QLDC Imagery

0 15 30 60 m

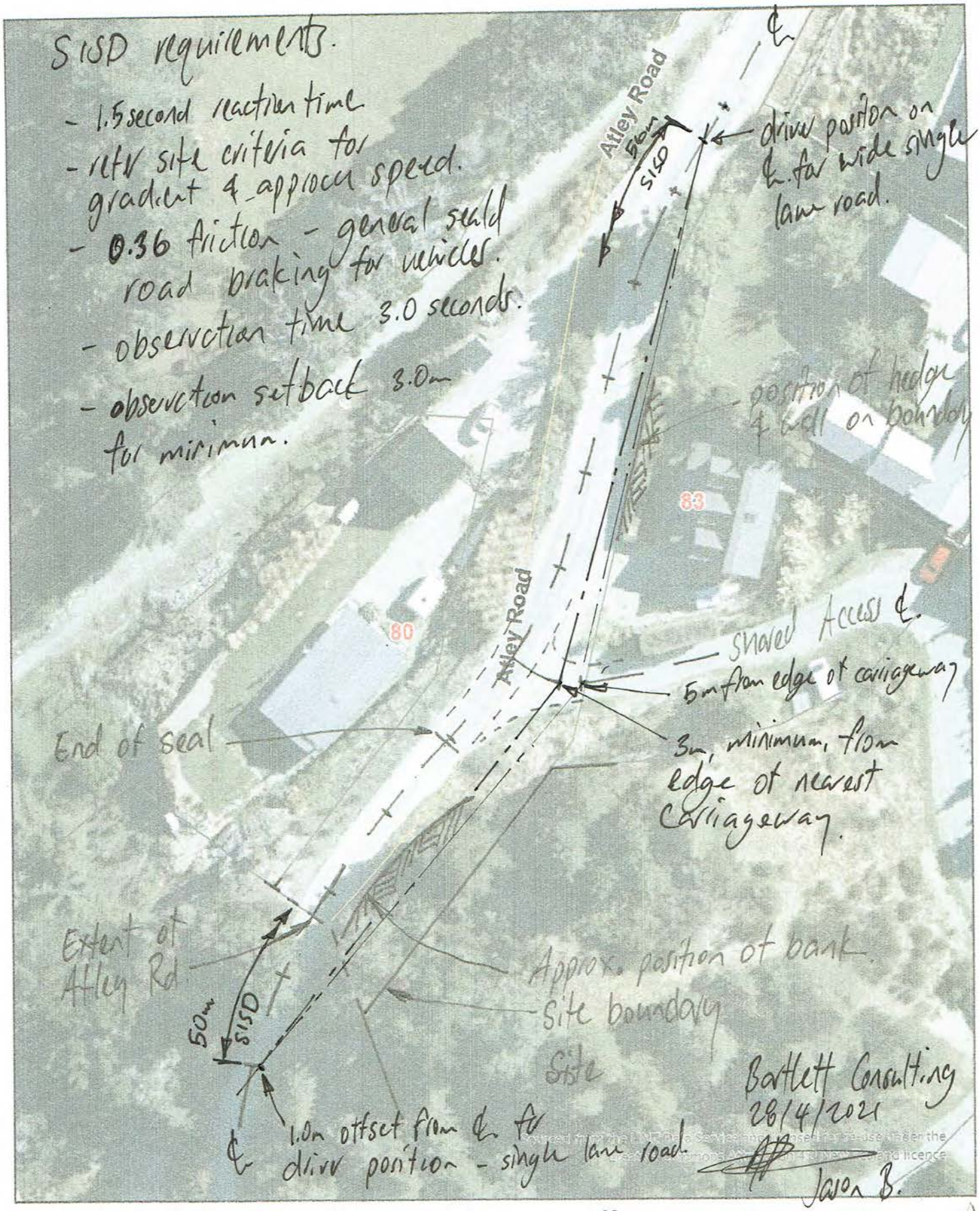
Scale: 1:500

Map Date: 28/04/2021

N

Canyon Ridge - Site Criteria

QLDC Imagery



Canyon Ridge - SISD Assessment

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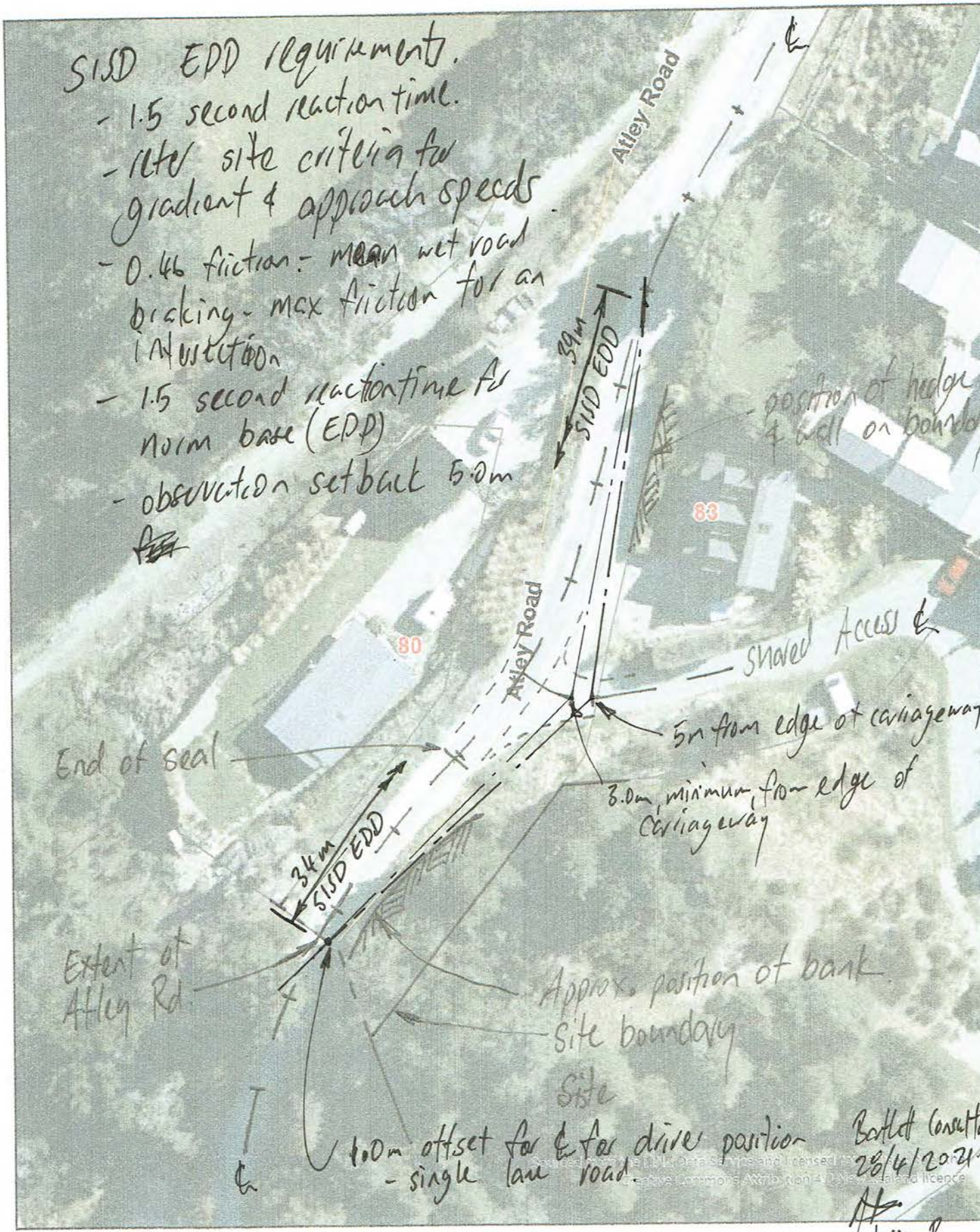

0 15 30 60 m

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Map Date: 28/04/2021

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Canyon Ridge - SISD EDD Assessment

QUEENSTOWN LAKES DISTRICT COUNCIL

Appendix B Site Photos

The following sight photos are provided to show the sight distances from the access intersection from Atley Road.

Photo B1: 4/11/2020, 3m from Atley Road carriageway looking north.

Photo B2: 4/11/2020, 3m from Atley Road carriageway looking south.

Photo B3: 4/11/2020, 5m from Atley Road carriageway looking north.

Photo B4: 4/11/2020, 5m from Atley Road carriageway looking south.

Photo B5: 4/11/2020, Intersection.

Photo B6: 27/4/2021, Intersection.

Photo B7: 27/4/2021, 3m from Atley Road carriageway looking north.

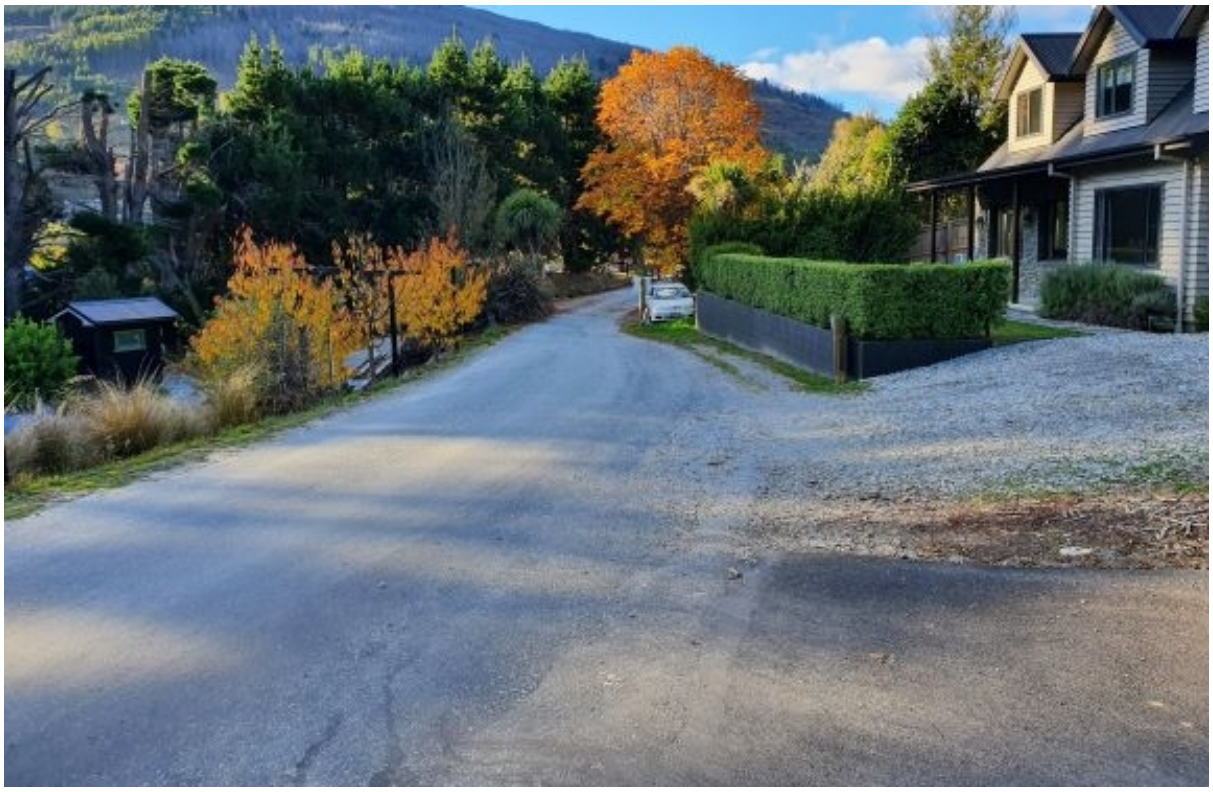

Photo B9: 27/4/2021, 3m from Atley Road carriageway looking south.

CANYON RIDGE VILLAS

CONSTRUCTION MANAGEMENT PLAN

CONTENTS

ISSUE STATUS – FOR RESOUCE CONSENT – Nov 20

1.0 Project Introduction

1.1 The proposed development comprises an 8 home development proposed to be developed on lot 2 DP 411983. The site totals 3365m2 accessed off Atleys Rd Arthurs Point. The intention is to develop the 8 homes in stages under a comprehensive house and land delivery methodology

1.2 The site is currently undeveloped and covered with mature wilding pines & broom.

1.3 The site is accessed via a private right of way accessed off Atleys road with easy access onto the rear of the site and consists of predominantly rock & schist gravel subgrade.

1.4 Each of the 8 homes are standalone homes to be titled as free hold titles.

1.5 The site is a north facing elevated knolled site with steep north facing drop offs to Atley's Rd & ROW. The site is bounded across the ROW by private residences to the south & east. To the west the site is bounded by a steep undeveloped site which drops away back down to an existing unconnected ROW.

2.0 Construction sequencing & staging

2.1 Construction Sequencing will follow the following stages

- 2.1.1 Site Access formed off the rear ROW & temporary site demarcation put in place
- 2.1.2 Trees removed
- 2.1.3 Bulk earthworks & rock excavation / removal completed
- 2.1.4 Stage 1, 3 homes – lots 5, 6 & 7 constructed including the widening & upgrade of the access ROW which will be completed whilst allowing neighbours access to be maintained.
- 2.1.5 Stage 2, 2 homes lots 1 & 2 constructed
- 2.1.6 Stage 3, final 3 homes lots 3,4 & 8 constructed

3.0 Construction programme

Running consequentially the following construction programme is planned.

3.1 **Enabling works;-** The works will commence on site in the winter of 2021 with Trees removal followed immediately afterwards by the bulk earthworks.

3.2 **Stage 1** (3 units) to commence following earthworks and expected to take 12 months to completed.

3.3 **Stage 2** (2 units) to commence following earthworks and expected to take 12 months to completed

3.4 **Stage 3** (3 units) to commence following earthworks and expected to take 12 months to completed

It's anticipated that the programme will overlap for each stage with for example Stage 2 being commenced ahead of the completion of stage 1.

We expect the entire construction works to be completed within 2 years of inception

4.0 Consents

The following consents, and or approvals are anticipated as required

4.1 Landuse and Subdivision consent

4.2 Engineering approval for all vested Council assets and / or works within the ROW extension

4.3 Building consent for 8 homes

4.4 Land owner consents –

4.4.1 Neighbours consents are not required as the development is entirely located within the site which is independent of other landowners. We do not anticipate the need to locate any temporary works or scaffold etc on any neighbours property.

4.4.2 Prior to the commencement on site all neighbours properties will be photographed for dilapidation record prior to the works being commenced.

4.4.3 It will be necessary to shut down neighbours power and other services for short durations whilst on site connections etc are made to the grid. Prior to these such shutdowns a min of one weeks written notice will be given to all affected neighbours & shutdowns will be limited to the hours of 0900 to 01500 hrs.

4.5 Work within ROW; We anticipate this will require traffic management to ensure access to the existing residences during the construction period. A traffic management plan will be prepared in support of the work within the ROW.

5.0 Construction Management

5.1 Construction activities will be contained within the subject site and accessed via the ROW to the south.

5.2 A traffic management plan shall be prepared & approved by the council for accessing the site via the ROW.

5.3 Each stage will be protected by 1.8m high solid hoardings to the east and south sides of the site with the steep site topography providing natural protection to the north and west.

5.4 No heavy vehicles will enter or leave the site earlier than 0730 except for vehicles associated with concrete pours whereby access to the site will not be before 0600.

5.5 **Materials handling**;-

5.5.1 For stages 1 & 2 there will be a lay down area established on the site within lots 3 & 4. This area is accessed from the south ROW and will house the site offices, & materials storage.

5.5.2 For stage 3, lots 3 & 4 the site offices will be located on the south side of the lots behind the garages & materials storage will be on the north side open space in front of the units.

5.5.3 The site will be supplemented for the duration of the house construction with a self erecting tower crane situated central on the site for the duration of the homes construction. This will minimise the need for goods vehicles to access the site from the south or east ROW rather allowing materials to be offloaded directly onto the site from delivery vehicles located within a loading bay on Atley's Road or on the north side ROW.

5.6 **Hours of Operation;-** Unless noted below construction activity will operate from hours 0730 to 1800, Monday – Saturday excluding public holidays.

5.6.1 Rock breaking;- will be contained within hours 0900 to 1500

5.7 Noise & Vibration Management

5.7.1 Construction activities will be undertaken in accordance with New Zealand Standard NZS6803:1999 Acoustics – Construction Noise. In line with this Standard, and the Queenstown Lakes District Plan, the noise levels from the site will not exceed a noise limit of 70 dB L_{Aeq} at location one metre from the neighbouring dwellings as far as practicable.

5.7.2 In line with the proposed Queenstown Lakes District Plan, the activities will comply with the vibration activity limits outlined in Table 1 of DIN 4150-3 *Structural Vibration – Part 3: Effects of vibration on structures*. For residential dwellings this would be as follows"

- Vibration at the foundation at the frequency of 1 to 10 Hz – 5 mm/s
- Vibration at the foundation at the frequency of 10 to 50 Hz – 5 to 15 mm/s
- Vibration at the foundation at the frequency of 50 to 100 Hz – 15 to 20 mm/s

Worst-case construction activities

5.7.3 The highest noise and vibration generating activity on the site is expected to be rock breaking. This is to occur with an excavator mounted hydraulic breaker.

5.7.4 The noise and vibration generated from this activity will be very site specific as the noise and vibration levels received at the neighbouring dwellings will vary depending on the specific rock on the site, the specific machinery, the shielding provided by the land contours, and temporay shield systems.

5.7.5 **Noise;-** Based on the range of values for rock-breaking activity provided in NZS6803:2008 a hydraulic rock breaker could generate worst-case sound power of 120 dB L_{wA}. A rock-breaking noise reduction attachment, such as the Duraflex Hushtec Rock Breaker Attachment or similar may be utilised where necessary. Attachment's

such as this are expected to reduce breaker noise in the order of 10 dB. Noise levels of 70 dB L_{Aeq} or less can therefore be expected if the rock breaker is more than 54 metres from neighbouring dwellings (when taking in façade reflection as per NZS6803:2008). Where rock breaking occurs closer than this, temporay shield dampening will be implemented to remove line of sight between the rock breaker and the dwelling.

5.7.6 **Vibration;-** A 1500 kg hydraulic breaker is expected to generate in order of 4 – 5 mm/s measured at a distance of 5 metres, reducing to in the order of 0.5 mm/s when measured at 20 metres. As the rock breaking will occur more than 5 metres from any neighbouring dwelling, the vibration noise limits outlined above are expected to be readily achieved.

Noise mitigation measures

5.7.7 To reduce the noise from construction to surrounding sites a 1.8 metre high solid site hoarding will be installed along the east and south site boundaries. This site hoarding will have a minimum surface mass of 12 kg/m^2 and will be continuous and maintained with no gaps or cracks.

5.7.8 Community consultation is identified as an important noise control method in Clause 8.3 of NZS6803:2008. Procedures for community consultation are outlined below.

5.7.9 As the noise from rock breaking is site specific, at the beginning of the construction process the noise emissions from the rock breaker (with and without the noise control attachment) will be measured before the rock breaking is undertaken. This will determine the specific mitigation (such as additional close proximity shielding) that would be required in each location on the site in order to reduce the noise levels as far as practicable.

5.7.10 However, wherever possible, rock breaking will be carried out with the noise control attachment as outlined above on the breaker, and with placement of localised barriers (excavated material or mass concrete blocks) to remove line of sight to the neighbouring dwellings.

Community consultation

5.7.11 A Noise and Vibration Liaison Officer will be nominated for the site. This person will be responsible for the consultation with the neighbouring dwelling occupants.

5.7.12 The process for community liaison will be as follows:

- Give the neighbouring dwellings written prior notice of activities expected to generate noise and vibration levels approaching the limits, or activities of a nature, timing or duration which may potentially cause a negative reaction (typically 7 days before the commencement of the activity). At a minimum this should include rock-breaking and concrete pouring. As stated in NZS 6803:1999, section 8.3.1 "*The removal of uncertainty can help to reduce adverse reactions to noise*". This notice should include the following information:
    - A description of the activity and its role in the construction.
    - The expected duration and time of operation of the activity.
    - A general description to illustrate that steps have been taken to ensure noise causes as little nuisance as possible.
    - A contact telephone number and name of the Noise and Vibration Liaison Officer who neighbours can telephone if they want more information or have concerns regarding noise.

- Maintain a register of any community correspondence received relating to noise and vibration, and the action taken in response.

5.7.13 Upon the receipt of a complaint or enquiry, the Noise and Vibration Liaison Officer will be responsible for any follow up. Steps likely to be required include:

a) Note in the noise complaint log the nature of the complaint, contact details of the complainant, and time and date of the complaint.

b) Investigation to establish whether the noise levels, durations and times established for the activity have been exceeded. It may be appropriate to conduct a noise survey and audit by a suitably qualified acoustic engineer. This process should establish whether the noise emitted has been *reasonable* and whether the best practicable options for noise reduction have been used. However, in an effort to maintain good community relations, all cases must be investigated, not just those where the relevant noise limits have clearly been exceeded. This CNVMP may then be reviewed to make sure the procedures described herein ensure that the noise associated with the construction does not exceed a *reasonable* level and that community goodwill is maintained.

c) Liaison with the local authority with regard to the Contractors responsibilities, and best course of action in the given situation. A common course of action may be the rescheduling work to other times of the day.

d) Further liaison with the complainant to establish why the noise received caused a nuisance and to communicate the Contractors concern and describe what action will be taken as a result.

5.7.14 These procedures will ensure that all possible steps are taken to maintain community goodwill at all times, and an understanding is

gained for the expectations of members of the community with regard to noise and vibration.

5.8 Earthworks

5.8.1 Earthworks associated with the project entail circa 2,500m3 of bulk earthworks the majority of which will be rock material trucked off site & dumped at an approved dump site or reutilised as certified hard fill on other approved development sites around the district.

5.9 Sedimentation Controls

5.9.1 With the site being of predominantly rock subgrade we do not anticipate any major issues with sedimentation getting into the council stormwater system however to provide environmental protections stormwater mud tanks will have filter cloth protections installed under grates and sucker truck cleaned as required.

5.10 Works outside the site

5.10.1 Works outside the site shall be limited to the following;-

5.10.1.1 Installation of services within the ROW

5.10.1.2 Resurfacing the ROW

5.10.1.3 Landscaping to the Row verges.

For the above operations a traffic management plan will support these operations thereby ensuring access to the neighbours properties is maintained.

6.0 Assessment of affects and mitigations

The site a reasonably private & elevated site which with the exception of the immediate neighbours does not pose significant public safety issues. We consider the major public safety concerns surround the neighbours and to mitigate against that the following controls will be implemented on-site

6.1 Site safety signage installed at all entrances warning of the risks of entering the site

6.2 Site under the day to day control of a qualified construction manager charged with managing all site activities and communicating with the neighbours and

general public on a timely basis about the pending activities associated with the construction works.

6.3 1.8 high security gates installed on the south and east side of the site

6.4 Daily sign in registers for all contractors working on the site.

6.5 Site made secure & locked down during non-working hours

6.6 Contractor vehicle parking – will be permitted on site but at all times and (except as permitted by the approved traffic management plan) shall not impede neighbours access to their dwellings. In busy times contractors will be allowed to drop off gear on site and then remove their vehicles from site to a park on Atleys road thereby not blocking the ROW.

6.7 Construction deliveries – Will be arranged for off load from load in bays adjacent to the southern ROW and / or the northern ROW / Atleys road & these delivery activities shall not impede the access to any of the neighbours dwellings.

6.8 Dust Mitigation;- Regular & consistent site cleaning will be implemented to ensure the site stays tidy and is free of build-up of construction residue and dust.

6.9 Rubbish Removal – Shall be carried out utilising skips located on site in designated areas adjacent to the southern ROW.

6.10 Non Compliances – A non-compliance and complaints register will be kept on site with actions and mitigating actions recorded weekly as part of the site management meetings procedures.

Appendix A – Construction Staging Plan

FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

plan: proposed staging plan

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RC.03
scale: 1:250
11/11/2020

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File Ref: AC20322 – 02 – R1

11 March 2021

Mr S. Fairmaid
Momentum Projects
4 Peasmoor Road
Lower Shotover
Queenstown

Email: shanef@momentumprojects.co.nz

Dear Shane,

Re: Proposed Canyon Ridge Villas residential development, Atley Road, Arthurs Point
Assessment of Rock-breaking Noise Effects

Acoustic Engineering Services Ltd (AES) has been engaged to undertake an assessment of rock-breaking noise effects in response to an RFI issued in relation to an application for Resource Consent for a proposed residential development to be located at Atley Road, in Arthurs Point, Queenstown.

We have based our analysis on the following documentation:

- Construction Management Plan titled *Canyon Ridge Villas Construction Management Plan*, Resource Consent issue, and dated November 2020.
- Construction staging plan titled *Plan: Proposed Staging Plan, 2928, Canyon Ridge*, prepared by Foley Group Architecture, and dated the 11th of December 2020.

1.0 SITE AND SURROUNDING AREA

The Applicant's site is located at Atley Road, in Arthurs Point, Queenstown, as shown in figure 1.1 below. The site is legally described as Lot 2 DP 411983.

Figure 1.1 – Site and locality

2.0 ACOUSTIC CRITERIA

The site and those surrounding it are located within the Low Density Residential Zone as defined with the Queenstown Lakes ODP. Therefore, for rock breaking noise the Queenstown Lakes District Plan, Volume 1, *Section 7 Residential Areas – Rules, 7.5 Low Density and High Density Residential Zone Rules, 7.5.5 Standards – Residential and Visitor Accommodation Activities, 7.5.5.3 Zones Standards – Residential Activities and Visitor Accommodation, xii Noise,* applies, as follows:

> *(c) The noise limits in (a) shall not apply to construction sound which shall be assessed in accordance and comply with NZS 6803:2008*

Within the Proposed District Plan, the site and those surrounding it are located in a Lower Density Suburban Residential Zone. The rule outlined in *Part Five – District Wide Matters, Chapter 36 Noise, 36.5 Rules – Standards, 36.5.12 Construction Noise*, applies, as follows:

> *Construction sound must be measured and assessed in accordance with NZS 6803:1999 Acoustics – Construction Noise. Construction sound must comply with the recommended upper limits in Tables 2 and 3 of NZS 6803. Construction sound must be managed in accordance with NZS 6803.*

NZS 6803:1999 contains guidelines for the setting of construction noise limits, as these limits will depend on different situations, as explained in section C7.1.1: *"The acceptability of construction noise in any community is likely to depend on the potential for interfering with activities, the expected duration of the noise and the existing background sound level at the places affected…".*

NZS 6803:1999 *Acoustics – Construction Noise* provides noise limits for construction activities for three durations. This is because higher noise levels are tolerable for short term activities as opposed to those of a more permanent nature. The duration of work is for the total construction activity on the site as opposed to a specific activity, therefore for this activity we would expect the 'long-term duration' (more than 20 weeks) to apply. These noise limits apply at 1 metre from the noise-sensitive neighbouring dwellings.

