Rear Garden) Noise Levels – Plots 28 to 34

Modelling of rear garden noise levels has been carried out, which has determined that a 2.2m high acoustic barrier is required around the perimeter of the gardens to reduce the rear garden noise to within the target criteria of 50 to 55dB. The acoustic barrier is required as the rear garden noise levels at these properties have increased due to the revised orientation, with gardens now directly backing onto the A920.

The location of the garden barrier is shown in Drawing No. 376821-GIS002, in the Appendix. The rear garden noise levels with and without mitigation are shown in Table 2.

Table 2: Daytime Rear Garden Noise Levels, Plots 28 to 34

Plot	Without Mitigation		With Mitigation		Meet Target Criteria?
	Daytime Noise Level L _{Aeq,16hours}	Excess over target criteria: 55dB L _{Aeq,16 hours}	Daytime Noise Level L _{Aeq,16hours}	Excess over target criteria: 55dB L _{Aeq,16 hours}	
28	62.2	7.2	54.5	-0.5	Yes
29	61.9	6.9	54.8	-0.2	Yes
30	61.6	6.6	54.6	-0.4	Yes
31	61.4	6.4	54.4	-0.6	Yes
32	61.1	6.1	54.1	-0.9	Yes
33	60.8	5.8	53.8	-1.2	Yes
34	60.6	5.6	53.5	-1.5	Yes

The acoustic barrier may be constructed using a range of, or combination of the following materials:

- Timber fencing with overlapping boards with a thickness of at approximately 25mm;;

- Stone;
- Brickwork;
- Earth bunding

The acoustic barrier should be constructed of either a specialist acoustic design or of materials with a minimum surface density of 10 kg/m². The construction of the barrier should be homogeneous with no gaps through the structure and it should be installed flush with the ground.

Glazing and Trickle Ventilator Specifications

Detailed noise break in calculations for Plots 20 to 34 have been carried out using the rigorous method provided in BS8233³. The calculations utilise the modelled noise levels at each of the considered facades and have been carried out to determine the minimum specifications required to achieve the previously applied target internal noise criteria of 30 to 35dB in bedrooms during the night-time, and 40 to 45dB in living areas during the day.

The minimum glazing and trickle ventilator recommendations for each of the considered Plots is presented in Table 3, in the Appendix.

With the minimum specifications in place, the internal noise target criteria is achieved at all properties during the day and night-time period.

Yours sincerely
for EnviroCentre Ltd

(issued electronically)

Craig Cloy
Principal Acoustic Consultant

Andrew Hood
Senior Acoustic Consultant

Enc: Acoustic Glazing and Ventilator Specifications
Drawings

CC:

³ British Standards Institution (2014), *BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings*.

ACOUSTIC GLAZING AND VENTILATOR SPECIFICATIONS

Detailed noise break in calculations in line with the rigorous method presented in BS8233 have been carried out to determine minimum acoustic glazing and trickle ventilator specifications at each property, as presented in Table 3. The calculations take into account the glazing size, room volume, and room reverberation times (assumed from database measurements of reverberation times for the same room types of similar size).

Note that the effective sound reduction of a given glazing or trickle vent specification is determined by the sum of the R_w (for glazing) or $D_{n,e,w}$ value (for trickle vents) and the appropriate correction factor. The terms C & C_{tr} are correction values which take into account the frequency components of road traffic noise, which can compromise overall sound reduction performance of the glazing or trickle ventilators. At Huntly, C_{tr} is the relevant correction value to use due to the range of speeds of the road traffic approaching and slowing down at the junction between the A96 & A920. C & C_{tr} are typically expressed as a 0 or a negative number, in the format (C, C_{tr}) which follows the R_w or $D_{n,e,w}$ value. For example, glazing with an R_w 31dB (-1;-4) has an $R_w + C_{tr}$ value of 27dB overall as C_{tr} value of -4 is subtracted from the R_w of 31dB. **It is therefore important that the C_{tr} correction value is taken into account when selecting glazing and trickle ventilators for the properties presented below in Table 3.**