Table 2.1 – Noise limits outlined in NZS 6803:1999

Time of week	Time period	Duration of work					
		Typical duration (dBA)		Short-term duration (dBA)		Long-term duration (dBA)	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Weekdays	0630-0730	60	75	65	75	55	75
	0730-1800	75	90	80	95	70	85
	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	85	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

We note that NZS 6803:1999 states that best practicable options for noise avoidance or mitigation should be applied to construction activities on the site; however, if the best practicable options are applied and the noise limits are still not met, discretion is able to be applied. Nevertheless, we consider that compliance with the long-term construction noise limit as far as practicable would be in line with good practice and would result in reasonable and acceptable noise effects.

3.0 METHOD OF ROCK BREAKING

We understand that the site contains bedrock which will need to be removed prior to construction commencing. Where the bedrock needs to be broken before removal, an approach should be selected which represents the best practicable option in terms balancing the level and duration of noise and vibration impacts experienced by neighbours. Options for bedrock removal can include the use of a hammer type rock-breaker fitted to an excavator, rock-splitting (chemical or mechanical) or downhole blasting; each suited to different situations, as follows:

- Blasting – produces high levels of noise and vibration but as excavation can progress quickly noise is present on site for a shorter period of time. Blasting is not likely to be used in this location as it cannot be safely accomplished on smaller sites.

- Hammer type rock breaking – produces moderate levels of noise and vibration, and allows excavation to be progressed at a moderate pace. This method of rock breaking can be used to produce an accurate finish and remove small amounts of rock in awkward spaces.

- Rock splitting – produces moderate levels of noise and low levels of vibration, but excavation may progress more slowly. Rock splitting may also not be practical in some locations due to the nature of the rock, the geometry of the excavation or the final finish required.

We understand that the topsoil and any loose rock will be cleared by an excavator, and any bedrock will then be removed down to the required cut depth via a hammer type rock breaking attachment fitted to an excavator.

4.0 NOISE ASSOCIATED WITH ROCK BREAKING

4.1 Proposed site mitigation

We understand that 1.8 metre solid site hoardings will be installed along the site boundary for the duration of rock breaking activity. This will either be in the form of Envirocon Interbloc concrete blocks, or wooden site hoardings constructed to the following minimum standards:

- Height – at least 1.8 metres
- Surface mass – at least 10 kg/m^2 (such as 15 mm plywood)
- The fence must be continuous, and maintained with no gaps or cracks.

In addition, the site hoardings will be extended to a minimum height of 2.4 metres in the locations shown in red in figure 4.1 below when rock breaking activity occurs in the areas indicated in green.

Figure 4.1 – Locations of extended site hoardings

4.2 Expected noise levels received at neighbouring sites

Based on the range of values for rock breaking activity provided in NZS 6803:1999 *Acoustics – Construction Noise* we have assumed a worst-case sound power level of 120 dB L_{WA}. In addition, we have assumed the use of a rock breaking noise reduction attachment, such as the Duraflex Hushtec Rock Breaker Attachment. We note that the manufacturer's data states that a 7 – 13 dB reduction has been achieved with its use in previous situations. We have based our modelling on the attachment reducing the noise levels by 10 dB.

In order to calculate worst-case expected noise levels, we have assessed use of a rock breaking attachment at various locations within the excavation area as indicated in figure 4.2 below, with the noise source at existing ground level, not below.

Figure 4.2 – Location of assessed rock breaking scenarios

In each location the existing ground level considered for the rock breaking would be worst case, as in each position once the first portion of rock is broken there would be additional screening provided by the excavated face.

The resulting noise levels received at neighbouring properties are as shown in table 4.1 below.

Table 4.1 – Expected noise levels from rock breaking activity received at neighbouring dwellings

Neighbouring property	Direction	Noise level from scenario (dB L_{Aeq})					
		A	B	C	D	E	F
80 Atley Road	Northeast	66	58	<50	<50	<50	<50
83 Atley Road	North	67	70	54	<50	<50	54
85A Atley Road	East	64	60	62	<50	61	69
85B Atley Road	East	<50	<50	59	51	59	60
85C Atley Road	Southeast	<50	<50	58	55	64	60
85D Atley Road	South	<50	<50	58	63	67	58
85E Atley Road	South	<50	<50	59	61	62	54
94 Atley Road	West	<50	<50	<50	51	50	<50
98 Atley Road	Southwest	<50	<50	<50	52	51	<50
41 Matthias Terrace	Northeast	65	66	61	<50	56	59
43 Matthias Terrace	Northeast	64	69	57	<50	<50	55

Based on the above analysis, we expect that noise from rock breaking activity will be 70 dB L_{Aeq} or less at all neighbouring dwellings, which complies with the long-term duration noise limits identified in NZS 6803:1999 for daytime works. We would therefore expect that if the activity was limited to between 0730 and 1800 hours Monday to Saturday the associated noise effects would be minimal.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Noise from rock breaking activities associated with the proposed Canyon Ridge Villas residential development at Atley Road, in Queenstown, has been considered.

As discussed above, we consider that as far as practicable, compliance with the long term construction noise limits set out in NZS 6803:1999 is appropriate and would result in reasonable and acceptable noise effects.

To provide confidence that noise emissions associated with rock breaking activity for the proposed development are maintained at appropriate levels, we recommend the following mitigation measures are adopted:

- Solid site hoardings with a minimum height of 1.8 metres are installed along the site boundaries for the duration of rock breaking activity.
- When rock breaking activity occurs in the areas identified in figure 4.1 above, the site hoardings in the indicated locations will be extended to a minimum height of 2.4 metres.
- All rock-breaking activity on site is limited to between 0730 and 1800 hours Monday to Saturday.

We trust this is of assistance. Please do not hesitate to contact us further as required.

Kind Regards,

Gene Hopkins
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File Ref: AC20322 – 03 – R2

6 May 2021

Mr S. Fairmaid
Momentum Projects
4 Peasmoor Road
Lower Shotover
Queenstown

Email: shanef@momentumprojects.co.nz

Dear Shane,

Re: Proposed Canyon Ridge Villas residential development, Atley Road, Arthurs Point
Response to Council RFI

We understand that Queenstown Lakes District Council has raised queries pertaining to the Assessment of Construction Noise and Vibration Effects report produced for the Canyon Ridge Villas residential development (AES file reference AC20322 – 02 – R1, and dated the 11th of March 2021), as reproduced below:

1. *As the geotech report has yet to be submitted to Council, can you confirm if the AES report has taking into account the preliminary findings and construction methodologies recommended by the geotech engineer?*

2. *Has the acoustic report and noise modelling taking into account the potential noise effects from rock breaking within the ROW easement area required to widen the road.*

3. *The report states the following assumption which appears to have been factored into the expected noise levels calculated at neighbours boundaries, however there is no corresponding recommendation. Would be keen to clarify if this is requirement to ensure compliance with the noise standards (based on the noise levels outlined in Table 2.1).*

   assumed the use of a rock breaking noise reduction attachment, such as the Duraflex Hushtec Rock Breaker Attachment. We note that the manufacturer's data states that a 7 – 13 dB reduction has been achieved with its use in previous situations. We have based our modelling on the attachment reducing the noise levels by 10 dB.

Please find our responses to these queries below.

1.0 CONSIDERATION OF GEOTECHNICAL REPORT

Although the geotechnical report had not been produced at the time of our original assessment, we have since reviewed the report (geotechnical report titled *Proposed Canyon Ridge Development – Arthurs* Point, prepared by Bell Geoconsulting Limited, and dated the 15th of April 2021), and can confirm that the assumptions and methodologies used in our acoustic assessment align with the findings of the geotechnical report.

2.0 ROCK BREAKING ACTIVITY FOR RIGHT OF WAY WIDENING

Regarding the widening of the right of way, at the time of our original assessment we were unaware that this process was occurring and had therefore not included it in our analysis and reporting. We have since been provided with a survey plan showing the planned area of rock excavation to accommodate the extra width of the right of way (survey plan titled *Indicative Access Widening, Canyon Ridge, Arthurs Point*, as prepared by Aurum Survey, and dated the 27th of November 2020).

The earthworks plan indicates that the maximum elevation of the work area is 421 metres, with the majority of excavation occurring at an elevation of 418 – 420 metres. While the earthworks plan notes that a 6 metre maximum cut height is expected, this only occurs in a small section of the excavation area. The majority of the excavation area has a cut height of 2 – 3 metres.

We have undertaken additional acoustic modelling based on the excavation area identified in the plan, and a mitigated sound power of 110 dB L_{wA} for the rock breaking equipment as described below. Our analysis had assumed that 2.4 metre high temporary solid site hoardings were installed around the work area as shown in green in figure 2.1 below, with the northern section having an elevation of 418 to 415 metres following the contour of the right of way, and both sides extending up to join the main site boundary at an elevation of 420 metres.

From this, we expect that noise emissions from rock breaking activity associated with the widening of the right of way would be less than 70 dB L_{Aeq} at all neighbouring dwellings. The acoustic screening would need to conform to the minimum standards outlined in section 4.1 of our original assessment.

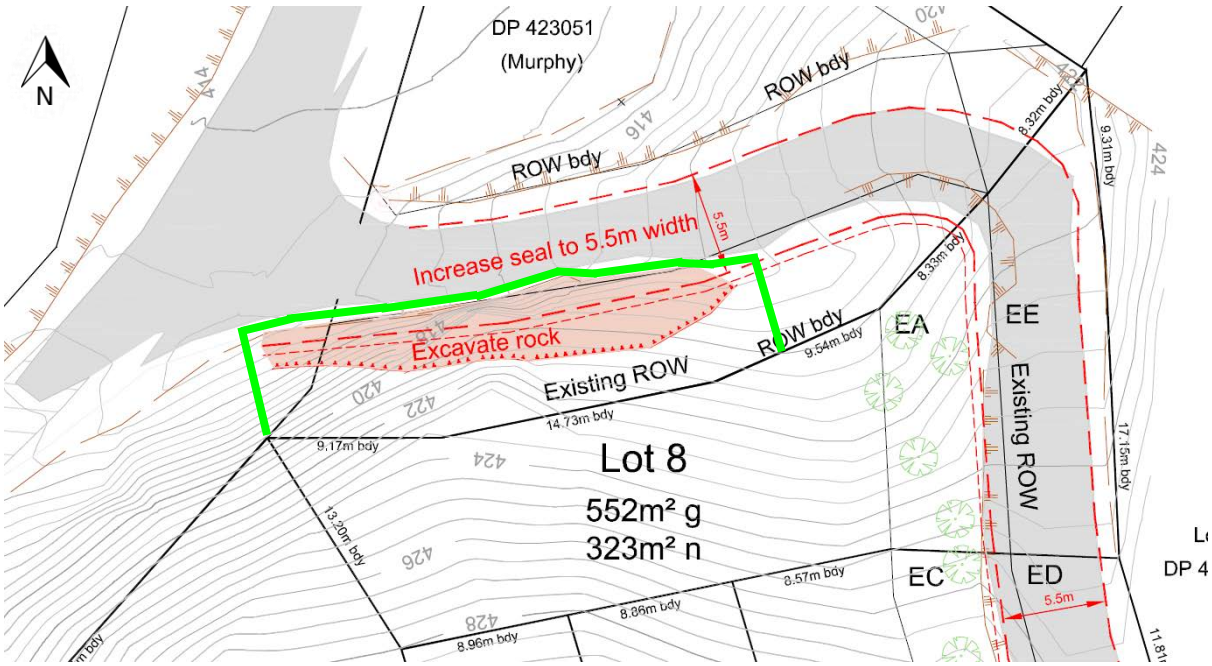


Figure 2.1 – Required location of temporary solid site hoardings

3.0 REQUIREMENT FOR ROCK BREAKING ATTACHMENT

As outlined in our report, the range of values in NZS 6803:1999 results in a worst case sound power level of 120 dB L_{wA} for a hammer type rock breaking attachment.

We have also undertaken measurement of a 1600 kg hammer type rock breaking attachment on a 20 tonne excavator when breaking schist rock. This resulted in a sound power level of 118 dB L_{wA}.

Our analysis has assumed a mitigated sound power level of 110 dB L_{wA} for the excavator and rock breaking attachment, and typically this is accomplished by installing a noise reducing shroud such as the Duraflex Hushtec Rock Breaker Attachment on the equipment. However, the noise levels emitted by rock breakers vary significantly depending on the specific type of breaker and the type rock being broken. Therefore, it may also be possible to select a smaller, low noise rock breaking attachment which generates a sound power level of 110 dB L_{wA} without requiring a noise reducing shroud. In order to achieve compliance with the relevant noise standards one of the following is required:

- Install a noise reducing shroud on the rock breaking attachment
- Select a rock breaking attachment with a sound power of 110 dB L_{wA} or less as verified by manufacturers data, and confirmed on site prior to works commencing

We trust this is of some assistance, please do not hesitate to contact us if you have any further questions.

Kind Regards,

Gene Hopkins
BE Hons (ECE)
Acoustic Engineer
Acoustic Engineering Services

www.aeservices.co.nz
office@aeservices.co.nz
Auckland +64 9 917 0369
Wellington +64 4 890 0122
Christchurch +64 3 377 8952

File Ref: AC20322 – 04 – R2

7 July 2021

Mr S. Fairmaid
Momentum Projects
4 Peasmoor Road
Lower Shotover
Queenstown

Email: shanef@momentumprojects.co.nz

Dear Shane,

Re: Proposed Canyon Ridge Villas residential development, Atley Road, Arthurs Point
Response to additional Council RFI

We understand that Queenstown Lakes District Council has undertaken a review of our Assessment of Construction Noise and Vibration Effects report produced for the Canyon Ridge Villas residential development (AES file reference AC20322 – 02 – R1, and dated the 11th of March 2021), and the Response to Council RFI Letter (AES file reference AC20322 – 03 – R2, and dated the 06th of May 2021). Based on this review, the following was requested:

1. *Please update the noise level predictions based on a maximum of 5 dB reduction for wrapping the 20 t breaker assessed in the report or provide data to support a higher reduction being assumed. Alternatively, please confirm that the use of a smaller, quieter breaker is practicable for the works and that this is proposed as a noise mitigation measure. In the latter case, updated noise level predictions are not required.*

2. *Please advise the estimated duration of the rock breaking (if available) and the total length of time where noise levels may infringe the PDP permitted construction noise limits.*

3. *Please provide comment on the ability of other construction activities on site to comply with the PDP permitted construction noise limits. Will there be any other high noise activities such as chainsaw works, wood chipping or piling?*

4. *Please confirm the assumed reduction by the proposed 1.8 m and 2.4 m high acoustic screening for the nearest receivers. Will effective screening be possible when noisy works take place at a higher ground level than the receivers?*

Please find our responses to these queries below.

1.0 ROCK BREAKING

Due to the stage of the project, the specific rock breaking equipment that will be used on site has yet to be selected.

Our assessment has considered a mitigated sound power of 110 dB L_{WA} for the rock breaking. Based on the range of noise levels that could be expected from rock breaking, and the types of mitigation that are available, we expect that it is realistic that this level can be achieved.

Due to the range of noise levels emitted by rock breaking equipment, it is therefore proposed to undertake measurements of the selected rock breaker on site to determine the specific mitigation measures that will be required for that particular model / ground combination to comply.

Our assessment provides an example to demonstrate that compliance with the construction noise limits is achievable. Therefore, simply adding 5 dB to the values outlined in our original assessment is not representative of what is proposed on site, as the management approach would not result in that scenario occurring.

From our correspondence with the Applicant we understand that the following mitigation measures can be employed on site if required in order to ensure that the sound power emitted by the rock breaker remains below 110 dB L_{wA}, and ensure compliance with a 70 dB L_{Aeq} noise limit at neighbouring sites:

- Install a noise reducing shroud to rock breaking attachment (up to 5 dB reduction)
- Select a rock breaking attachment with lower noise emissions
- Install temporary localised close proximity screening (up to 10 dB reduction)

The specific combination of mitigation measures required will be determined on site based on in situ noise measurements for the machinery, as required by the proposed Condition of Consent.

Regarding the duration of rock breaking activity, we understand that this has yet to be confirmed. However, the Applicant has proposed to limit operating hours of rock breaking activity to be between 0900 and 1700 hours Monday to Friday so that the impact on neighbouring sites is reduced.

Full compliance with the NZS 6803:1999 construction noise limits is proposed at all times. This is required by the proposed Condition of Consent.

2.0 NOISE FROM OTHER ACTIVITIES

We expect that rock breaking will be the highest noise generating construction activity on site. We understand that Styles Group are particularly concerned about potential piling, use of a chainsaw, and wood chipping activity.

We have been advised that no piling is required on site.

With regards to the chainsaw and wood chipping, this appears to be related to removal of the existing trees on site. We have considered these sources below.

Based on our previous measurements, chainsaws suitable for this type of activity can have a sound power of around 110 dB L_{wA}. We have been advised that tree felling is expected to be completed within 3 days. Additionally, from our experience we expect that using typical methodology the chainsaw would not be expected to operate continuously for a full 15 minute assessment period. We therefore expect for this activity to comply.

Wood chipping is not expected to occur on site. This has been volunteered as a Condition of Consent.

For lower noise generating activities, managerial controls will be implemented to ensure that the construction noise limits are complied with at all times, as outlined in a Construction Noise and Vibration Management Plan which will be provided by the Applicant prior to works commencing.

Overall, we expect that it is reasonably practicable for construction activity on site to managed such that compliance with the relevant noise limits is achieved.

3.0 EFFECTIVENESS OF SCREENING

All of our analysis was conducted in acoustic modelling software SoundPLAN, with terrain data from the most recent DEM for the area used as the basis for the 3-dimensional model. The location of neighbouring dwellings was imported from the LINZ property database and mapped to the terrain.

For rock breaking activity within the main site, a number of worst-case operational locations were modelled around the perimeter of the site as well as in the more elevated central region. For the right of way works the excavation area indicated in the earthworks plan was overlaid onto the terrain data, with worst-case operational locations modelled around the perimeter and in the centre of the excavation area, including the highest points of the excavation.

Based on the above, we are confident that the barrier locations indicated in our reporting are effective and will result in compliant noise levels at neighbouring sites.

4.0 PROPOSED CONDITIONS OF CONSENT

The Applicant has volunteered the following draft Conditions of Consent in order to provide confidence that the noise emissions from construction activity will be appropriate.

1. All construction activities on site shall comply with the noise limits set out in NZS 6803:1999 *Acoustics – Construction noise*. All construction noise shall be measured and assessed in accordance with the same Standard.

2. An appropriately qualified person shall prepare a Construction Noise and Vibration Management Plan (CNVMP) for the development prior to the commencement of works.

3. All activity on site including arrival and departure of vehicles is limited to between 0730 and 1800 hours Monday to Saturday, with the exception of rock breaking which will only occur between 0900 and 1700 hours Monday to Friday.

4. A suitably qualified and experienced person shall undertake noise measurements of the selected rock breaking equipment prior to activity commencing on site, to determine the appropriate mitigation measures to be adopted and included within the CNVMP.

5. Solid site hoardings with a minimum height of 1.8 metres will be installed along the site boundaries for the duration of rock breaking activity.

6. When rock breaking activity occurs in the areas identified in figure 4.1 of the acoustic report (AES file reference AC20322 – 02 – R1, and dated the 11th of March 2021), the site hoardings in the indicated locations will be extended to a minimum height of 2.4 metres.

7. No less than 5 days before any rock breaking begins on site, the consent holder shall provide written advice to the occupants of all dwellings within 50 metres of the site. The written advice shall include the approximate dates, times and duration of the rock breaking works and a contact phone number for any feedback or concerns. Any feedback provided on more noise sensitive times shall be taken into account when scheduling the works.

8. No wood chipping activity will occur on site.

We trust this is of some assistance, please do not hesitate to contact us if you have any further questions.

Kind Regards,

Gene Hopkins
BE Hons (ECE)
Acoustic Engineer
Acoustic Engineering Services

PO Box 2493
Wakatipu 9349
Ph 03 4423466
Fax 03 4423469
Email admin@ascl.co.nz

C:\Aurum Dropbox\Aurum Survey Dropbox\Jobs\4900\Q_4924__Pinnacles Development\Documents\4924L-2-Height review.doc

5 July 2021

Pinnacles Development
Atley Road
Arthurs Point
Queenstown

Attention: Shane Fairmaid

Email: shanef@momentumprojects.co.nz

Dear Shane

PINNALCES DEVELOPMENT - ATLEY ROAD – ARTHURS POINT

HEIGHT REVIEW

I have reviewed the height limits shown on the Foley Group plans as attached.

I conclude the proposed dwellings comply with the maximum height control of 7m for the site.

You will note there are some differences in the depiction of original ground and the associated height limit on some of the cross sections. This is a result of the location of the cross sections provided by Foley Group differing from my manual review. It is apparent the Foley designs have been undertaken with the correct attention to the maximum building height using a 3D model approach. Given the comprehensive 3D approach their example cross sections are less important, and so do not always show the worst case scenario.

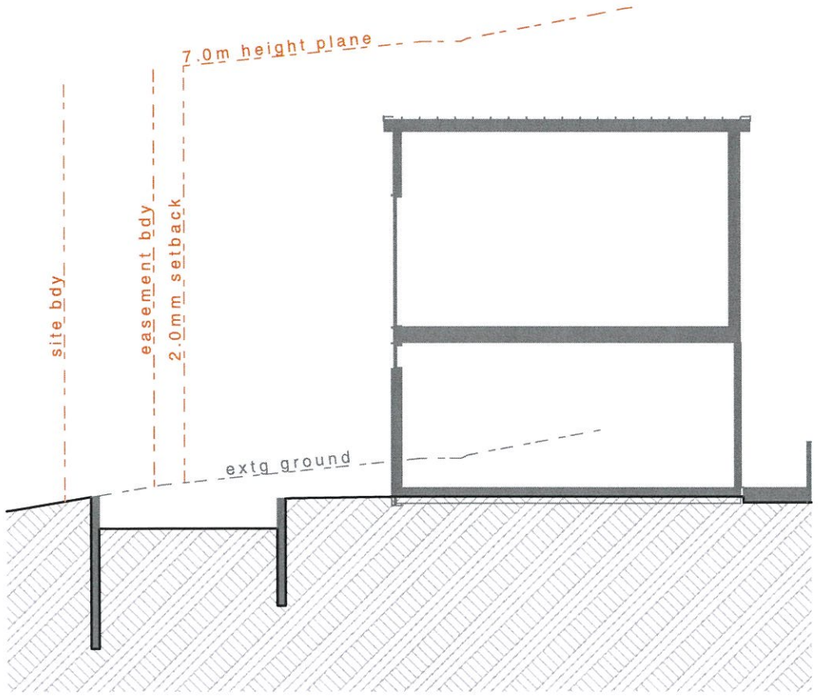
I have analysed the worst case position on the proposed dwellings and conclude the dwellings comply. It can be said that I am in agreement with the Foley cross sections where they are coincident with my review.