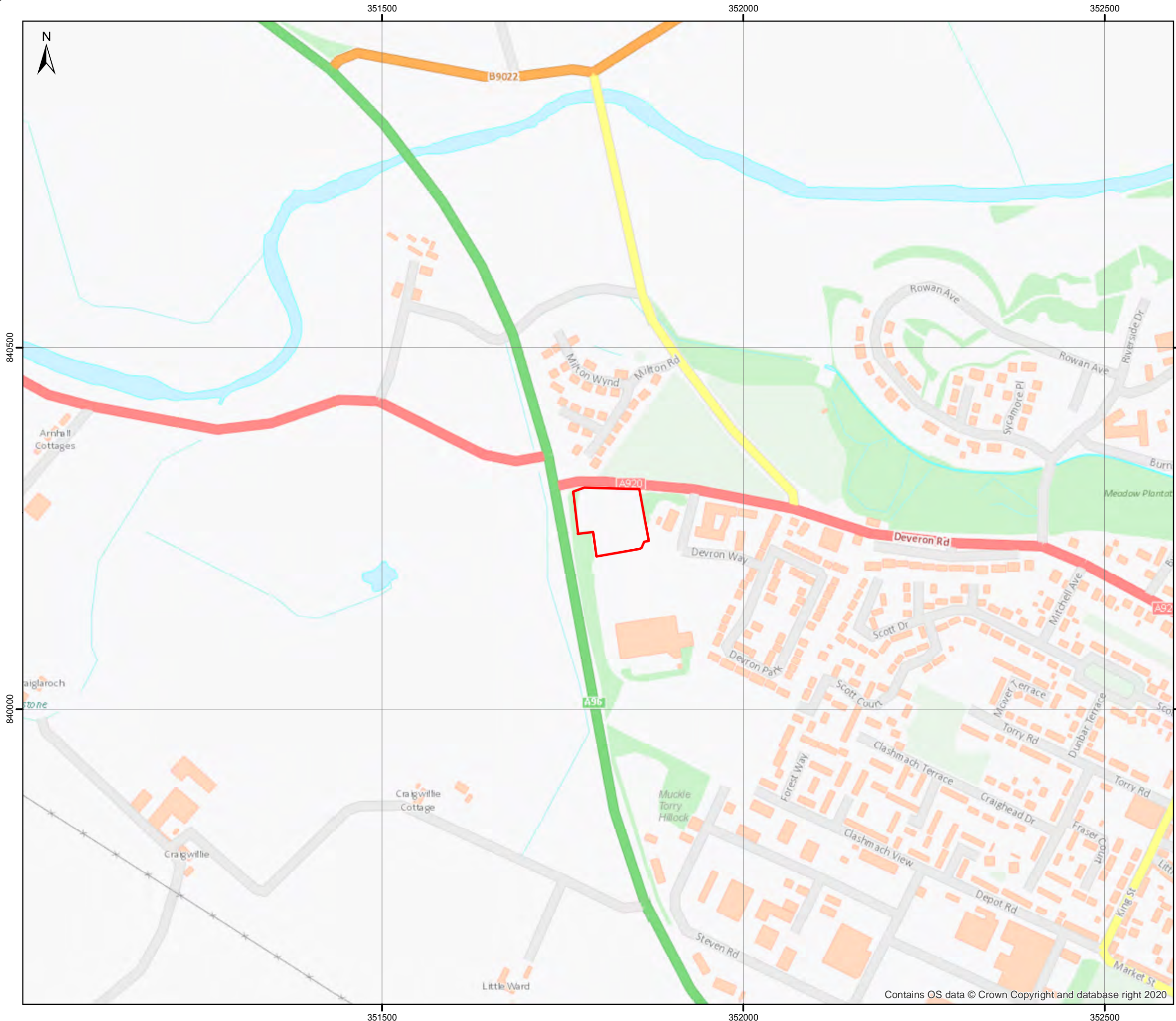
Two trickle ventilators have been assumed in each room. If more than two vents are to be fitted to any one room then the requirements will require to be increased. The amount by which the value should be increased is by a factor of $10\log(n/2)$, where n = the number of trickle ventilators.

Table 3: Minimum Required Acoustic Glazing and Trickle Ventilator Specifications

Plots	Room	Facade	Minimum Glazing Requirement $R_w + C_{tr}$	Minimum Trickle Ventilator Requirement $D_{n,e,w} + C_{tr}$
22 & 26	Lounge / Kitchen	West	29	34
	Bedroom	West	29	41
23 & 27	Lounge / Kitchen	West	29	34
	Bedroom	East	27	34
20 & 24	Lounge / Kitchen	South	27	27
	Bedroom	North	29	34
21 & 25	Lounge / Kitchen	South	27	27
	Bedroom	South	27	27
32 to 34	Kitchen / Dining	North	27	27
	Bedroom	North	27	34
28 to 31	Kitchen / Dining	North	27	27

Plots	Room	Facade	Minimum Glazing Requirement $R_w + C_{tr}$	Minimum Trickle Ventilator Requirement $D_{n,e,w} + C_{tr}$
	Bedroom	North	27	34

DRAWINGS



Legend

Site Boundary

Do not scale this map
Client
 THE Architecture & Planning

Project
 Deveron Road, Huntly

Title
 Site Location

Status
 Final

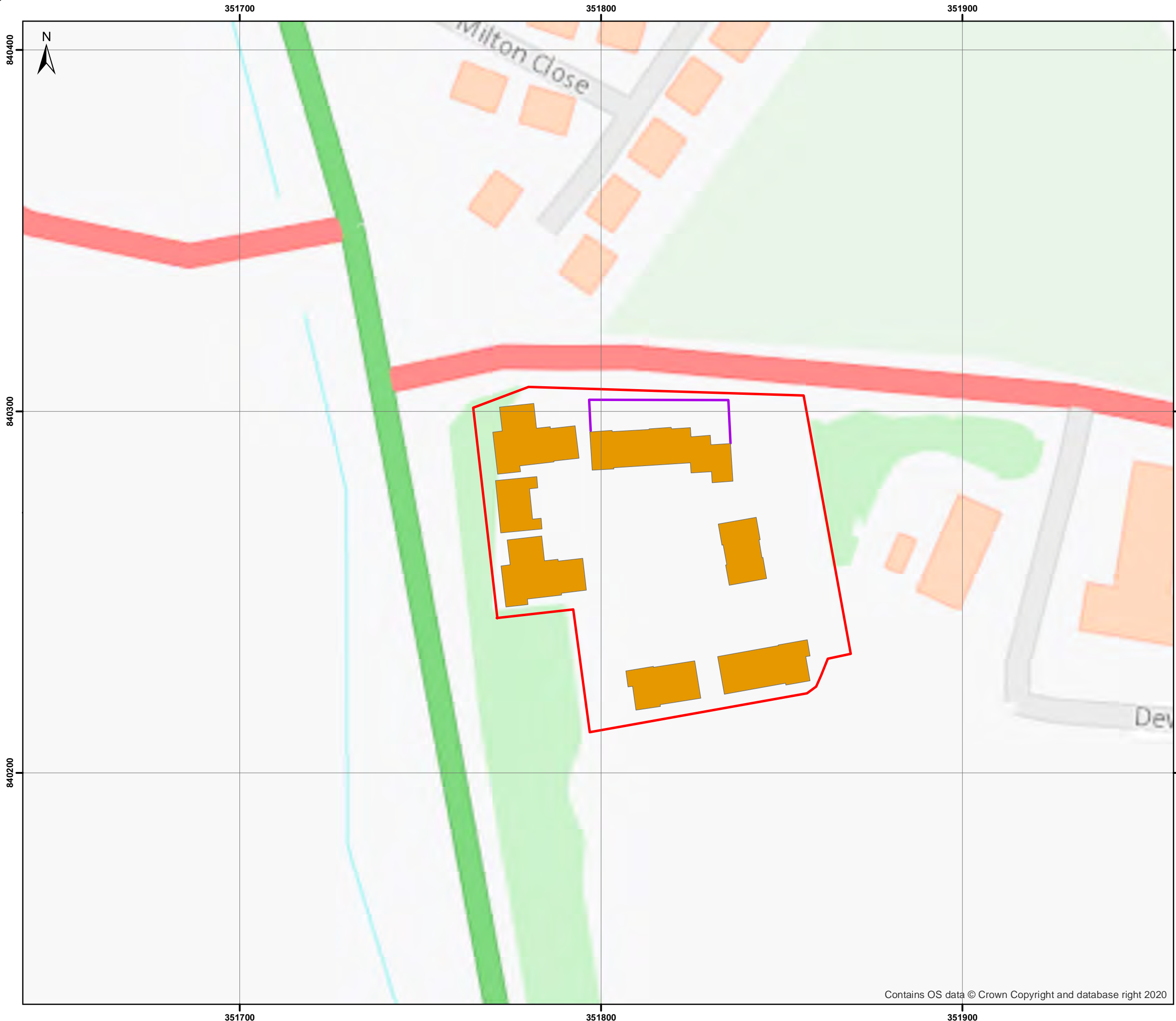
Drawing No. 376821-GIS001	Revision -	Date 01 Aug 2022
Drawn CC	Checked AH	Approved AH