Yours faithfully
Aurum Survey Consultants

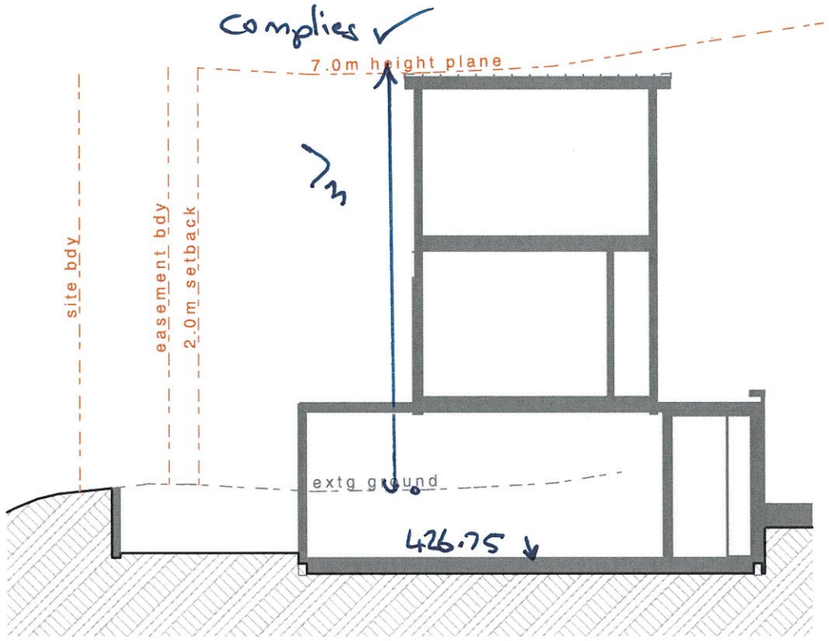
Bruce McLeod
Registered Professional Surveyor
Mobile 027-418 2104
email: bmcleod@ascl.co.nz

cc: Scott Freeman: scott@southernplanning.co.nz,

1:103



RP01



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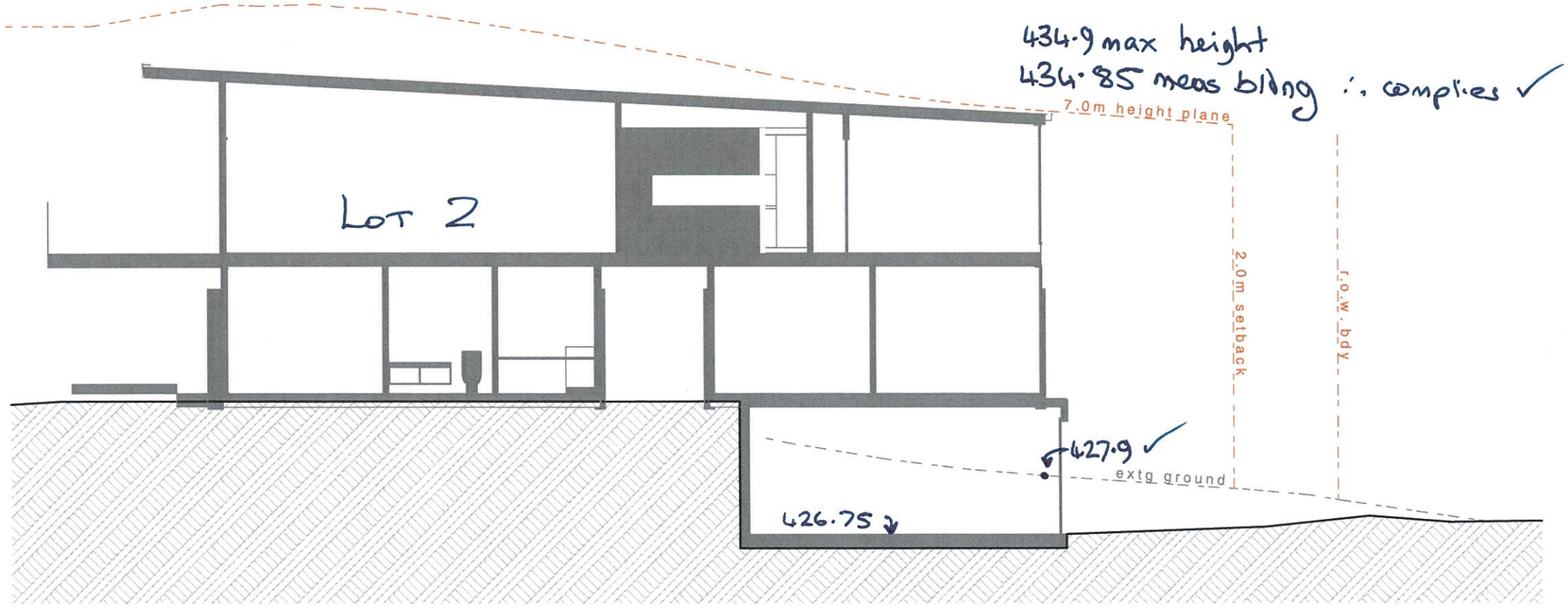


RP03

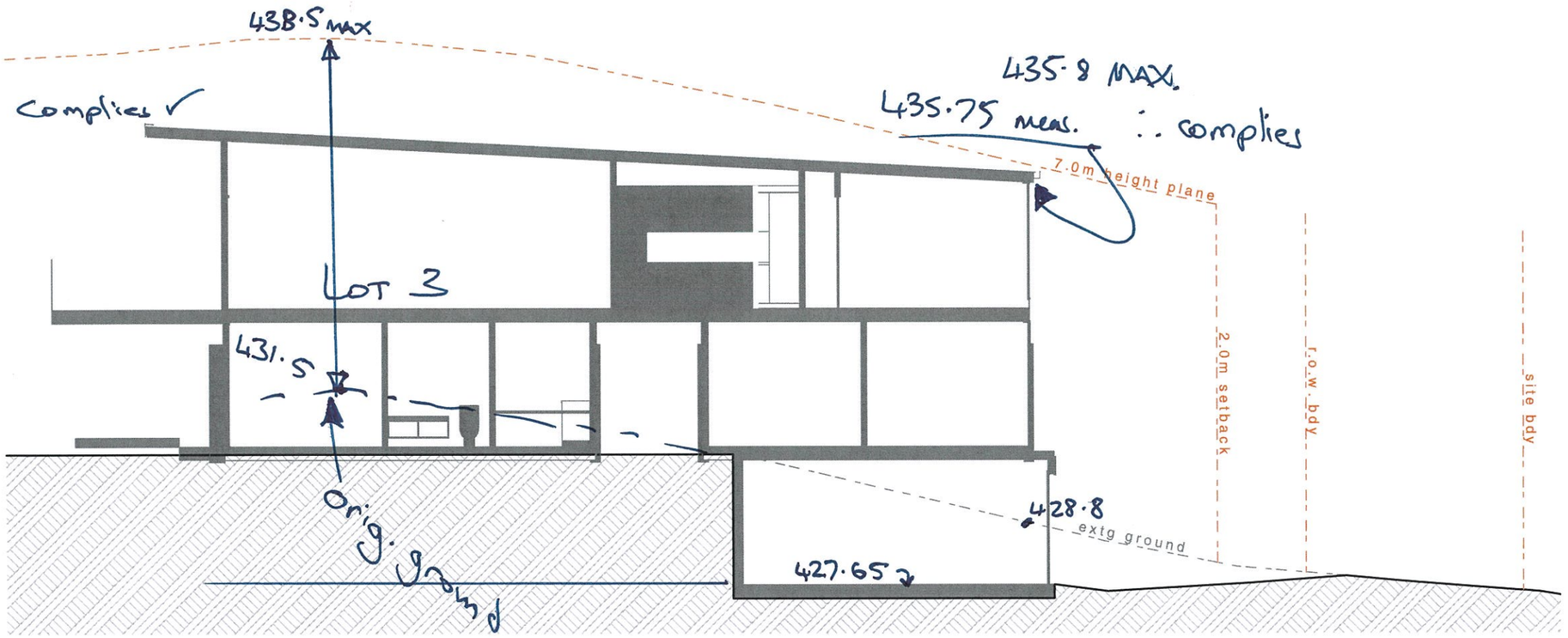
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

recession plane sections: RP01 _ RP03

03 377 5666 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22.166 | christchurch 8140

RC.09
scale: 1:100
21/12/2020



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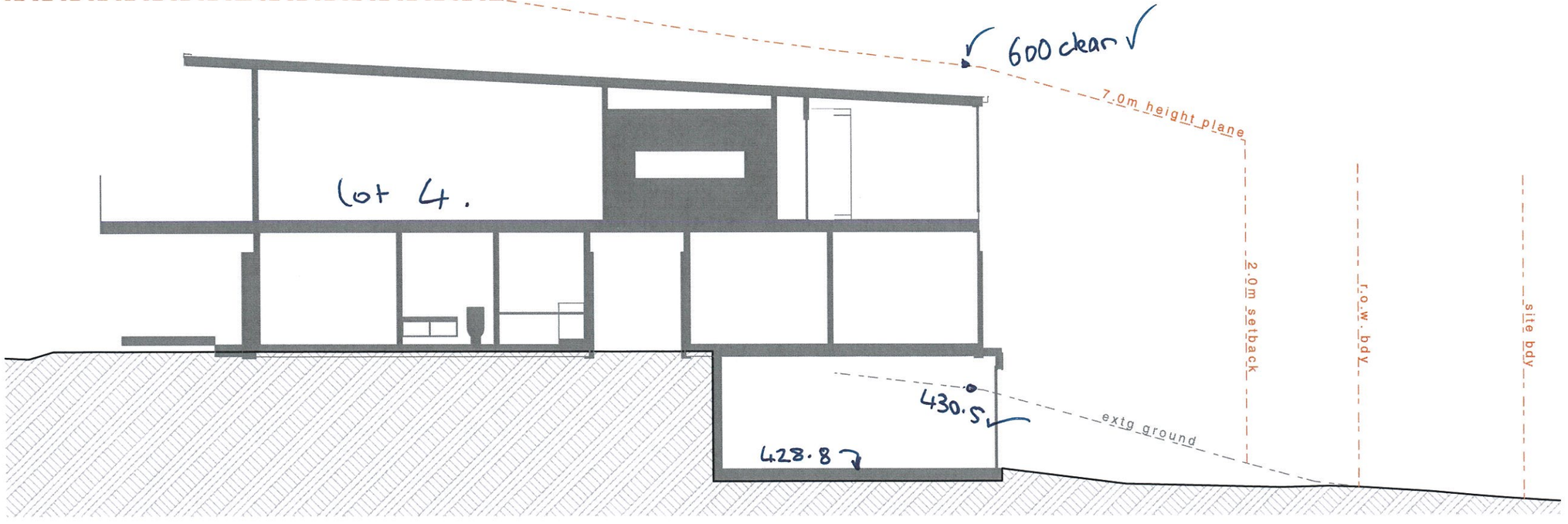
RP04



RP05

FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

recession plane sections: RP04 _ RP05

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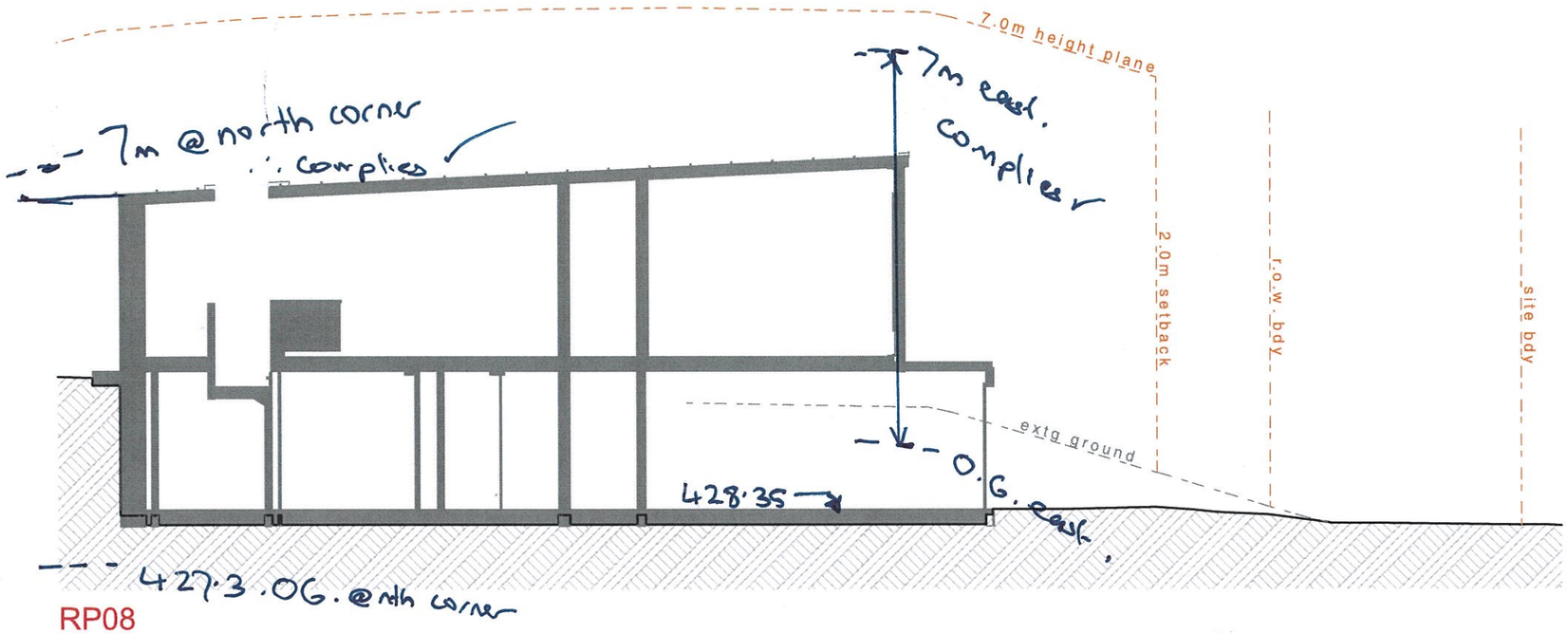
21/12/2020



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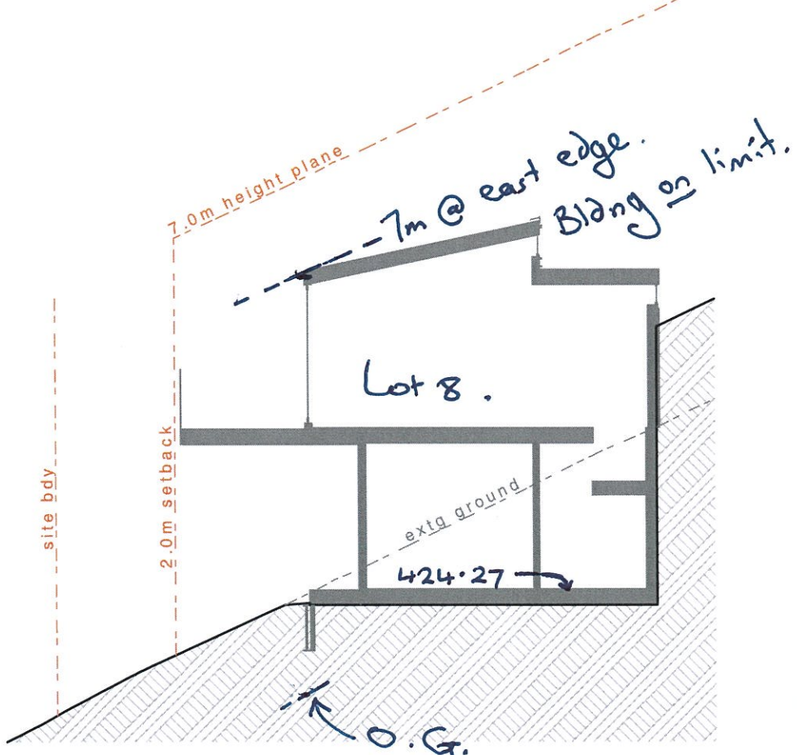

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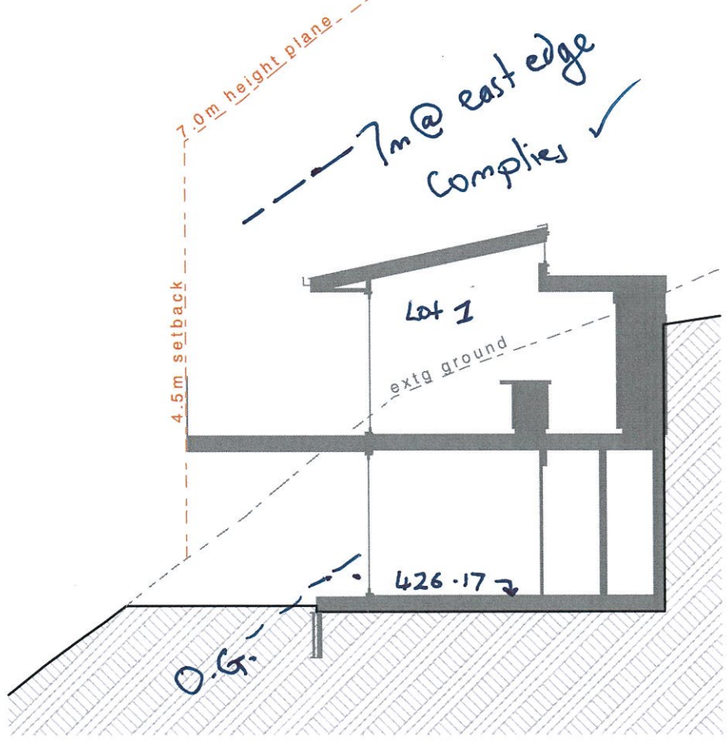


RP10

2928 | Canyon Ridge | Momentum Projects

recession plane sections: RP08 _ RP10

03 377 5666 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22.166 | christchurch 8140

RC.12
scale: 1:100
21/12/2020

AFFECTED PERSON'S APPROVAL

FORM 8A

Resource Management Act 1991 Section 95

QUEENSTOWN LAKES DISTRICT COUNCIL

RESOURCE CONSENT APPLICANT'S NAME AND/OR RM

Canyon Ridge Villas Limited

AFFECTED PERSON'S DETAILS

~~I~~/We Canyon Ridge Limited

Are the owners/~~occupiers~~ of

~~Lot 1~~ DP 411983 AGS.

Lot 2 [signature]

DETAILS OF PROPOSAL

~~I~~/We hereby give written approval for the proposal to:

To construct eight residential units and then undertake a staged subdivision.

at the following subject site(s):

~~Lot 1~~ DP 411983

Lot 2 [signature] AGS.

☑ PLEASE TICK ~~I~~/We understand that by signing this form Council, when considering this application, will not consider any effects of the proposal upon ~~me~~/us.

☑ PLEASE TICK ~~I~~/We understand that if the consent authority determines the activity is a deemed permitted boundary activity under section 87BA of the Act, written approval cannot be withdrawn if this process is followed instead.

WHAT INFORMATION/PLANS HAVE YOU SIGHTED

☑ PLEASE TICK ~~I~~/We have sighted and initialled ALL plans dated and approve them. 21/12/20

[signature] AGS.

APPROVAL OF AFFECTED PERSON(S)

The written consent of all owners /~~occupiers~~ who are affected. If the site that is affected is jointly owned, the written consent of all co-owners (names detailed on the title for the site) are required.

A

Name (PRINT)
Anthony Schluter — Anthony Joseph SCHLUTER.

Contact Phone / Email address
09 4087021 — 548 PEKERAU ROAD R.D.3 KAITAIA 0483 N.Z.

Signature
A.J. Schluter.

Date
22-1-21

B

Name (PRINT)
Eileen Schluter — Eileen Margaret SCHLUTER

Contact Phone / Email address
09 4087021 — 548 Pekerau Road RD3 Kaitaia 0483

Signature
E.M. Schluter

Date
22. 1. 21

C

Name (PRINT)

Contact Phone / Email address

Signature

Date

D

Name (PRINT)

Contact Phone / Email address

Signature

Date

Note to person signing written approval

Conditional written approvals cannot be accepted.
There is no obligation to sign this form, and no reasons need to be given.
If this form is not signed, the application may be notified with an opportunity for submissions.
If signing on behalf of a trust or company, please provide additional written evidence that you have signing authority.

Queenstown Lakes District Council
Private Bag 50072, Queenstown 9348
Gorge Road, Queenstown 9300

P: 03 441 0499
E: resourceconsent@qldc.govt.nz
www.qldc.govt.nz

canyon ridge

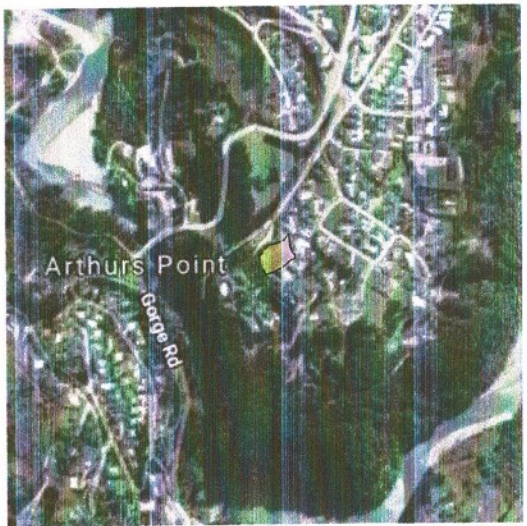
resource consent set

atley road
arthurs point

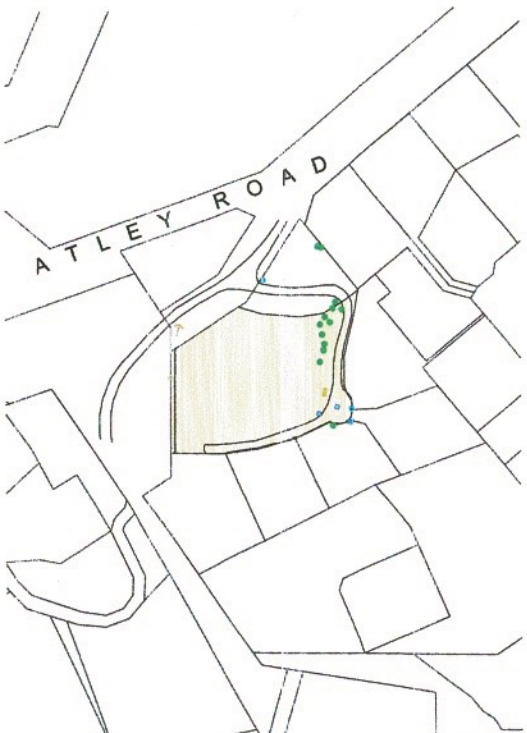
sheet	drawing
RC.01	plan: existing site & location
RC.02	plan: proposed site
RC.03	plan: lower
RC.04	plan: ground
RC.05	plan: first
RC.06	site elevations: north & east
RC.07	site elevations: south & west
RC.08	site sections: A & B
RC.09	recession plane sections: RP01 - RP03
RC.10	recession plane sections: RP04 - RP05
RC.11	recession plane sections: RP06 - RP07
RC.12	recession plane sections: RP08 - RP10
RC.13	unit plans: type A

sheet	drawing
RC.14	unit elevations: type A
RC.15	unit elevations: type AB & AC
RC.16	unit elevations: type AD & AE
RC.17	unit plans: type B
RC.18	unit elevations: type B
RC.19	unit plans: type C
RC.20	unit elevations: type C
RC.21	unit plans: type D
RC.22	unit elevations: type D
RC.23	3d view: south boundary
RC.24	3d view: northwest boundary
RC.25	3d view: north boundary

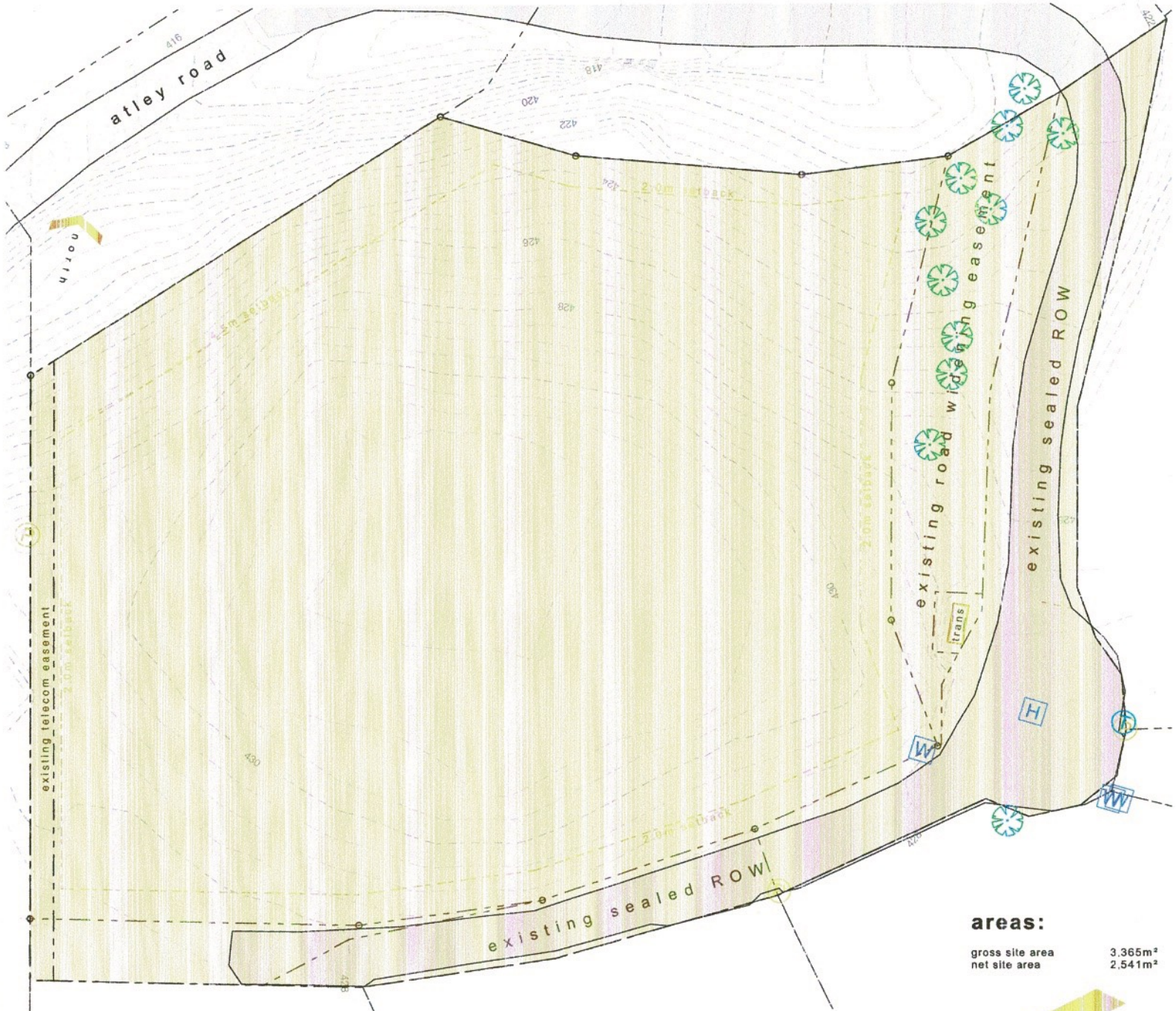
FOLEYGROUP



site & location scale 1 : 10000



site & location 1:2000



areas:

gross site area	3,365m²
net site area	2,541m²

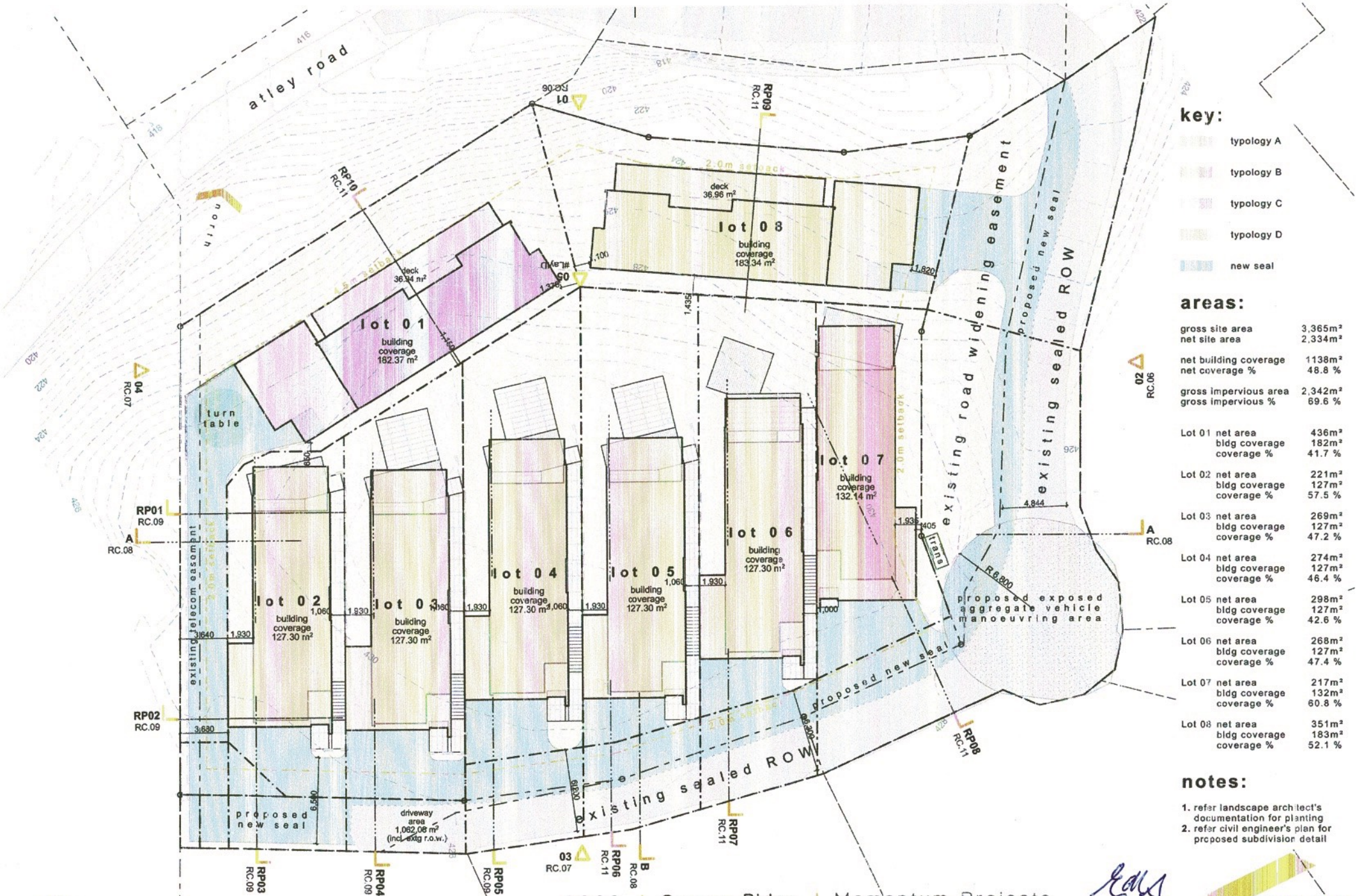
FOLEYGROUP architecture

2928 | Canyon Ridge | Momentum Projects

plan: existing site & location

03 377 5666 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.166 | christchurch 8140