Scale
 1:5,000 @A3

Rev	Date	Amendment	Initials
-	-	-	-

Craighall Business Park, Eagle Street, Glasgow, G4 9XA
 T: 0141 341 5040 E: info@envirocentre.co.uk W: www.envirocentre.co.uk

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Legend

- Site Boundary
- Development Layout
- 2.2m High Acoustic Barrier

Do not scale this map

Client
THE Architecture & Planning

Project
Deveron Road, Huntly

Title
Rear Garden Acoustic Barrier Location

Status
Final

Drawing No. 376821-GIS002	Revision -	Date 01 Aug 2022
Drawn CC	Checked AH	Approved AH

Scale
1:1,000 @A3

Rev	Date	Amendment	Initials
-	-	-	-

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123.9m

FLAT SYMBOL	FLAT TYPE	SQFT	SOM	NO. OF UNITS
F1	1 BED FLAT (COMMUNAL STAIR)	530, 549	50, 51	16
F2	GF - 1 BED COTTAGE FLAT 1F - 1 BED COTTAGE FLAT	527 506 (+75)	49 47(+7)	2 2
H2	2 BED TERRACED UNIT	893	83	5
H3	3 BED TERRACED UNIT	1044	97	10
H4	4 BED TERRACED UNIT	1249	116	2
				37

PARKING
 FLATS - 25 PARKING SPACES TOTAL (1 PER FLAT + 5 VISITOR SPACES)
 TERRACED HOUSES - 2 SPACES PER 2/3 BED, 3 SPACES PER 4 BED,
 + 4 VISITOR SPACES.

DATE	REVISION	REV	DR	CH
22/07/22	Layout Revised	P01	OF	NE

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THE | Thain
 ARCHITECTURE + PLANNING | Harrington
 Edward

24 North Silver Street,
 Aberdeen, AB10 1RL

Tel: 01224 586 277
 email: info@THE.co.uk
 web site: THE-ap.co.uk

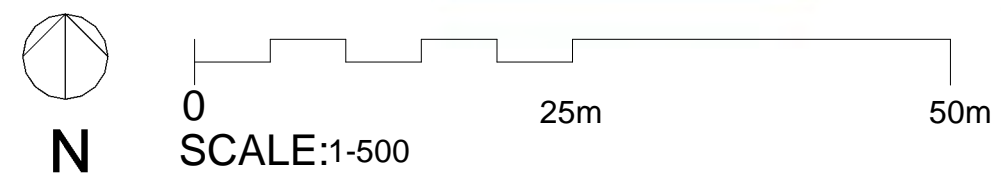
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Drawn NE	Date 03/2019
Checked NE	Date 03/2019

Project Name
 RESIDENTIAL DEVELOPMENT,
 DEVERON ROAD, HUNTLY

Drawing Title
 Proposed Site Layout

Scale As indicated@ A3	
Sheet Status S4 - FOR APPROVALS	
Project No. THE190005	
Drawing No. DEV-THE-ZZ-ZZ-DR-A-90006	Rev. P01



FOR HOUSE TYPES DETAILS REFER TO INDIVIDUAL HOUSE LAYOUTS.

REFER TO ASTELL REPORT FOR DETAILS OF TREES.
 REFER TO DWA DRAWINGS FOR LANDSCAPING DESIGN.
 REFER TO RAMSAY AND CHALMERS DRAWINGS FOR BOUNDARY DETAILS.