RC.01
scale: 1:250
21/12/2020



key:

- typology A
- typology B
- typology C
- typology D
- new seal

areas:

gross site area	3,365m²
net site area	2,334m²
net building coverage	1138m²
net coverage %	48.8 %
gross impervious area	2,342m²
gross impervious %	69.6 %
Lot 01 net area	436m²
bldg coverage	182m²
coverage %	41.7 %
Lot 02 net area	221m²
bldg coverage	127m²
coverage %	57.5 %
Lot 03 net area	269m²
bldg coverage	127m²
coverage %	47.2 %
Lot 04 net area	274m²
bldg coverage	127m²
coverage %	46.4 %
Lot 05 net area	298m²
bldg coverage	127m²
coverage %	42.6 %
Lot 06 net area	268m²
bldg coverage	127m²
coverage %	47.4 %
Lot 07 net area	217m²
bldg coverage	132m²
coverage %	60.8 %
Lot 08 net area	351m²
bldg coverage	183m²
coverage %	52.1 %

notes:

1. refer landscape architect's documentation for planting
2. refer civil engineer's plan for proposed subdivision detail

FOLEYGROUP architecture

2928 | Canyon Ridge | Momentum Projects

plan: proposed site

RC02
scale: 1250
21/12/2020

03 377 5888 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8140

key:

- typology A
- typology B
- typology C
- typology D

FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

plan: lower

RC03
scale: 1:250
21/12/2020

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.168 | christchurch 8140

key:

- typology A
- typology B
- typology C
- typology D

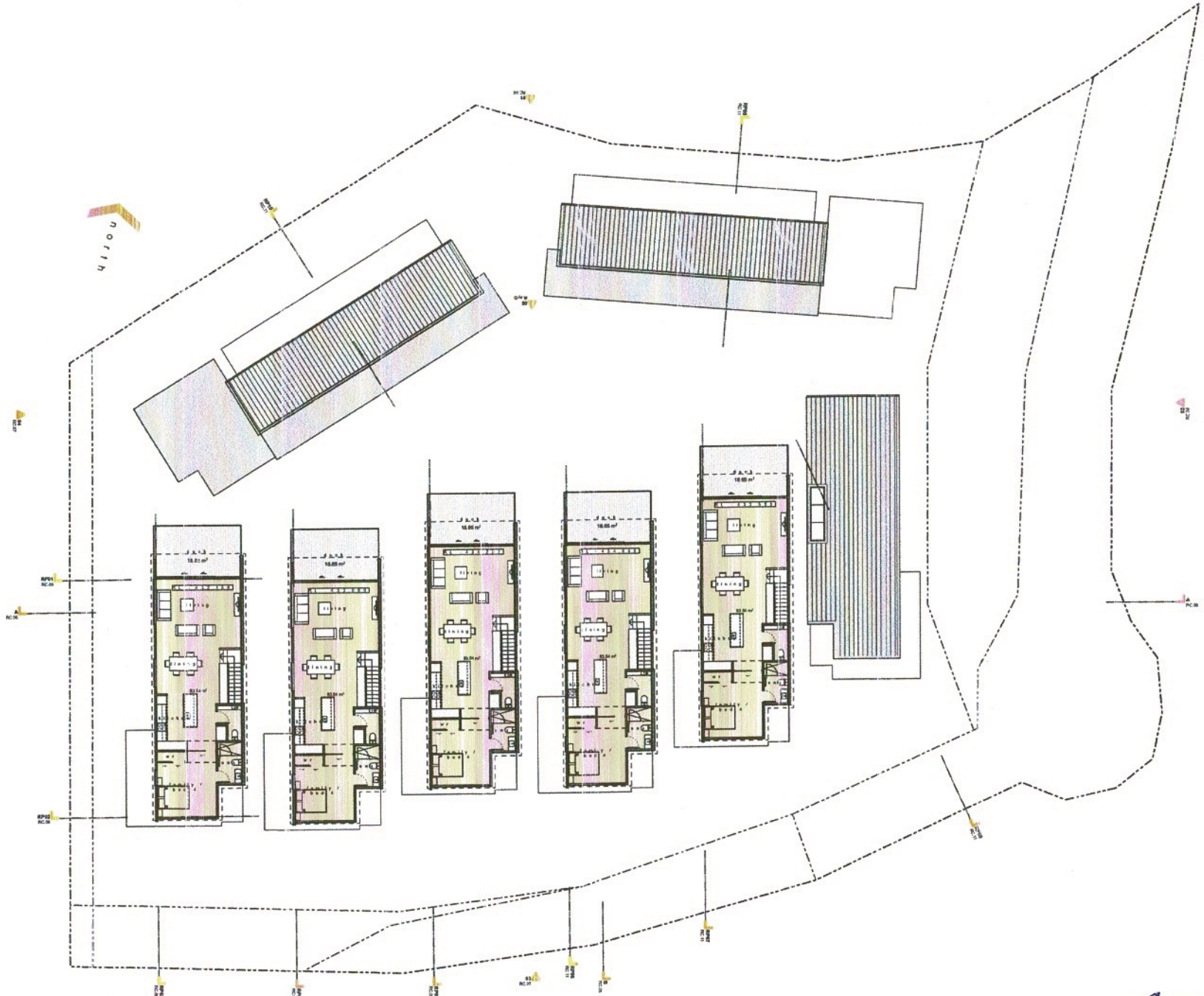
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

plan: ground

03 377 5866 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch

RC04
scale: 1:250
21/12/2020



key:

- typology A
- typology B
- typology C
- typology D

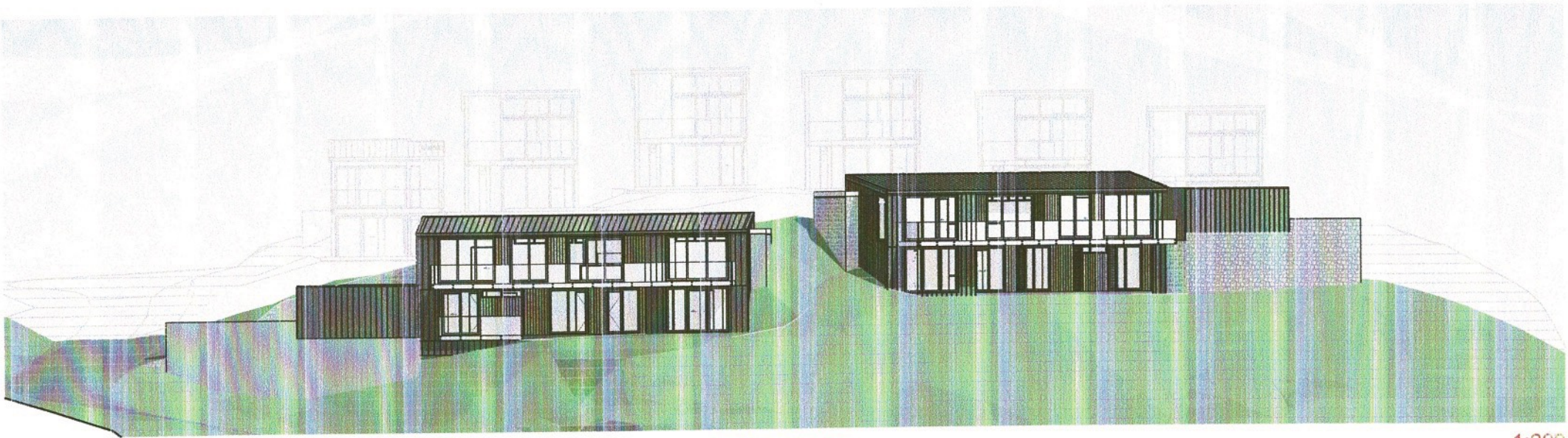
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

plan: first

RC05
scale: 1:250
21/12/2020

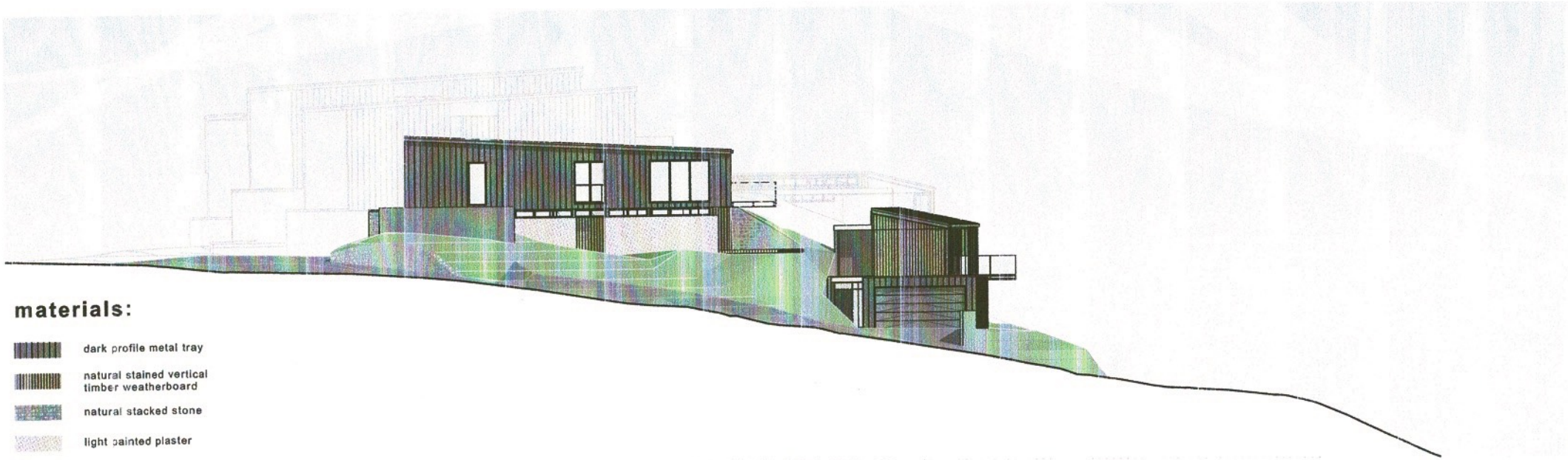
03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.188 | christchurch 8140



EN

north elevation

1:200



materials:

- dark profile metal tray
- natural stained vertical timber weatherboard
- natural stacked stone
- light painted plaster

EE

east elevation

1:200

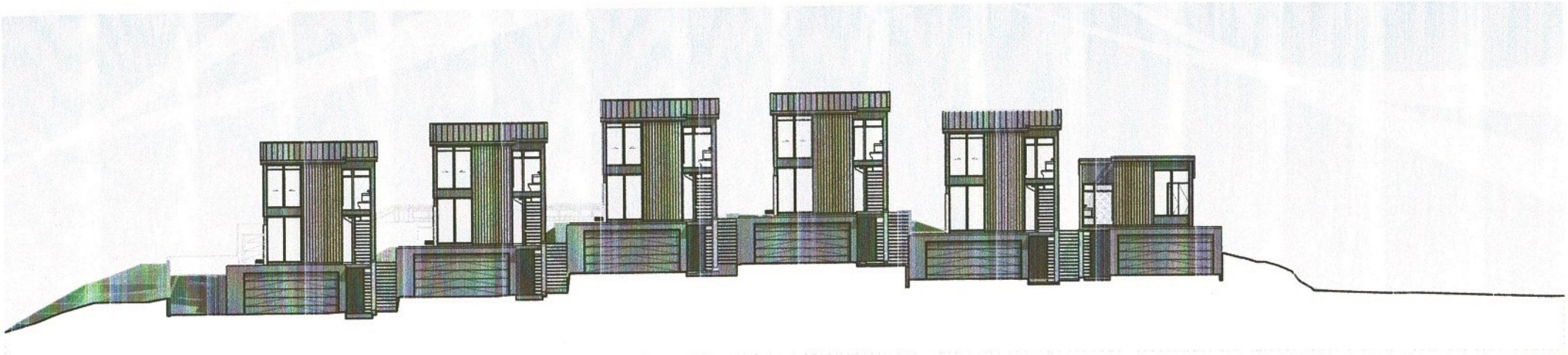
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

site elevations: north & east

03 377 5666 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.188 | christchurch 8140

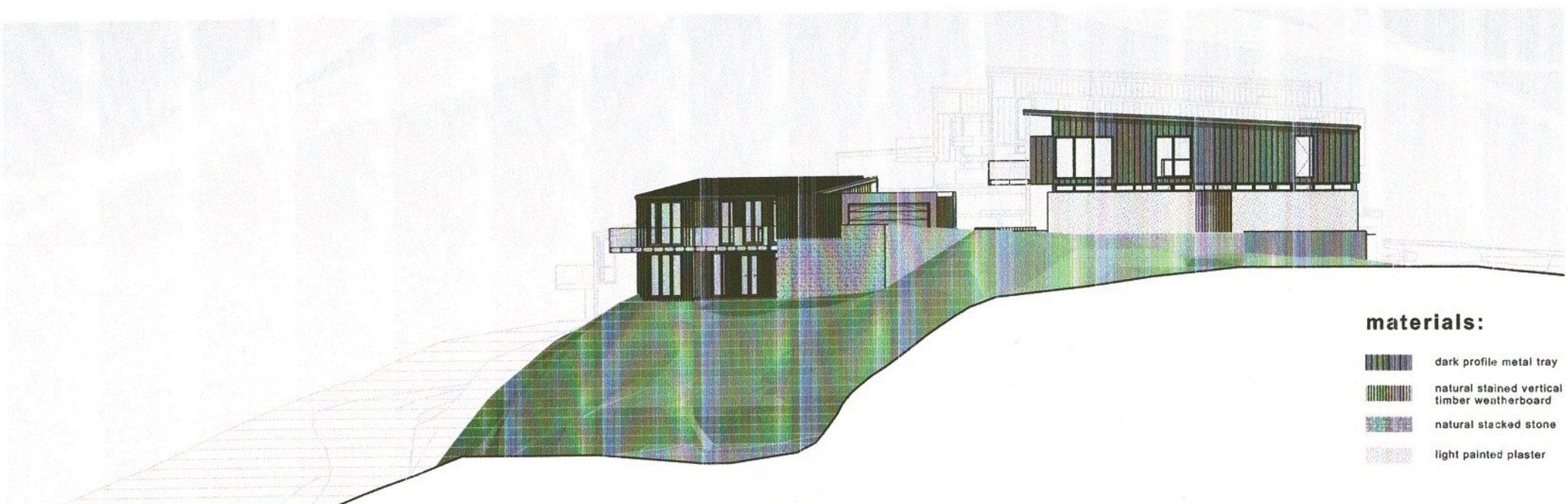
RC06
scale: 1:200
21/12/2020



ES

south elevation

1:200



EW

west elevation

1:200

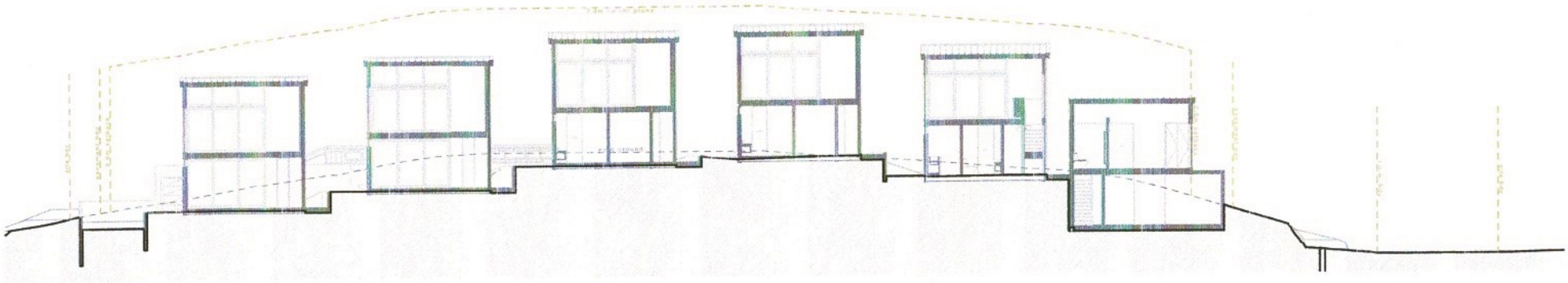
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

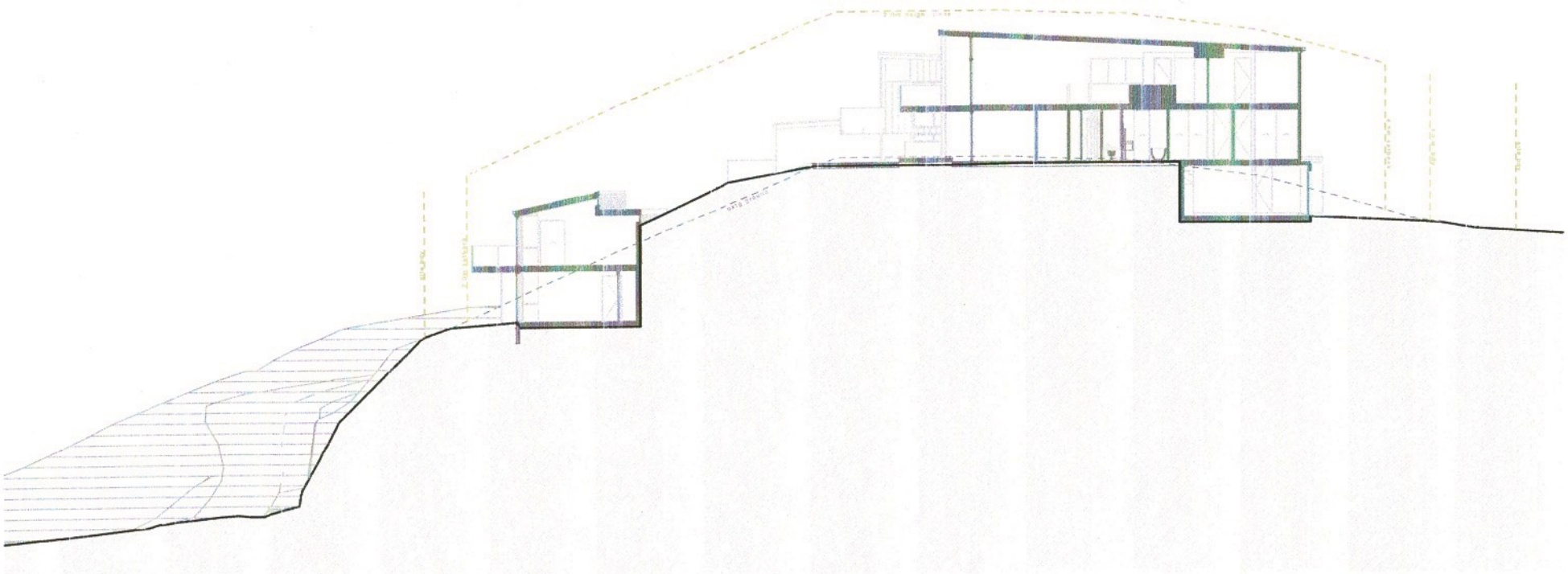
site elevations: south & west

03 377 5888 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8140

RC.07
scale: 1:200
21/12/2020



section A: across site



section B: through site

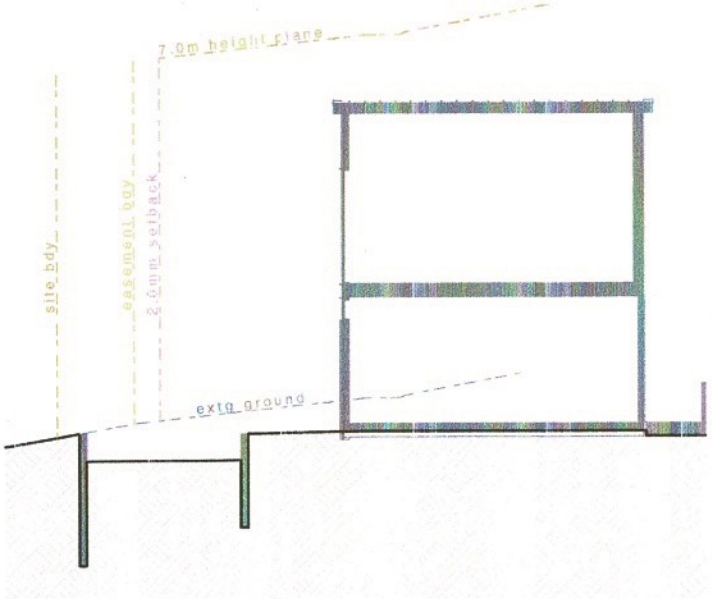
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

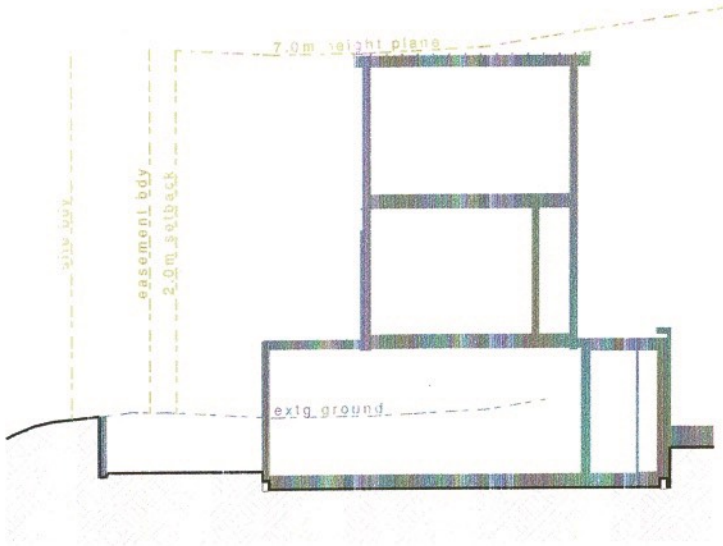
site sections: A & B

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.166 | christchurch 8141

RC08
scale: 1:200
21/12/2020



RP01



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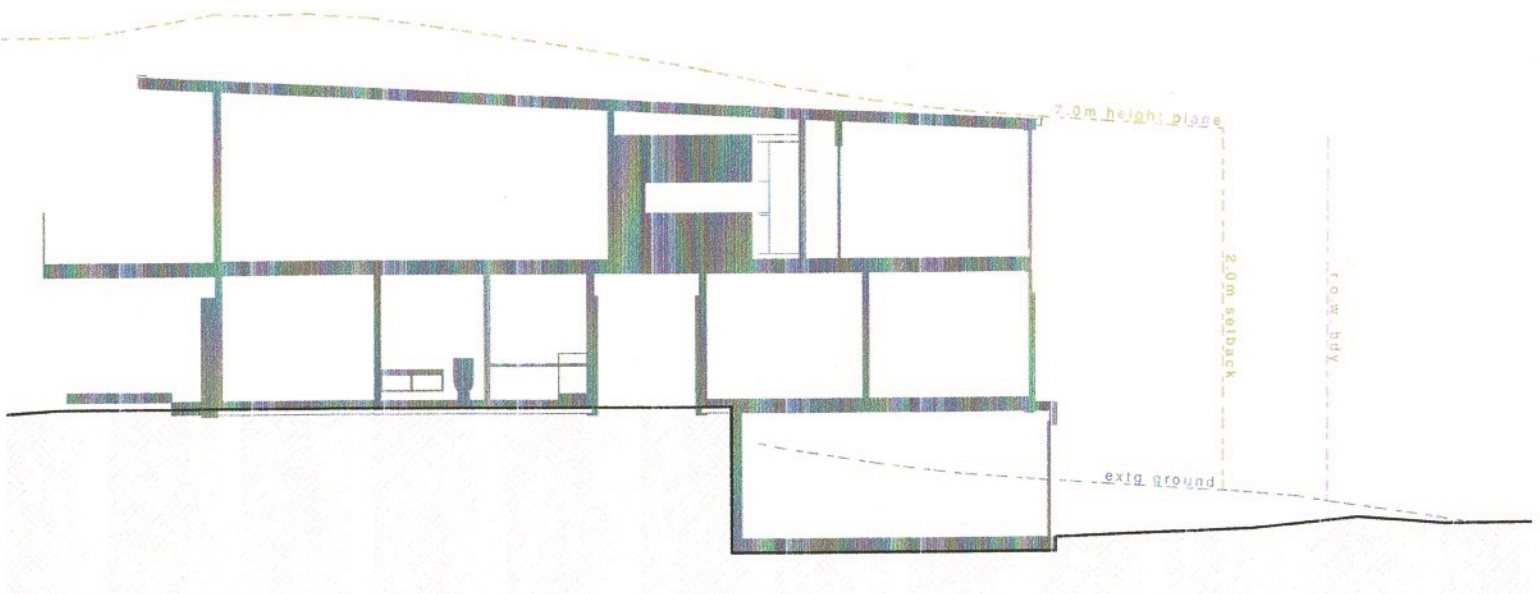


RP03

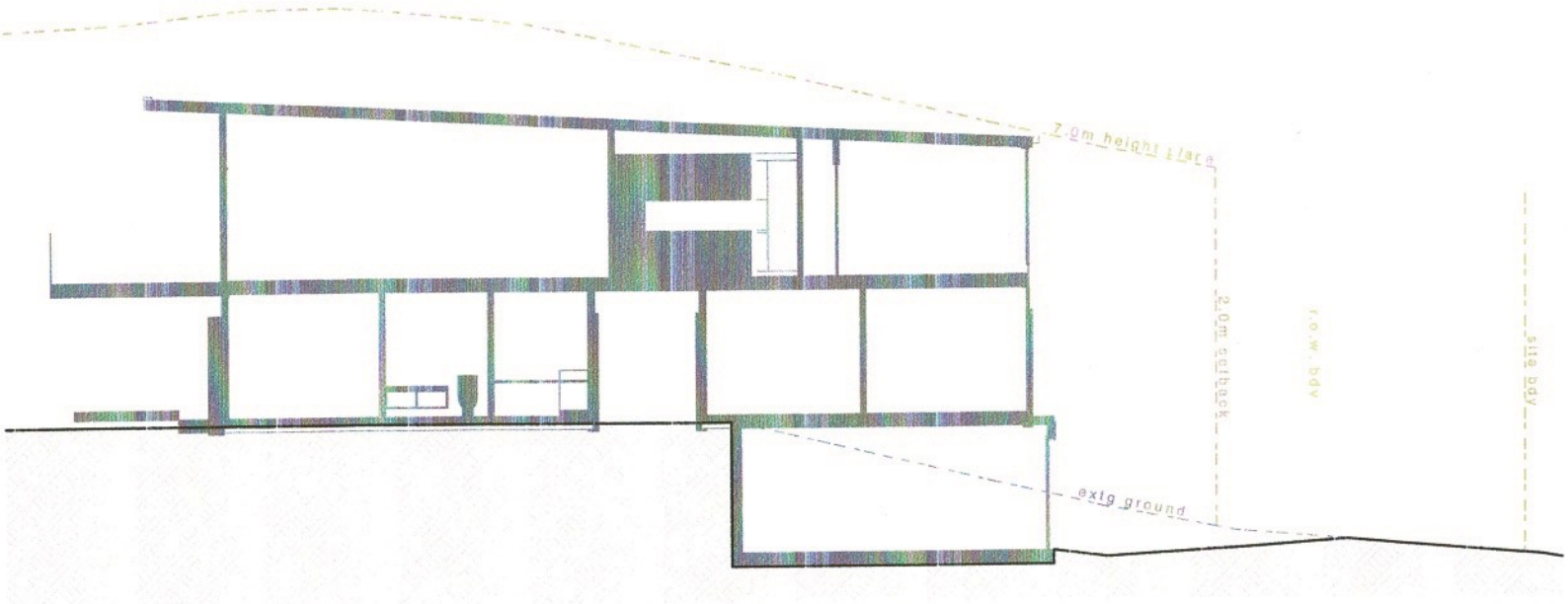
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

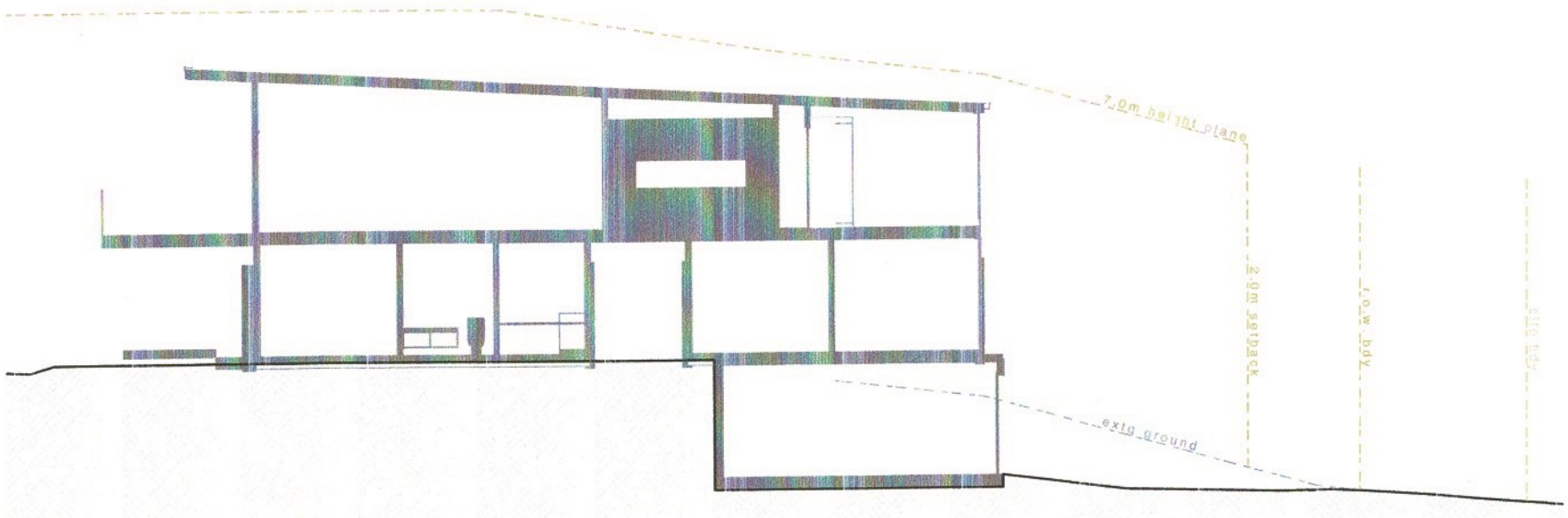
recession plane sections: RP01 _ RP03

03 377 5886 | info@foleygroup.co.nz www.foleygroup.co.nz | 30 southwark st po box 22 166 christchurch 8140

RC.09
scale: 1:100
21/12/2020



RP04



RP05

FOLEYGROUP
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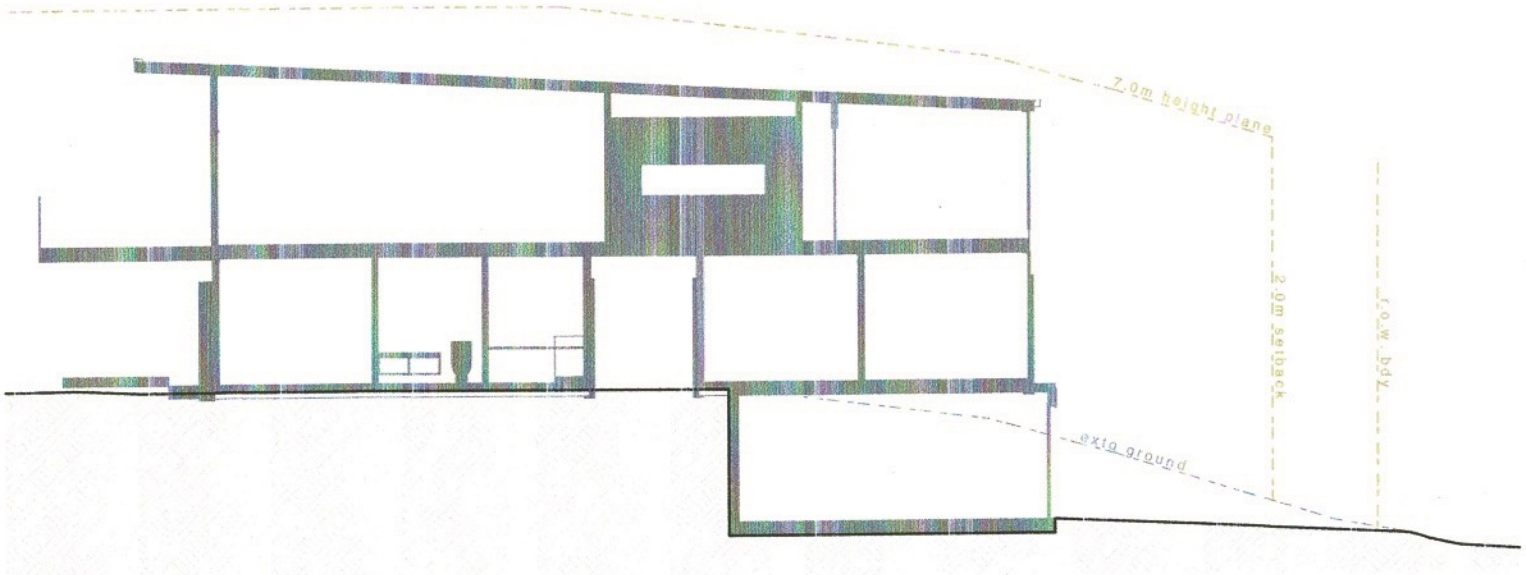
2928 | Canyon Ridge | Momentum Projects

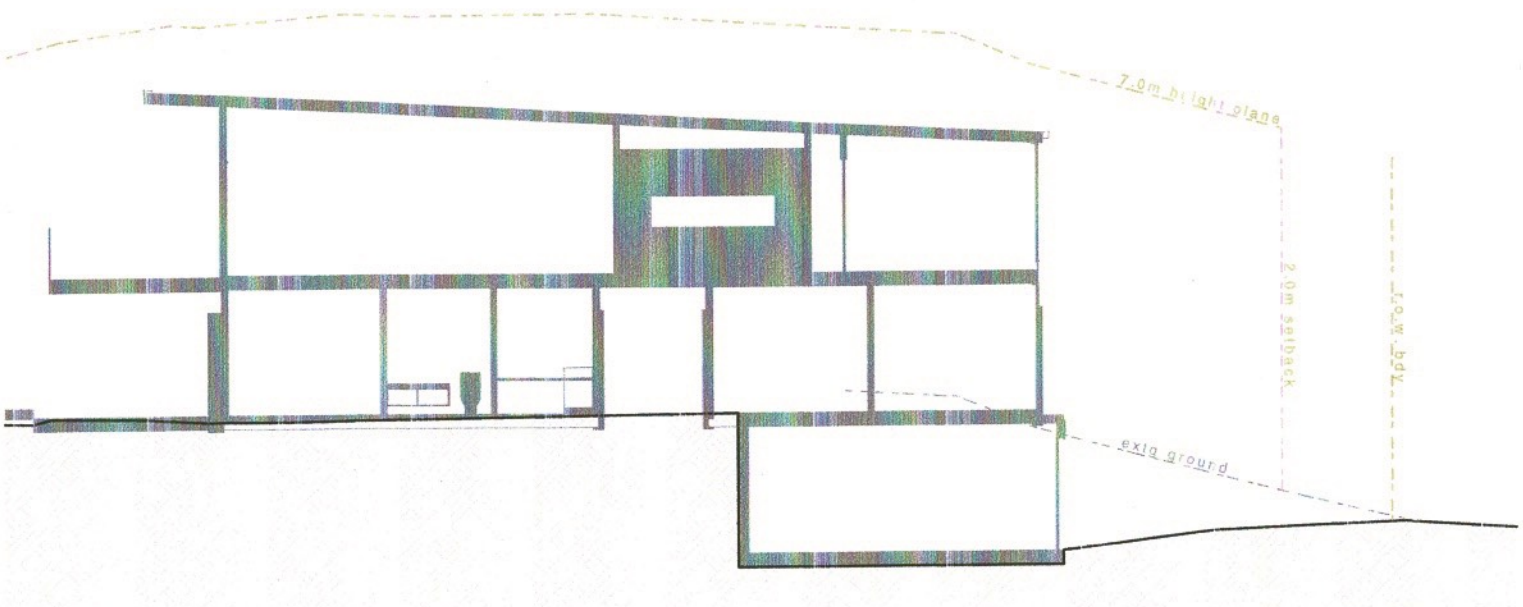
recession plane sections: RP04 _ RP05

03 377 5666 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8140

RC.10
scale: 1:100
21/12/2020



RP06



RP07

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architecture

2928 | Canyon Ridge | Momentum Projects

recession plane sections: RP06 _ RP07

03 377 5866 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22.168 | christchurch 8140

RC.11
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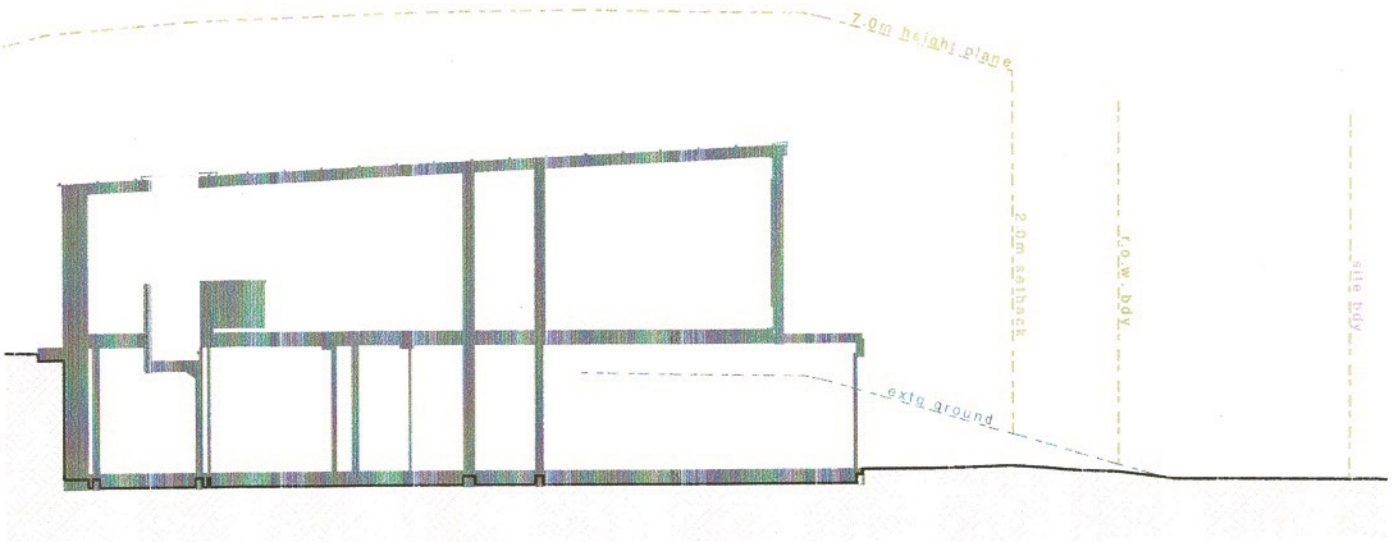
21/12/2020



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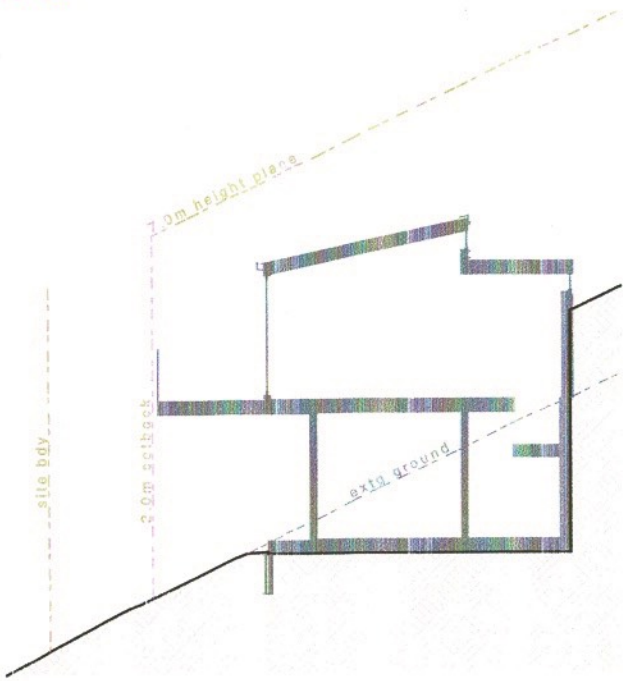
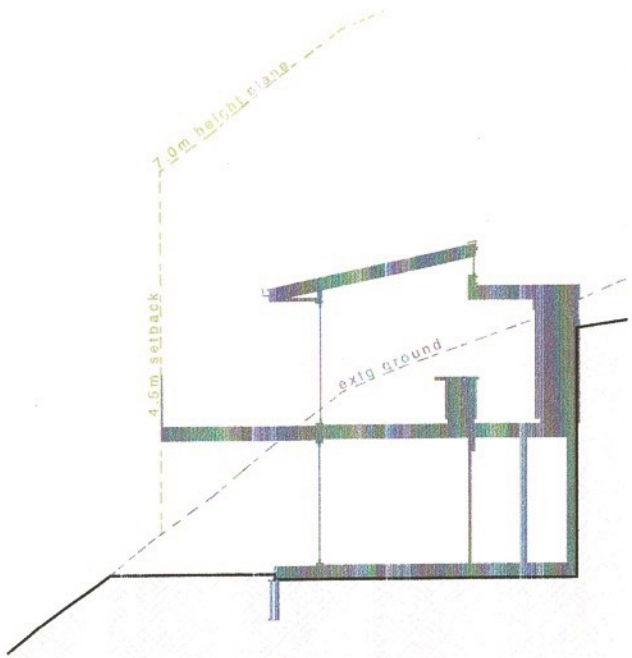


RP09



RP10

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architecture

2928 | Canyon Ridge | Momentum Projects

recession plane sections: RP08 _ RP10

03 377 5668 | info@foleygroupconz | www.foleygroupconz | 30 southwark st po box 22 188 christchurch 8140

RC.12
scale: 1:100
21/12/2020

RC 13
scale 1:100
21/12/2020

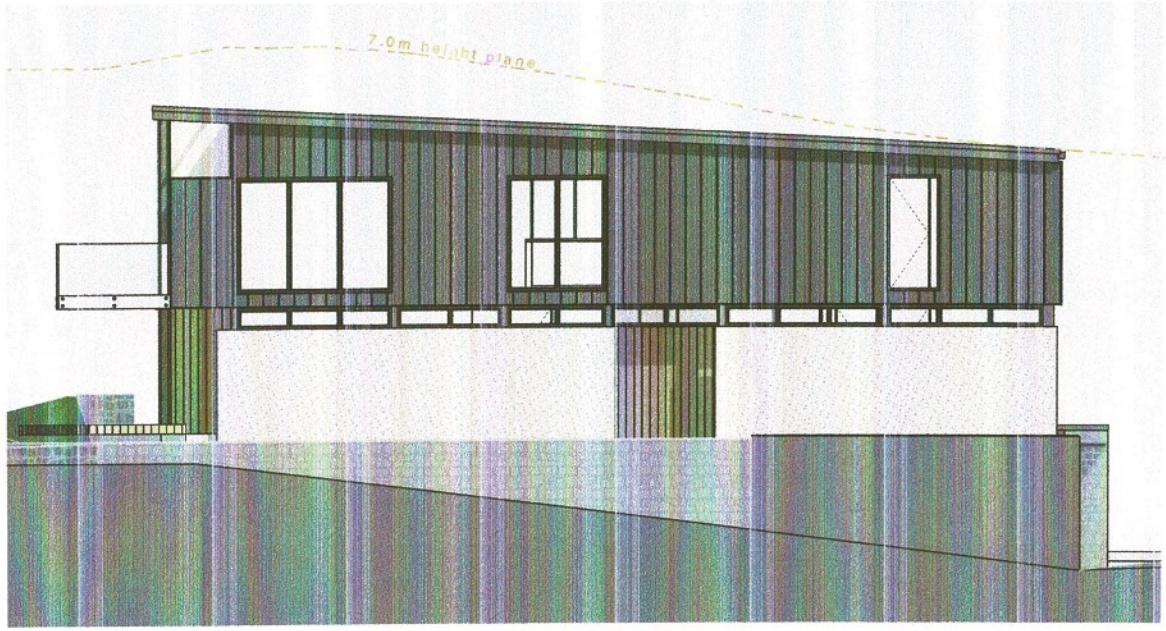
2928 | Canyon Ridge | Momentum Projects

unit plans: type A

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.168 | christchurch 8140

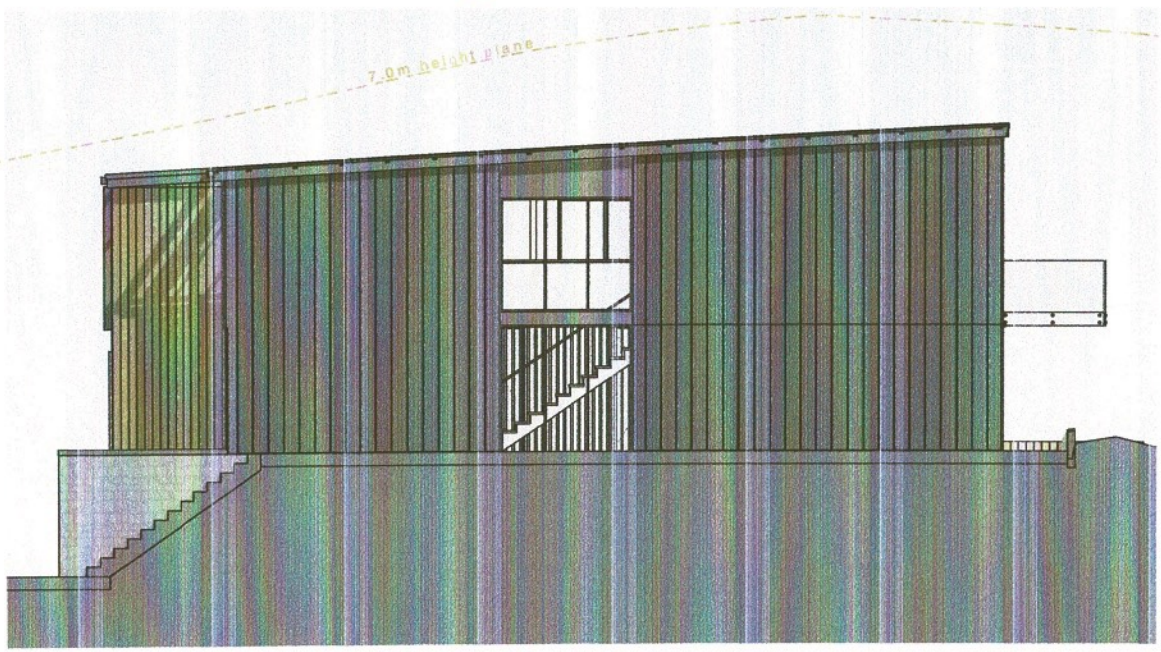
FOLEYGROUP
architecture

A1 type A south elevation



A2 type A west elevation

A3 type A north elevation



A4 type A east elevation

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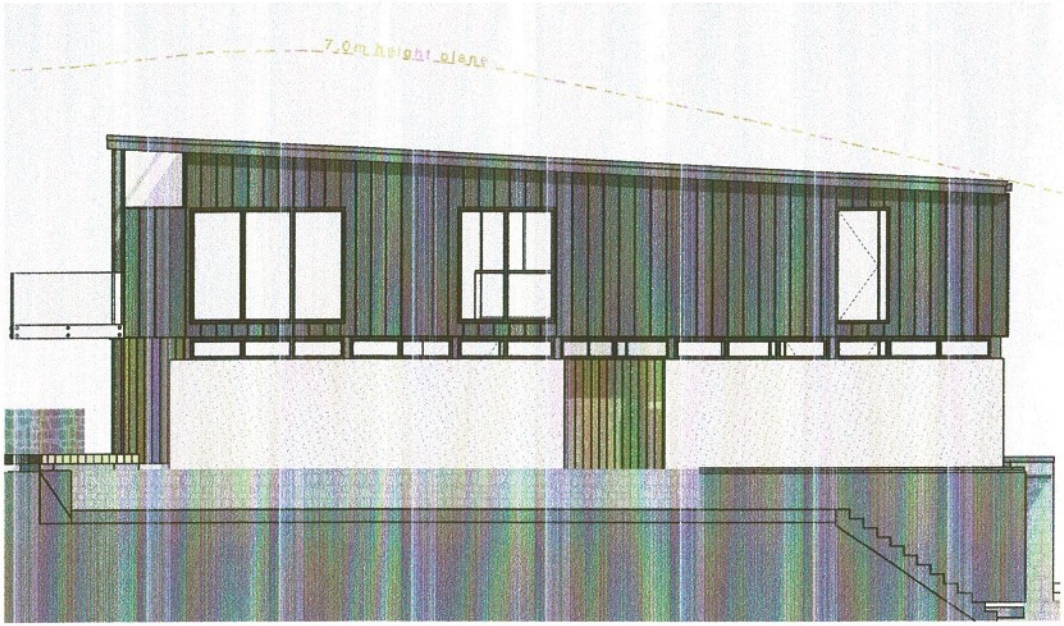
unit elevations: type A

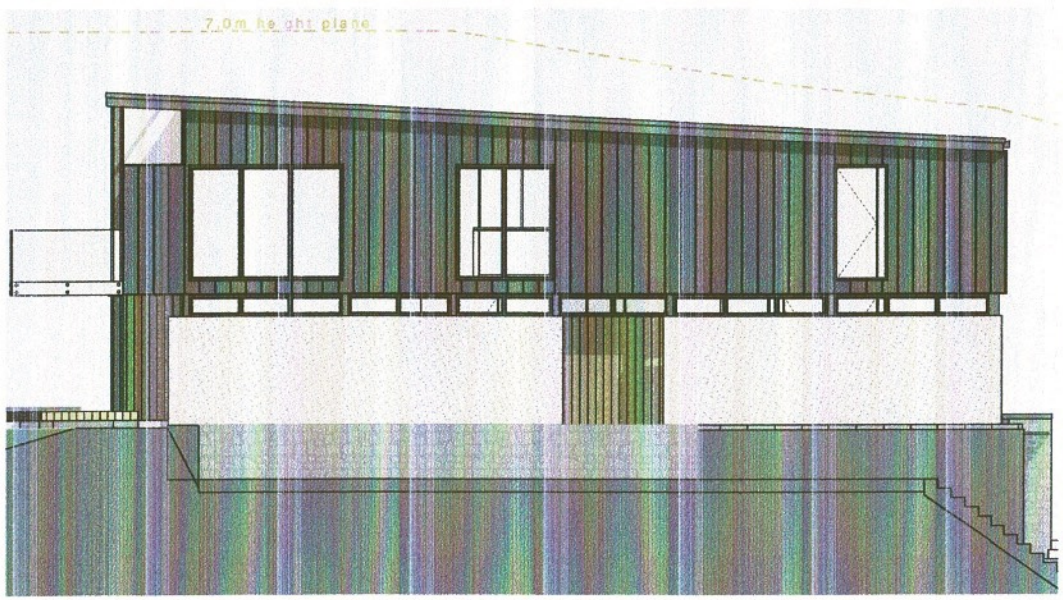
03 377 5666 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22 168 | christchurch 8140

RC 14
scale: 1:100
21/12/2020



AB1 type AB west elevation

AB2 type AB east elevation



AC1 type AC west elevation

AC2 type AC east elevation

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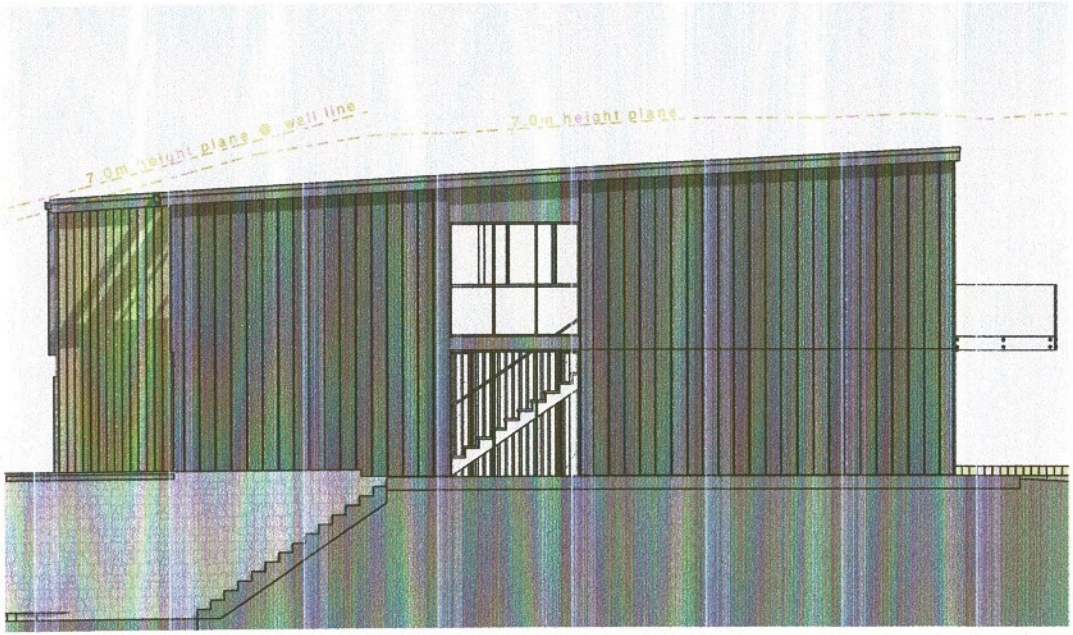
2928 | Canyon Ridge | Momentum Projects

unit elevations: type AB & AC

03 377 5866 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 166 | christchurch 8042

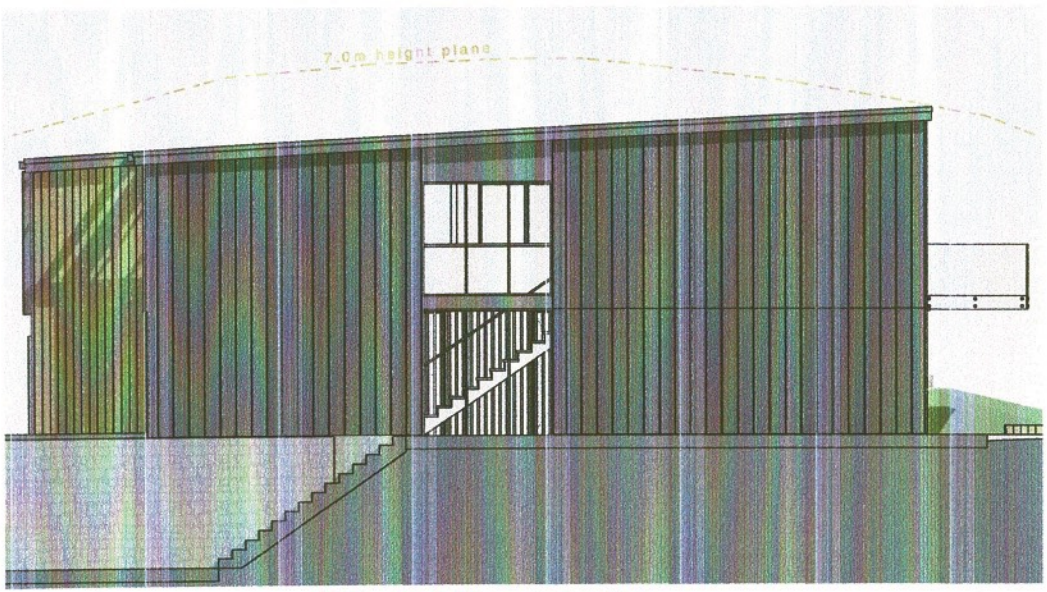
RC.15
scale: 1:100
21/12/2020

AD1 type AD west elevation



AD2 type AD east elevation

AE1 type AE west elevation



AE2 type AE east elevation

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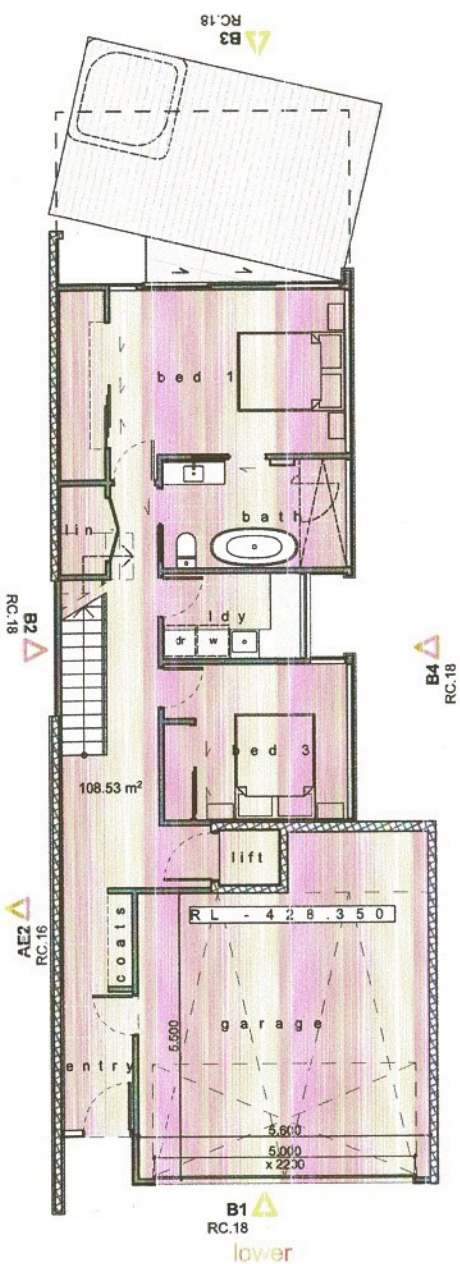
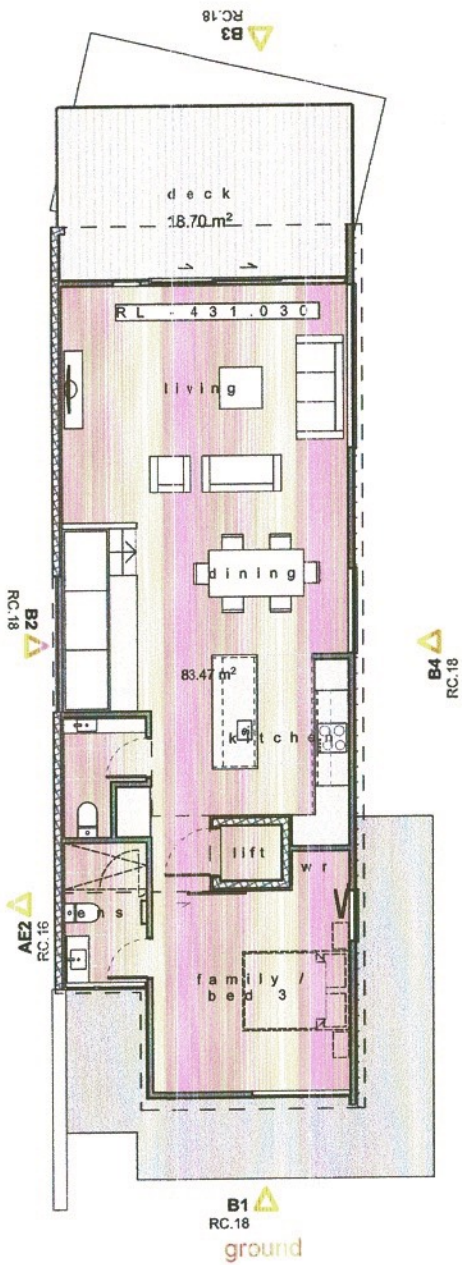
2928 | Canyon Ridge | Momentum Projects

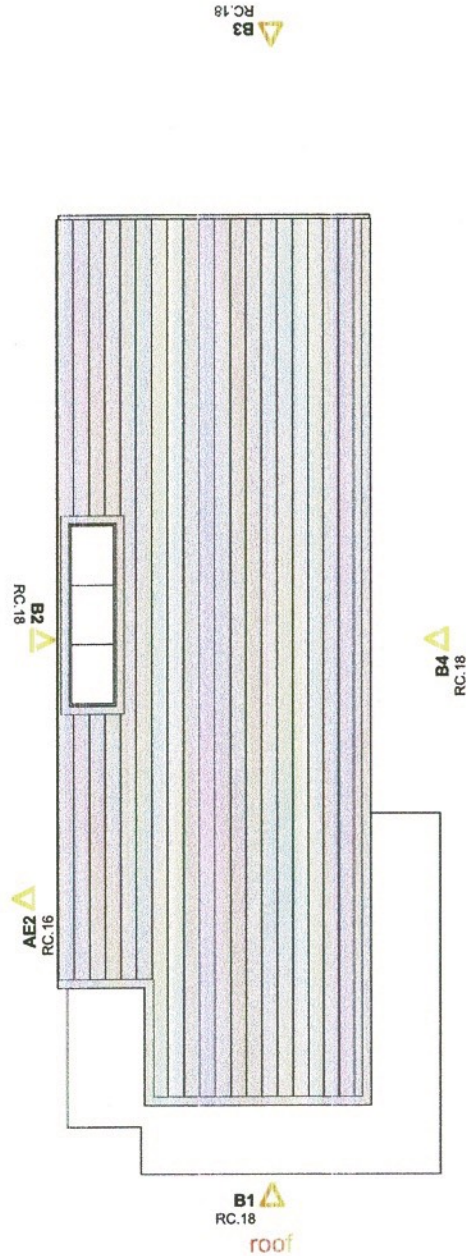
unit elevations: type AD & AE

03 377 5666 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8140

RC.16
scale 1:100
21/12/2020







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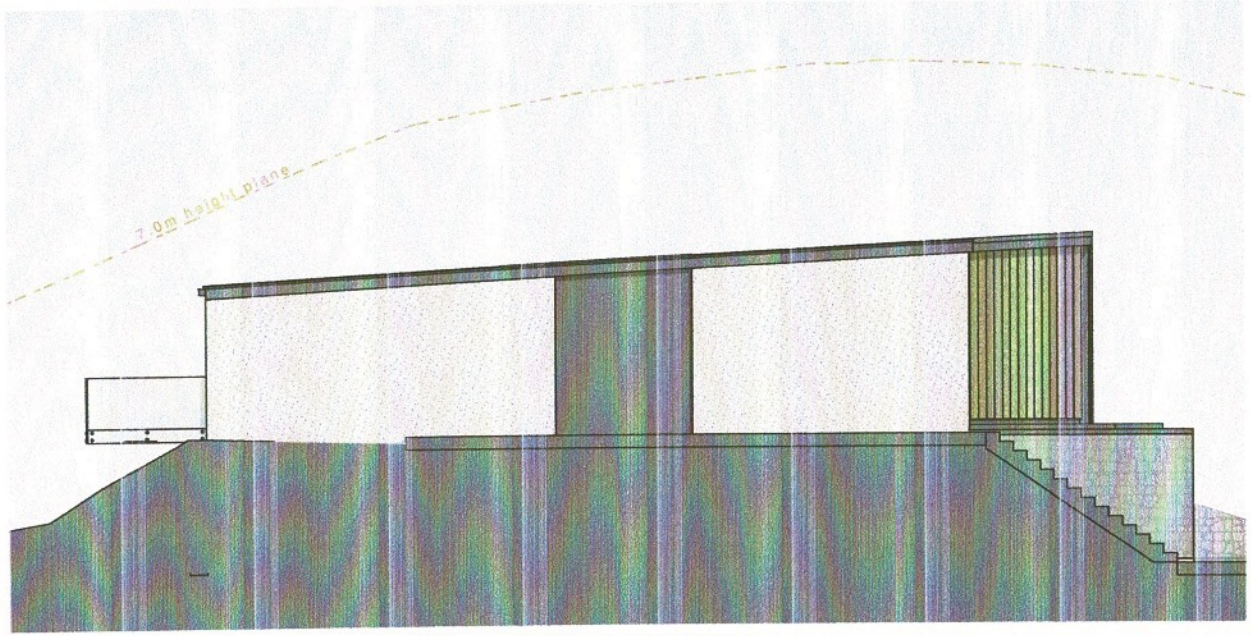
2928 | Canyon Ridge | Momentum Projects

unit plans: type B

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8142

RC.17
scale 1:100
21/12/2020

B1 type B south elevation



B2 type B west elevation

B3 type B north elevation

B4 type B east elevation

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2928 | Canyon Ridge | Momentum Projects

unit elevations: type B

03 377 5868 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22.188 | christchurch 8140

RC.18
scale: 1:100
21/12/2020

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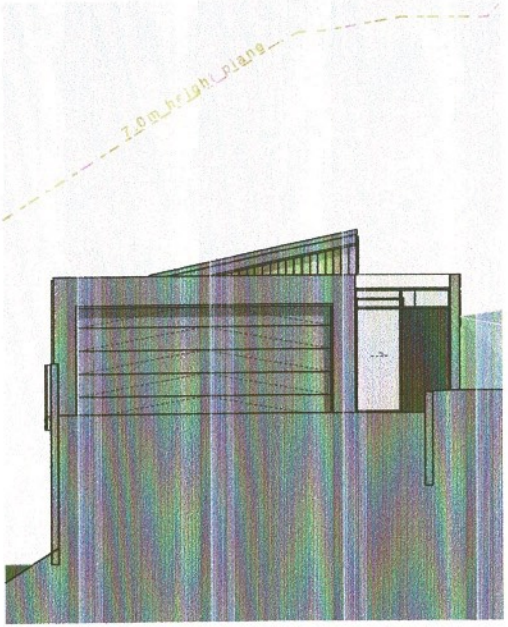
2928 | Canyon Ridge | Momentum Projects

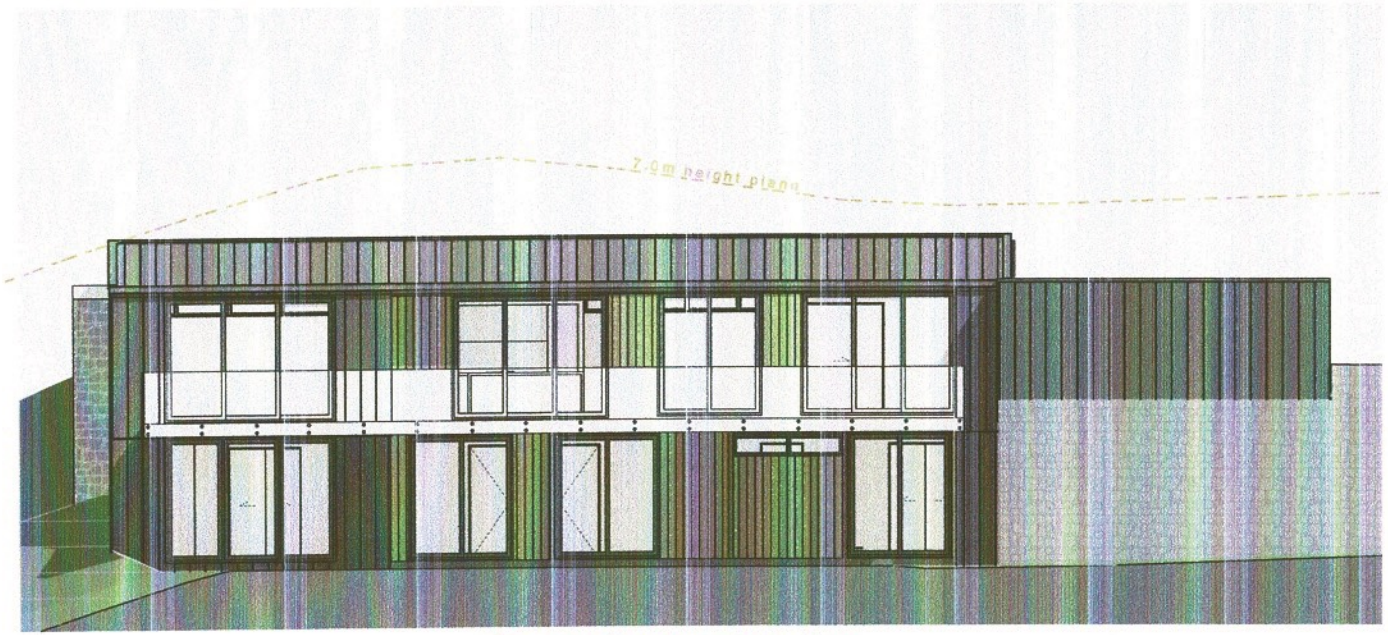
unit plans: type C

03 377 5366 | info@foleygroupconz | www.foleygroupconz | 30 southwark st | po box 22 168 | christchurch 8140

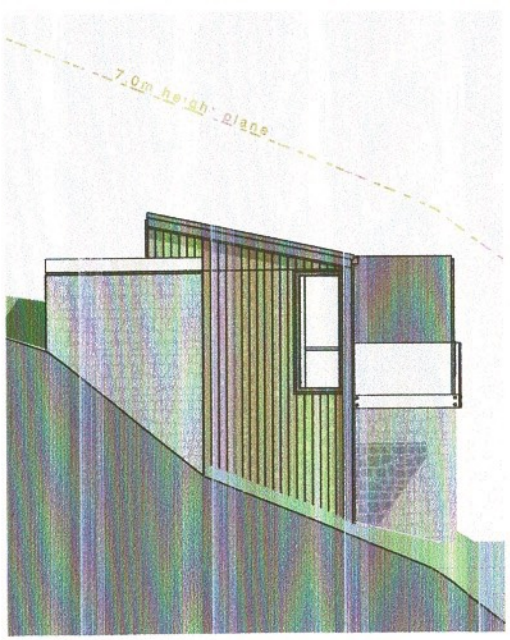
RC.19
scale: 1:100
21/12/2020



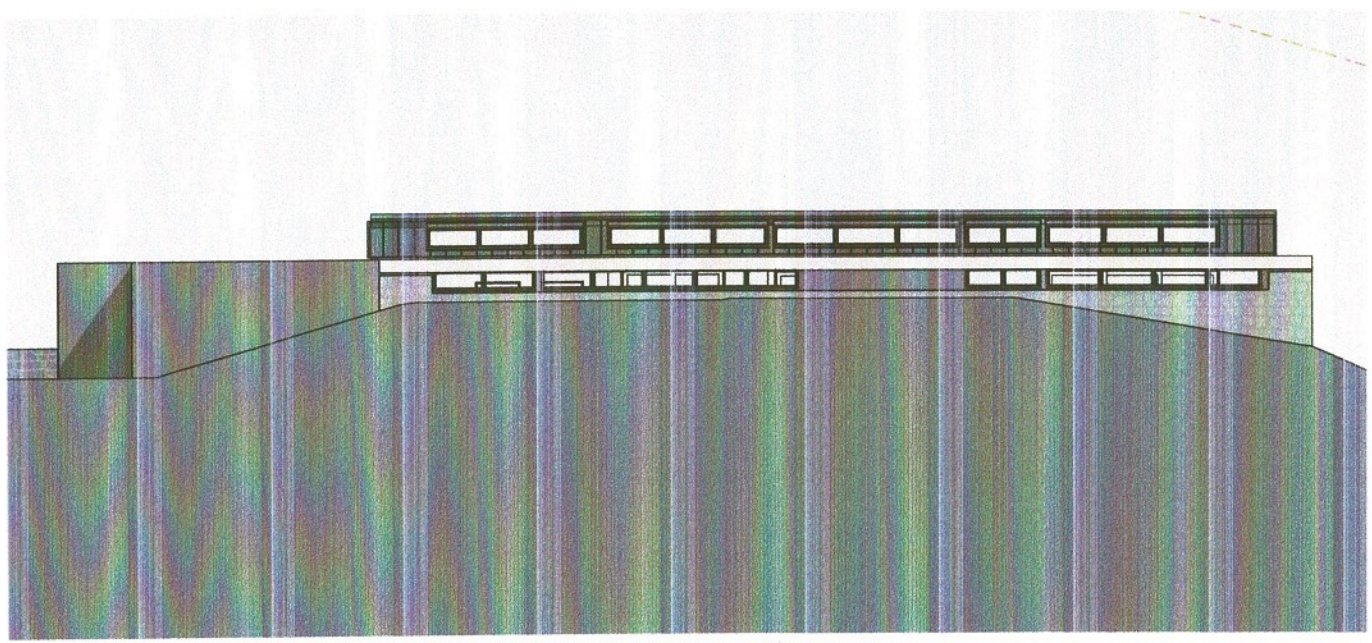
C1 type C southwest elevation



C2 type C northwest elevation



C3 type C northeast elevation



C4 type C southeast elevation

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2928 | Canyon Ridge | Momentum Projects

unit elevations: type C

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 168 | christchurch 8140

RC 20
scale: 1:100
21/12/2020

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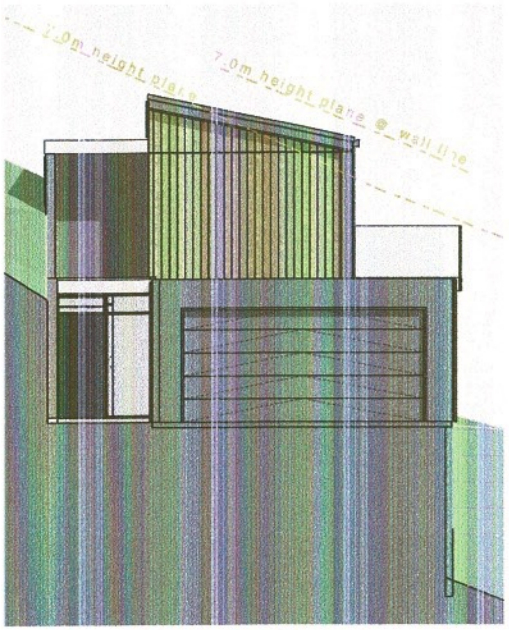
2928 | Canyon Ridge | Momentum Projects

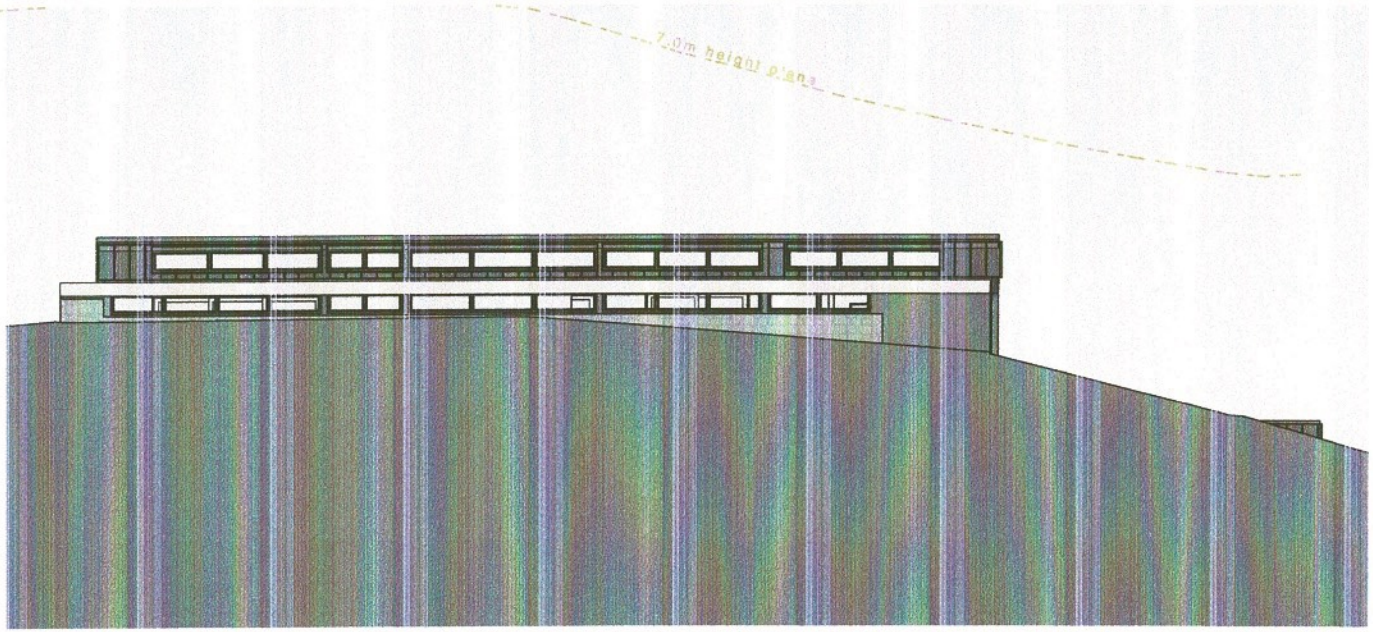
unit plans: type D

RC 21
scale: 1:100
21/12/2020

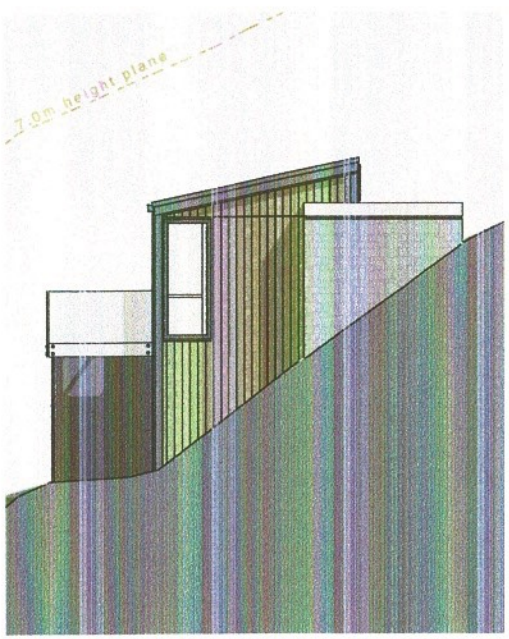
03 377 5665 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 166 | christchurch 8140



D1 type D east elevation



D2 type D south elevation



D3 type D west elevation

D4 type D north elevation

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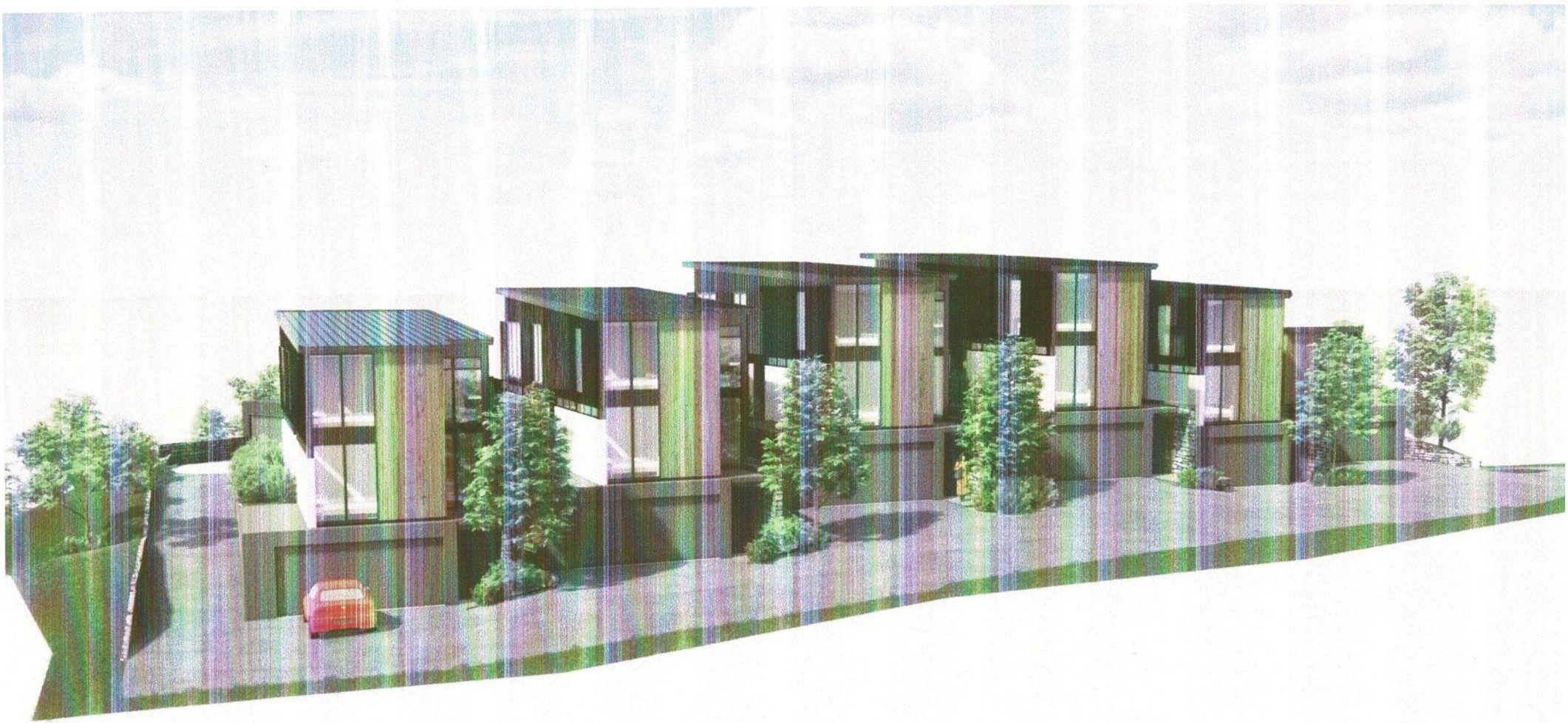
2928 | Canyon Ridge | Momentum Projects

unit elevations: type D

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 166 | christchurch 8140

RC 22
scale 1:100
21/12/2020



planting shown is indicative only - refer landscape architects documents for detail

FOLEYGROUP
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2928 | Canyon Ridge | Momentum Projects

3d view: south boundary

03 377 5888 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 188 | christchurch 8140

RC 23
scale: 1:208
21/12/2020

planting shown is indicative only - refer landscape architects documents for detail

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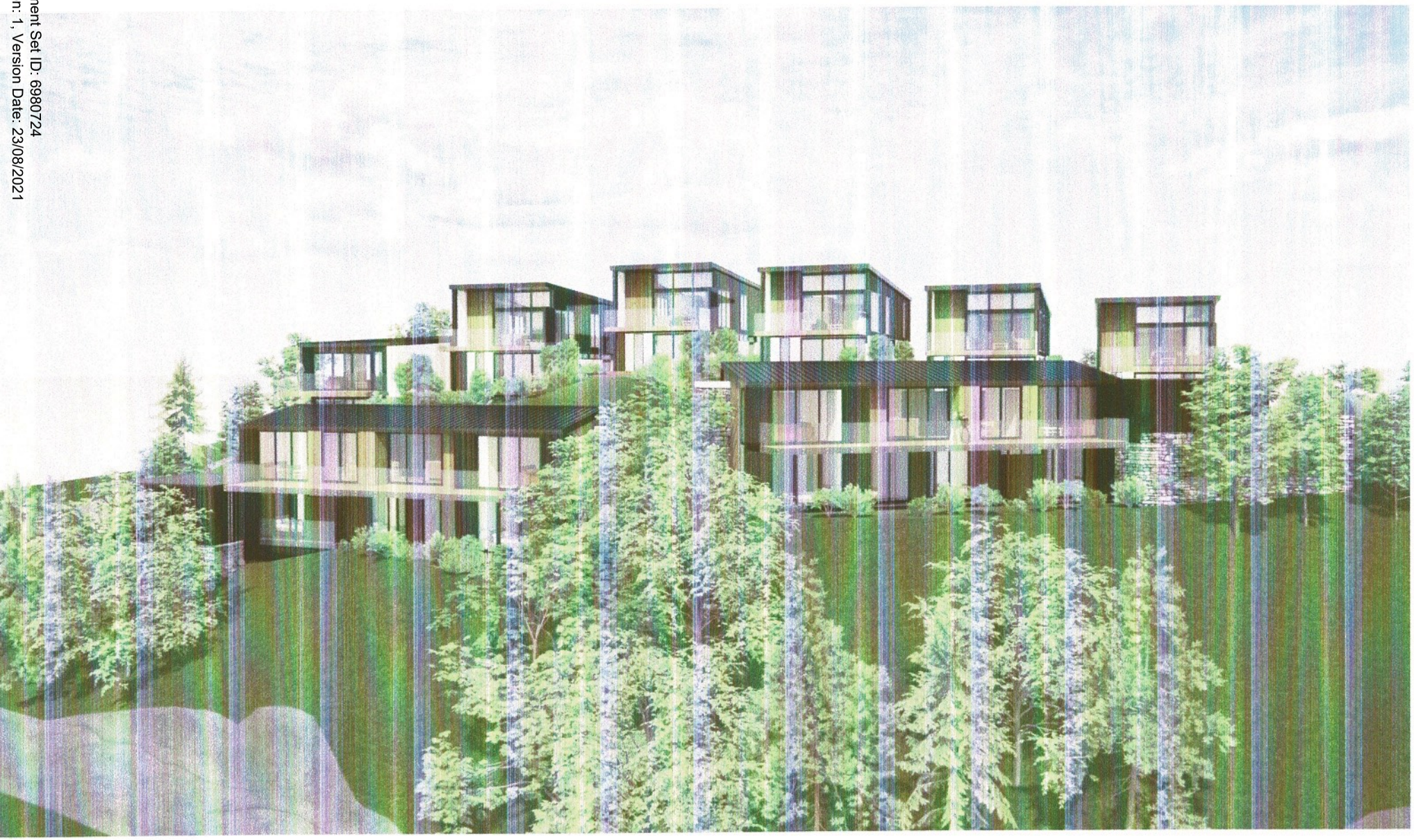
2928 | Canyon Ridge | Momentum Projects

3d view: northwest boundary

03 377 5888 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 186 | christchurch 8140

RC 24
scale: 12.08
21/12/2020



planting shown is indicative only - refer landscape architects documents for detail

FOLEYGROUP
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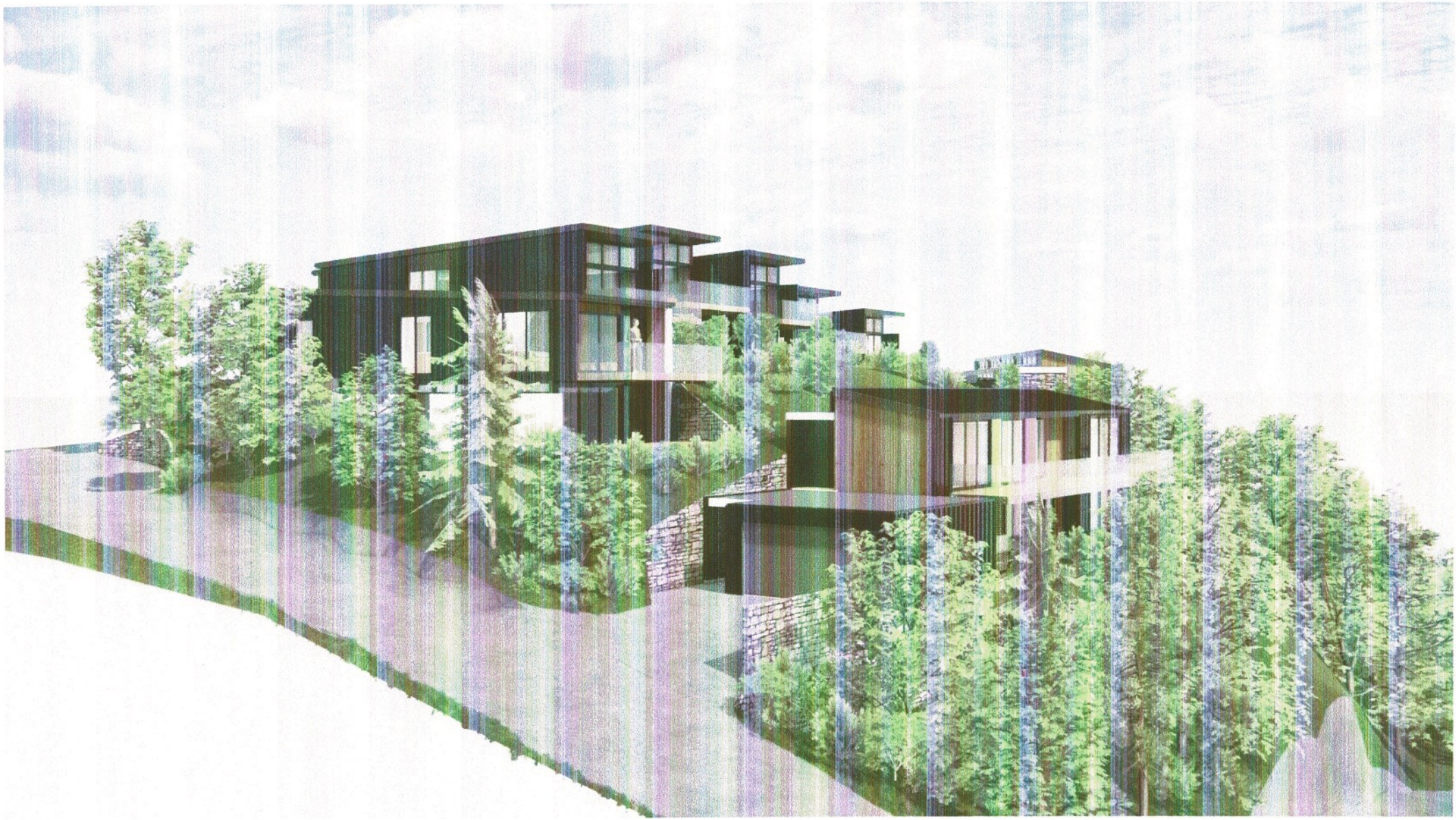
2928 | Canyon Ridge | Momentum Projects

3d view: north boundary

03 377 5888 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.168 | christchurch 8140

RC 25
scale: 1:208
21/12/2020



planting shown is indicative only - refer landscape architects documents for detail

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2928 | Canyon Ridge | Momentum Projects

3d view: east boundary

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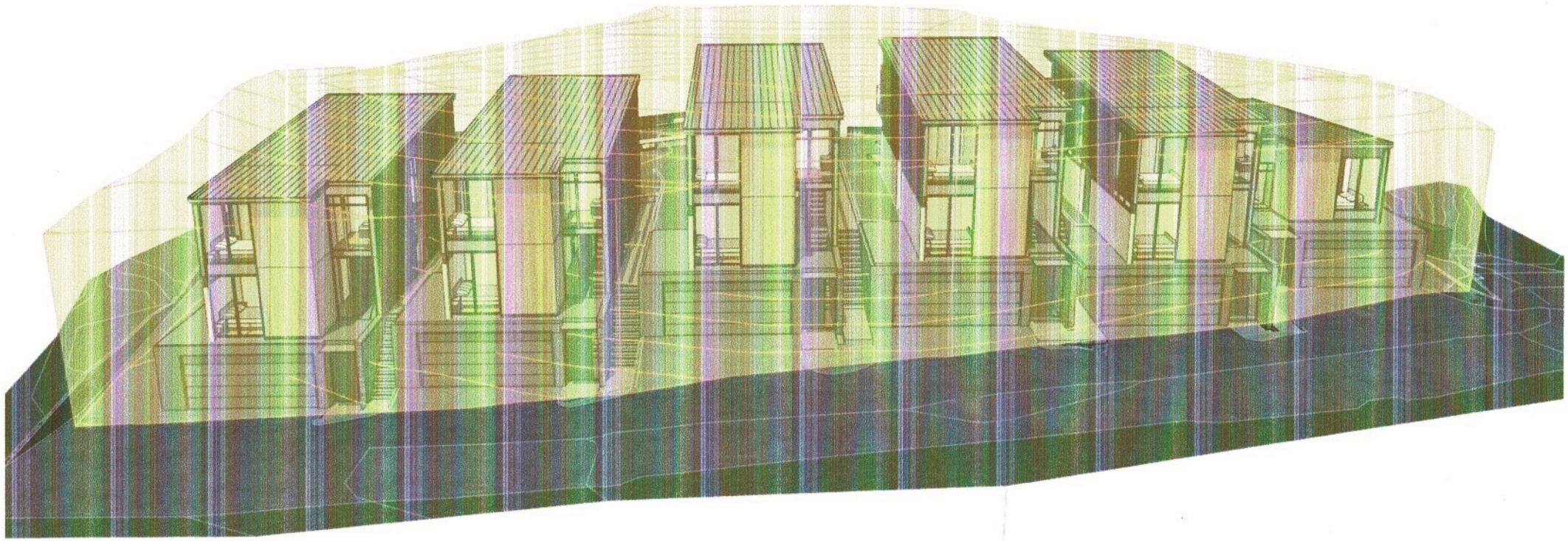
RC 26
scale: 1:2.08
21/12/2020



orange tint represents buildable envelope
building elements not tinted yellow project through envelope

FOLEYGROUP
architecture

2923 | Canyon Ridge | Momentum Projects

3d view: envelope south

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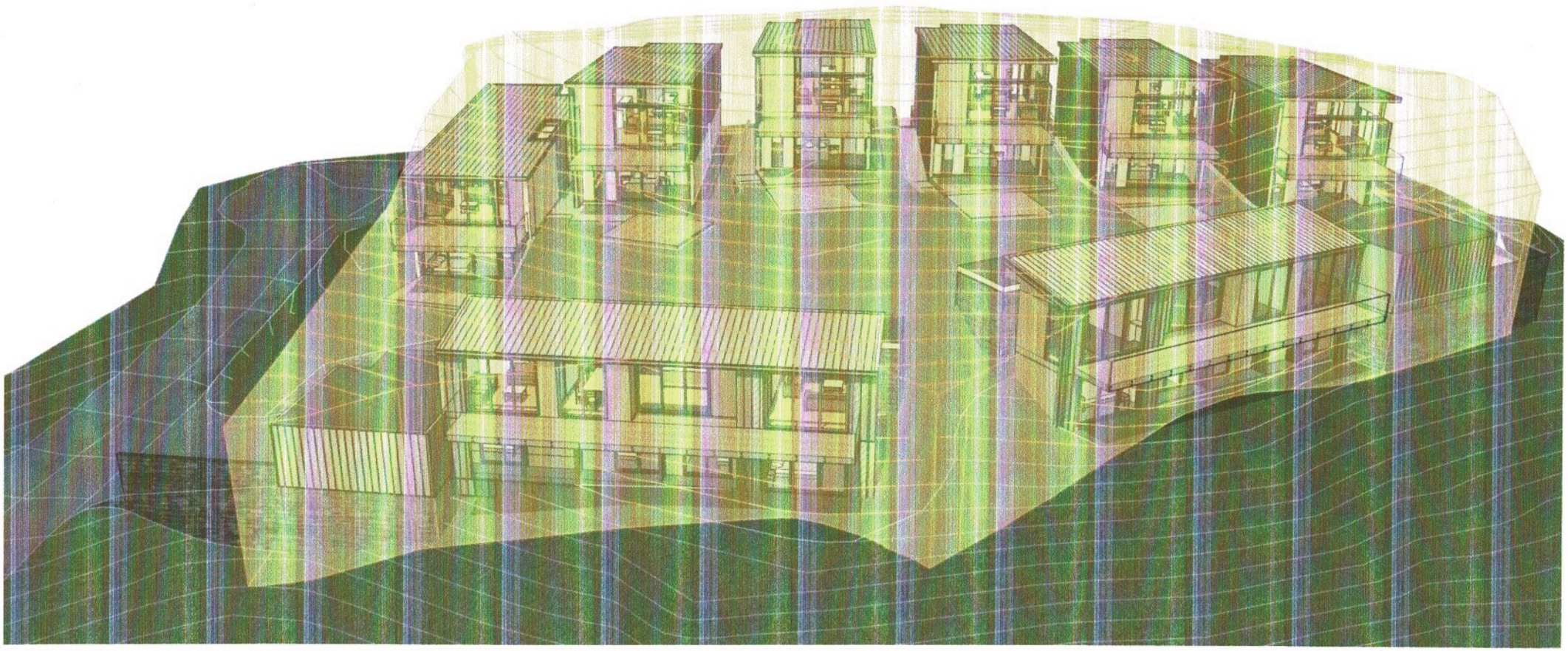
RC 27

21/12/2020



orange tint represents buildable envelope
building elements not tinted yellow project through envelope

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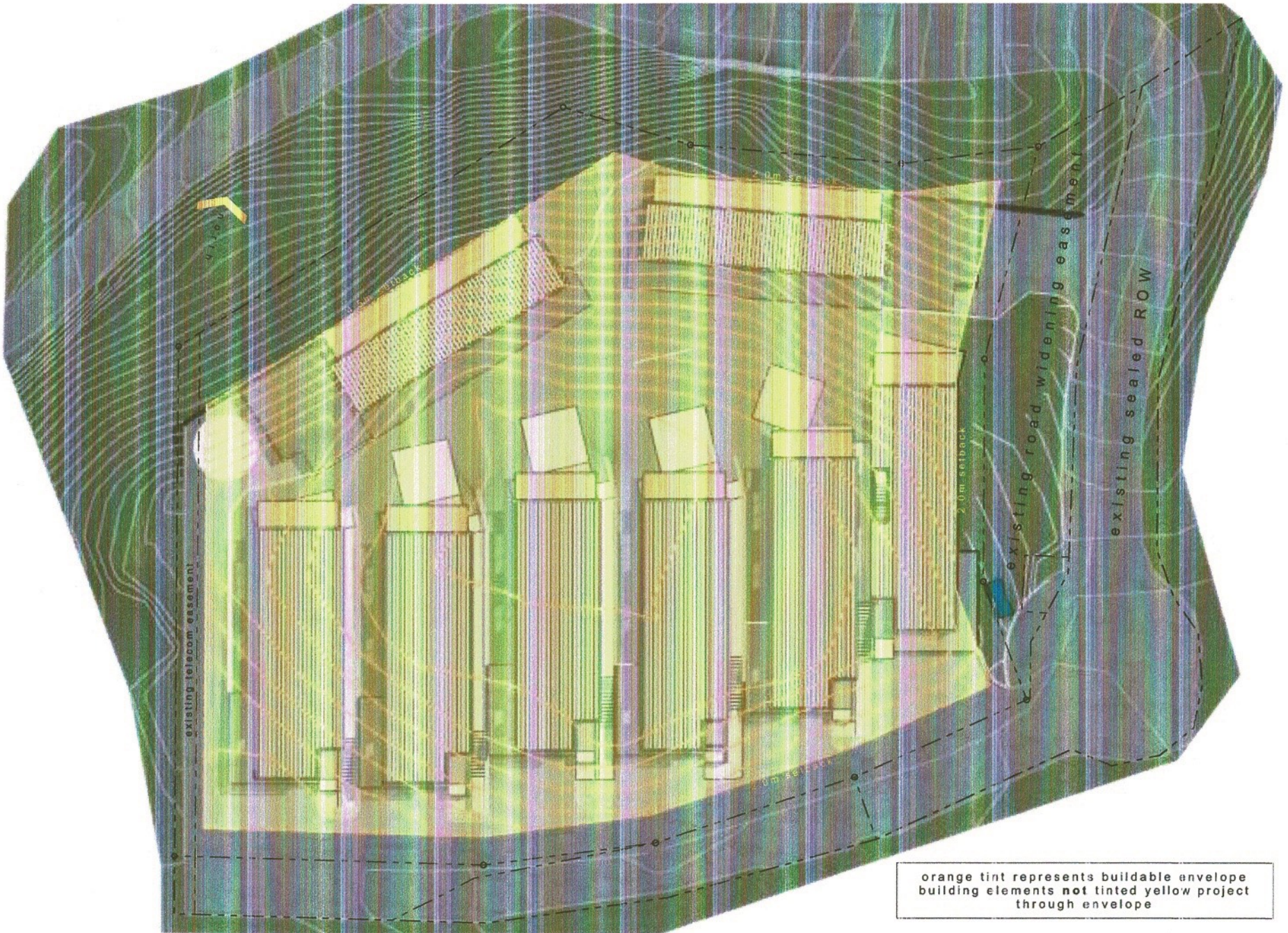
2928 | Canyon Ridge | Momentum Projects

3d view: envelope north

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 166 | christchurch 8140

RC 28

21/12/2020



orange tint represents buildable envelope
building elements **not** tinted yellow project through envelope

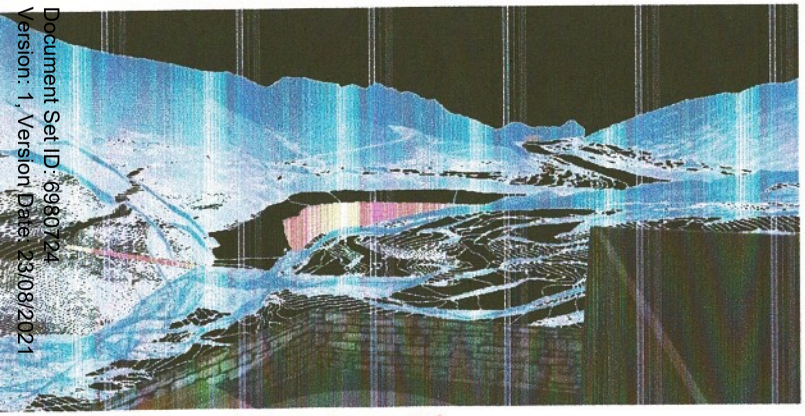
FOLEYGROUP
architecture

2928 | Canyon Ridge | Momentum Projects

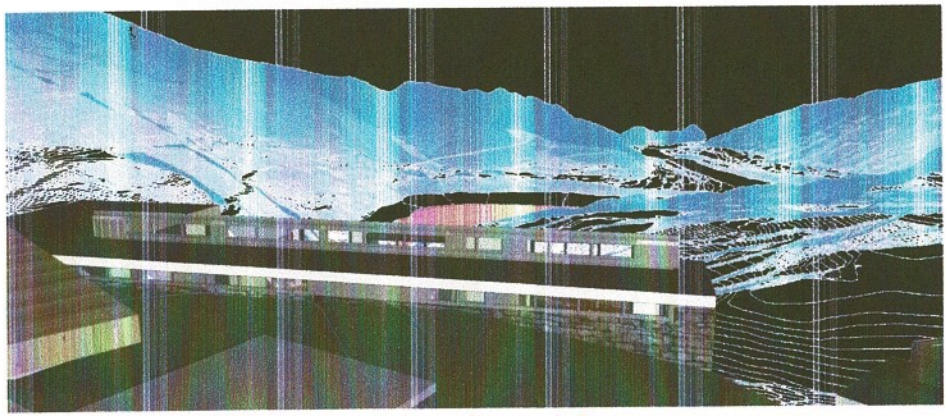
3d view: envelope plan

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22 166 | christchurch 8140

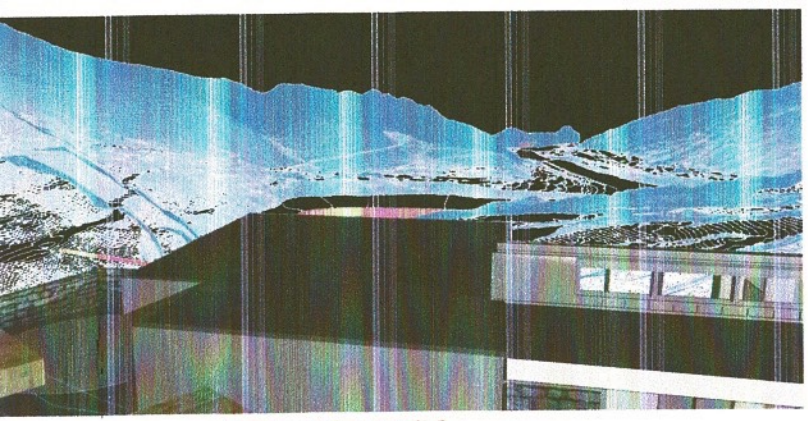
RC29
scale
21/12/2020



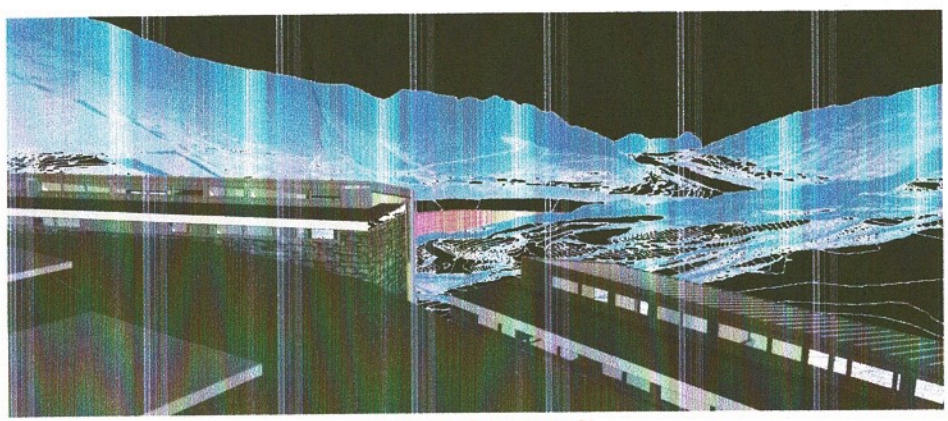
shotover from unit 2



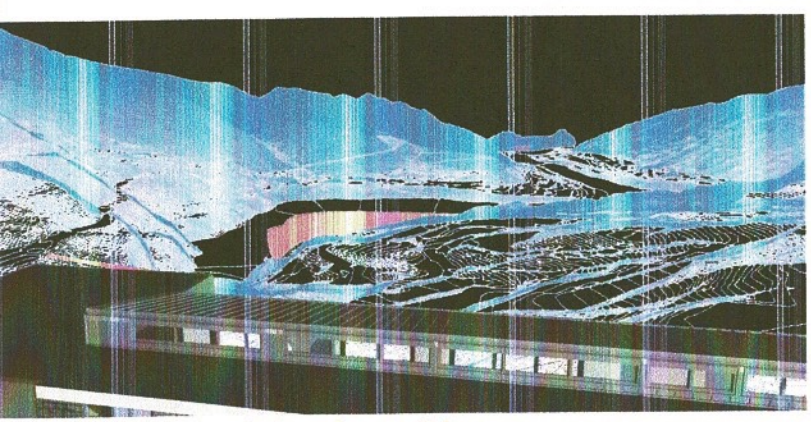
shotover from unit 5



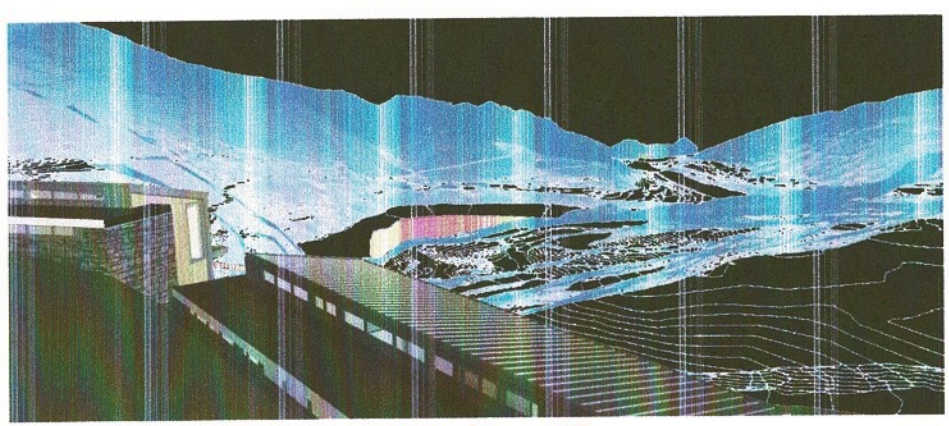
shotover from unit 3



shotover from unit 6



shotover from unit 4



shotover from unit 7

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2928 | Canyon Ridge | Momentum Projects

3d views: shotover river

03 377 5868 | info@foleygroup.co.nz | www.foleygroup.co.nz | 30 southwark st | po box 22.168 | christchurch 8140

RC 30

21/12/2020

5 October 2021

Novo Group Limited
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
O - 03 365 5570
info@novogroup.co.nz

MEMO

TO: Arsalan Ali

FROM: Simon de Verteuil, Senior Transport Engineer

PROJECT REF: 013014

TRANSPORT PEER REVIEW
RESIDENTIAL SUBDIVISION, ATLEY ROAD, ARTHURS POINT
RM210019

1. We originally reviewed the Transport Assessment (TA) prepared by Bartlett Consulting on 7 April 2021 and confirmed that the application could be accepted provided the required sight distances could be achieved. On the 1 July 2021, we confirmed that the Traffic Impact Assessment could be accepted having less than minor effects. We have subsequently been asked by Queenstown Lakes District Council (QLDC) to review whether the width of Atley Road between the ROW on the site and Mathias Terrace is acceptable and whether a footpath is required based on QLDC's Code of Practice (COP) [1]. This letter provides a summary of our findings.

2. We note that the nearest existing footpath to the site is to the north of Mathias Terrace as shown in **Photograph 1**. On the south side of Mathias Terrace, there is no footpath, with pedestrians required to share the existing road carriageway with vehicles.

Photograph 1: Views along Atley Road (Left Above: North towards the Atley Road and Mathias Terrace Intersection; Right Above: South from the Atley Road and Mathias Terrace Intersection).

3. QLDC have informed Novo Group that there are approximately 19 dwellings located south of the intersection to the site with Atley Road. Based on this, we can confirm that the COP requires the road network along Atley Road, between Mathias Terrace and the applicant's site to be upgraded to E12 design requirements, as shown in Table 3.3 of the COP. This

[1] https://www.qldc.govt.nz/services/resource-consents/land-developments-and-subdivisions

is required by a road serving between 1-200 dwellings. The applicant's new development will increase the number of dwellings being served by Atley Road to be well above 20, which is the upper limit for the lower standard of road meeting an E11 design. Based on the E12 design, the following is required (along Atley Road and between Mathias Terrace and the applicant's site) as a minimum:

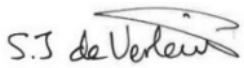
i. A 1.5m wide footpath on one side of the road. It is recommended that this is located on the east side of Atley Road, thus tying in with the footpath to the north of Mathias Terrace.

ii. A 5.5m wide movement lane to allow for two-way unopposed traffic movements.

4. We trust that the above satisfactorily confirms our opinion based on the requirements of the COP, but please feel free to contact the undersigned if you have any queries regarding this matter.

Yours sincerely,

Novo Group Limited



Simon de Verteuil

Senior Transport Engineer

D: 03 925 8170 | **M**: 022 358 3898 | **O**: 03 365 5570

E: simon@novogroup.co.nz | W: www.novogroup.co.nz

013014

18 November 2021

Novo Group Limited
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
O - 03 365 5570
info@novogroup.co.nz

MEMO

TO: Arsalan Ali

FROM: Simon de Verteuil, Senior Transport Engineer

PROJECT REF: 013014

TRANSPORT PEER REVIEW
RESIDENTIAL SUBDIVISION, ATLEY ROAD, ARTHURS POINT
RM210019

1. We have reviewed the Atley Road carriageway assessment and safety review presented by Bartlett Consulting on 4 November 2021. Our comments follow:

2. The Bartlett report makes the following points:

   - The southern portion of Atley Road (i.e. between Mathias Terrace and the applicant's site access) could serve a permitted 29 dwelling units, assuming the applicant's site is permitted to be developed as 5 residential lots.
   - The proposed development will create 8 residential lots at the site. This results in the southern portion of Atley Road serving a total of 32 proposed dwelling units.
   - The Proposed District Plan (PDP) extended residential zoning to the south of the site as part of a plan change with the potential to accommodate a further 89 residential dwellings.
   - An internal road safety review was conducted raising significant safety concerns with pedestrians and cycles using the southern portion of Atley Road.
   - The proposed development will increase traffic flows on Atley Road and therefore the frequency element of any road safety concern may increase.
   - The applicant considers the traffic volume increase as a result of the development as being small and that it will not have a noticeable effect on the safety of the southern portion of Atley Road.
   - The applicant proposes to install lighting columns along the east side of Atley Road, between the applicant's site access and Mathias Terrace. The lighting will improve the safety of pedestrians and cyclists.

3. As per our previous peer review response on the 5 October 2021, I am still of the opinion, that the current design of Atley Road between the applicant's site access and Mathias Terrace requires upgrading. The current design allows for shared use of the road by motorists and cyclists, however, it does not support shared use with pedestrians along the

road. Pedestrians are therefore not catered for. This is further corroborated by the internal safety audit undertaken by the applicant and the existing safety risks to pedestrians as well as cyclists.

4. I further note that there is the potential for this development (of 8 residential units) as well as another residential development of 89 units to be built further south along Atley Road. These developments will further increase traffic volumes and reduce pedestrian safety along Atley Road. This future development further emphasises the need for a footpath in this location.

5. In order to provide a safe environment for all modes, I recommend that the road is upgraded to E12 design requirements according to the requirements of the QLDC *Land Development and Subdivision Code of Practice* (COP). As a minimum, upgrading to E12 design requirements will require the following:

   i. A 1.5m wide footpath on one side of the road. It is recommended that this is located on the east side of Atley Road, thus tying in with the footpath to the north of Mathias Terrace.

   ii. A 5.5m wide movement lane to allow for two-way unopposed traffic movements (at slow speeds).

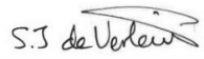
6. Upgrading the road would mitigate the safety concerns by providing:

   - A footpath for pedestrians so that they can avoid walking in the road space.
   - Lighting to ensure cyclists are visible in the shared road space and pedestrians can see where to walk.
   - A widened road. The applicant confirmed that presently, vehicles pull over on the western side of the road to allow others to pass but there is a significant, unprotected and non-recoverable drop beyond the verge area. The widened road would facilitate two-way access along Atley Road and remove this risk.

We trust that the above satisfactorily. Please feel free to contact the undersigned if you have any queries regarding this matter.

Yours sincerely,

Novo Group Limited



Simon de Verteuil

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013014

4 November 2021

Canyon Ridge Villas Limited

C/- Momentum Projects Limited
By email

Attention: Shane Fairmaid

Dear Shane,

Atley Road, Carriageway Assessment and Safety Review

The purpose of this letter is to provide a safety review and assessment of the southern portion of Atley Road which is the section of Atley Road between the site access and Mathias Terrace.

1 Introduction

1.1 Existing Road Formation

This southern portion of Atley Road, between the site access and Mathias Terrace, has been formed as a 4.0m to 5.0m otta seal surfaced carriageway on a platform width of between 5m and 7m between a stone retaining wall on the eastern side to a significant drop on the western side. The existing road meets the minimum requirements of a road expected to serve up to 6 dwellings. Within this section of Atley Road passing of oncoming vehicles is enabled by vehicles moving onto the verge/shoulder area. The legal road width of this portion of Atley Road is 20m.

1.2 Properties Served

This portion of Atley Road serves the following:

- 2 dwellings units – 80 & 83 Atley Road both served directly from the public road portion of this road,
- The site, an undeveloped lot served via a ROW over 83 Atley Road,
- 5 dwelling units – 85A, 85B, 85C, 85D & 85E served via a ROW over 83 Atley Road and the site,
- 1 undeveloped lot (Lot 2 DP518803) which provides the private road extension of Atley Road as a ROW,
- 7 dwelling units and 1 undeveloped residential lot (8 potential dwellings) - 94, 96, 98, 100, 102, 104, 106 & 108 Atley Road located to the south of the site accessed via the ROW extension of Atley Road,
- 3 dwelling units - 107, 107A & 107B Atley Road accessed via the ROW extension of Atley Road and a ROW over 10 Larchmont Close,
- 1 dwelling unit - 119 Atley Road accessed via the ROW extension of Atley Road,
- 3 dwelling units - 111, 113 & 115 Atley Road all within a single lot (Lot 1 DP518803) and Accessed via the ROW extension of Atley Road
- 1 dwelling unit - 163 Atley Road (Lot 2 DP398656) accessed via the ROW extension of Atley Road.

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The southern portion of Atley Road therefore serves 22 existing dwelling units and a further 3 potential dwelling units including the site, based on 1 dwelling unit per undeveloped lot. This would result in 25 potential dwellings.

As a permitted land use activity, it is understood that the site could be developed as 5 residential lots. Each lot is able to be developed as a single residential dwelling with an ancillary residential flat. This means that the southern portion of Atley Road could serve a permitted 29 dwelling units.

The proposed development will create 8 residential lots at the site. This results in the southern portion of Atley Road serving a total of 32 proposed dwelling units.

For an outer suburban dwelling the design traffic generation for a dwelling is 8.2 vehicles per day with 0.9vph during the peak period[1], other guidance would suggest that a dwelling unit generates 8vpd[2]. This would suggest that southern portion of Atley Road, south of Mathias Terrace, would have the following traffic flow:

- Existing traffic flow of 180vpd with a peak period traffic flow of 20vph (22 dwellings),
- Potential traffic flow of 205vpd with a peak period traffic flow of 23vph (25 dwellings),
- Permitted traffic flow of 238vpd with a peak period traffic flow of 26vph (29 dwellings), and
- Proposed traffic flow of 262vpd with a peak period traffic flow of 29vph (32 dwellings).

It is noted that the Proposed District Plan PDP) has extended the residential zoning to include the majority of Lot 1 & 2 DP518803 and Lot 2 DP398656 and being the properties containing 111, 113, 115 & 163 Atley Road. During the plan change this area was considered as a possible 89 further resident dwellings, if this land was to be developed this would increase the potential number of dwellings served by Atley road to approximately 120 dwelling units.

1.3 Road Design Standards

During the processing of the resource consent application QLDC have raised concerns with the current formation of Atley Road. It is agreed by Simon de Verteuil (Nova Group) and I that the current formation of the southern portion of Atley Road does not meet the minimum requirements of the QLDC Land Development and Subdivision Code of Practice[3]. The Code of Practice provides guidance on the design of new roads based on the based on the potential activity served. Using this guidance, the existing and potential number of dwellings served by Atley Road would suggest a Figure E12 road type which would require a 5.5m – 5.7m movement lane, footpath access and separate (indented) parking if required. Within the Code of Practice this road type is required where a road serves more than 20 dwelling units and is appropriate for up to 200 dwelling units. Within the urban area this road type will require street lighting.

As the existing road does not meet this standard the Nova Group advice recommended that Atley Road should be upgraded to include a movement lane width of 5.5m – 5.7m and a 1.5m footpath provided to the east to match the existing footpath on Atley Road to the north.

QLDC, in their engineering review, interpret that the existing formation of the southern portion of Atley Road does not meet the requirements set out in their Code of Practice and therefore there is a road safety concern. In their Engineering Report, to minimise this concern, they have recommended that a footpath is to be constructed to the west of Atley Road with allowance for the widening of the Atley Road movement lane.

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[1] Refer NZTA (now Waka Kotahi) Research Report, RR453 - Trips and parking related to land use.
[2] Refer QLDC Land Development Code of Practice, Section 3.3.1
[3] Refer QLDC Land Development Code of Practice, Table 3.3 – Road design standards.

1.4 Vehicle Speed

Atley Road has a posted speed limit of 40km/hr. Within the Transport the operating speed of Atley Road, between the site access and Mathias Terrace was assessed as less than 35km/hr to the north of the site access. This assessment was a result of the narrow carriageway width and alignment of Atley Road to the north of the site access, over the southern portion of Atley Road.

1.5 Other Road Users

QLDC have recently installed the Arthurs Point Cycle & Pedestrian Improvements. This project has created a shared cycle area on the southern portion of Atley, between Mathias Terrace and the legal road link to Edith Cavell Bridge. It is understood that future works also include resurfacing of the link between Atley Road and Edith Cavell Bridge. It is possible that this cycle link will also provide access to the Queenstown Trails Trust proposed Arthurs Point to Arrowtown and Arthurs Point to Quail Rise trails. These works will increase cycle, and pedestrian, traffic on the southern portion of Atley Road and forms part of a commuter route between Arthurs Point and Queenstown.

2 Road Safety Review

To investigate the road safety concern raised by QLDC the following road safety review has been undertaken. This review follows the procedures set out for a road safety audit in the Waka Kotahi (NZTA) Road Safety Audit Procedures for Projects (2013). This review is based on the existing road environment and considers any change in road safety concern ratings due to permitted and proposed development.

2.1 Existing Road Environment

This section of the road safety review consents the existing road environment based on current level of development served by the southern portion of Atley Road.

2.1.1 Pedestrian/Cycle Facilities — Significant Concern

There are no specific pedestrian or cycle facilities provided on the southern portion of Atley Road. Pedestrians and cyclists are required to share the carriageway (movement) with vehicles, as such cycle share the road signs have recently been installed.

The movement lane has a minimum width of 4.5m and operating speeds are assessed as being less than 35km/hr so there is sufficient space for vehicles to pass pedestrians/cyclists. The recently installed cycle route will increase the number of cyclists (and pedestrians) likely to use Atley Road which is part of a cycle commuter route between Arthurs Point and Queenstown. During the day there is appropriate visibility between pedestrian/cyclists and approaching drivers and therefore, during the day, this would be a Moderate (occasional/likely) safety concern.

The commuter route will increase the number of cycles (and pedestrians) on Atley Road. During the winter months the commuter period would be during the hours of darkness, where there is no street lighting provided on the southern portion of Atley Road. Pedestrians and cyclists will therefore be less visible to approaching drivers at night. The lack of street lighting will exacerbate potential safety concerns for pedestrians and cyclists.

Frequency Rating:	**Severity Rating:**
Crashes are likely to be **Common**	Death or serious injury is **Likely**

2.1.2 Passing — Minor Concern

The carriageway (movement lane) of Atley road is essentially a single lane with passing enabled by utilising the verge/shoulder area. Generally, there is sufficient verge space to facilitate passing along the majority of the southern portion of Atley Road. However, on the western side of the road there is a significant, unprotected and non-recoverable drop beyond the verge area. If a (northbound) vehicle moves too far to the west to pass an oncoming vehicle it is possible that a vehicle may drop a wheel over the edge and may not recover.

There is no street lighting which means that the edge of the usable road/verge may not be visible to drivers that at night, this will exacerbate the potential safety concern.

Frequency Rating:	**Severity Rating:**
Crashes are likely to be **Occassional**	Death or serious injury is **Unlikely**

2.2 Proposed Development

The proposed development would increase the number of dwellings served by the southern portion of Atley Road. This will increase traffic flows on Atley Road and therefore the frequency element of any road safety concern may increase.

When considering the possible increase between the existing development and the permitted and proposed developments the traffic volume increase is small. This small traffic increase is unlikely to result in any change to the road safety concern ratings. It is considered that the proposed development will not have a noticeable effect on the safety of the southern portion of Atley Road.

2.3 Zoned Development

It is possible that PDP zoning will enable a greater level of development over the zoned land to the south of the site. This level of development will result in increased in a significant increase in the traffic utilising the southern portion of Atley Road. This will increase the frequency element of any road safety concern. Given the zoned traffic increase would be significant it is possible that this will result in a step change in the frequency and a step change in the road safety concern ratings. The traffic flows increase from possible zoned development will result in the following safety concerns:

- Pedestrian/Cycle Facilities (frequent/likely) becoming a Serious safety concern, and
- Passing, (common/unlikely) becoming a Moderate safety concern.

3 Atley Road Improvements

It is possible to undertake a number of road improvements on the southern portion of Atley Road to improve safety. These may include:

- Improve footpath provisions (as suggested by QLDC) – provide a footpath to improve pedestrian safety. This will reduce or mitigate pedestrian safety concerns. The QLDC Code of Practice suggest that Atley Road should include a footpath given the number of existing dwellings served. This treatment will not change the significant safety concern for cyclists using the Atley Road carriageway.
- Improve carriageway provisions – provide a widened movement lane to allow for two traffic lanes which mitigates the passing (vehicles) road safety concerns. As the road also serves as a shared cycle (and pedestrian) route this will not change the significant safety concern for cyclists using the Atley Road carriageway. Carriageway widening alone is likely to increase vehicle speed which could further reduce pedestrian and cycle safety. On-street

(or off-street) cycle provisions would also be required to minimise (or mitigate) cycle safety concerns and a footpath (above) to mitigate pedestrian safety concerns.

- Improved carriageway lighting – the identified road safety concerns are exacerbated at night when hazards (roadside or pedestrians/cyclists) are less visible to the driver. Providing street lighting will reduce the safety concerns by reducing the frequency element. This would reduce the pedestrian and cyclist safety concern ratings to Moderate. For passing (vehicles) the frequency element would also reduce but would remain a Minor safety concern.
- Speed management – the provision of speed management or traffic calming can lower vehicle operating speeds. Should operating speeds drop below 30km/hr it is possible to reduce the severity element of the pedestrian/cycle safety concerns and possibly reduce the safety concern to Moderate, if combined with street lighting this may reduce to Minor.
- Roadside delineation – the existing drop to the west of Atley Road is a safety concern when passing which is exacerbated at night, to minimise this concern it is possible to provide roadside markers or a sight rail to delineate the edge of the usable road/verge area. This would reduce the frequency element of the passing concern rating although it is likely to remain as Minor.

4 Summary

The southern portion of Atley Road does not meet the road type requirements of the QLDC Land Development and Subdivision Code of Practice. This is considered to be a safety concern by QLDC. To investigate this concern a road safety review has been undertaken. This review has identified that there is a significant safety concern for pedestrians and cyclists utilising the southern porting of Atley Road and the recently created shared cycle (and pedestrian) area. Additionally, there is a minor safety concern for vehicles when passing.

The proposed development will add additional traffic to the southern portion of Atley Road. Given the relatively small volume of additional traffic this will not have a noticeable effect on the safety of Atley Road.

The southern portion of Atley Road forms part of a pedestrian and cycle route between Arthurs Point and Edith Cavell bridge and part of a commuter route between Arthurs Point and Queenstown. Therefore, road safety is an important consideration for this route, particularly as vulnerable road users such as pedestrian and cyclists will regularly use this route. A number of road safety improvements have been considered, of these the greatest benefit will be from the introduction of street lighting to improve the safety of pedestrians and cyclists. A number of other improvements are possible, but these only have limited benefit to cyclists who may be using the commuter route particularly at night.

Should you require any further information please contact me.

Yours sincerely,

Jason Bartlett

CEng MICE, MEngNZ
Transport Engineer