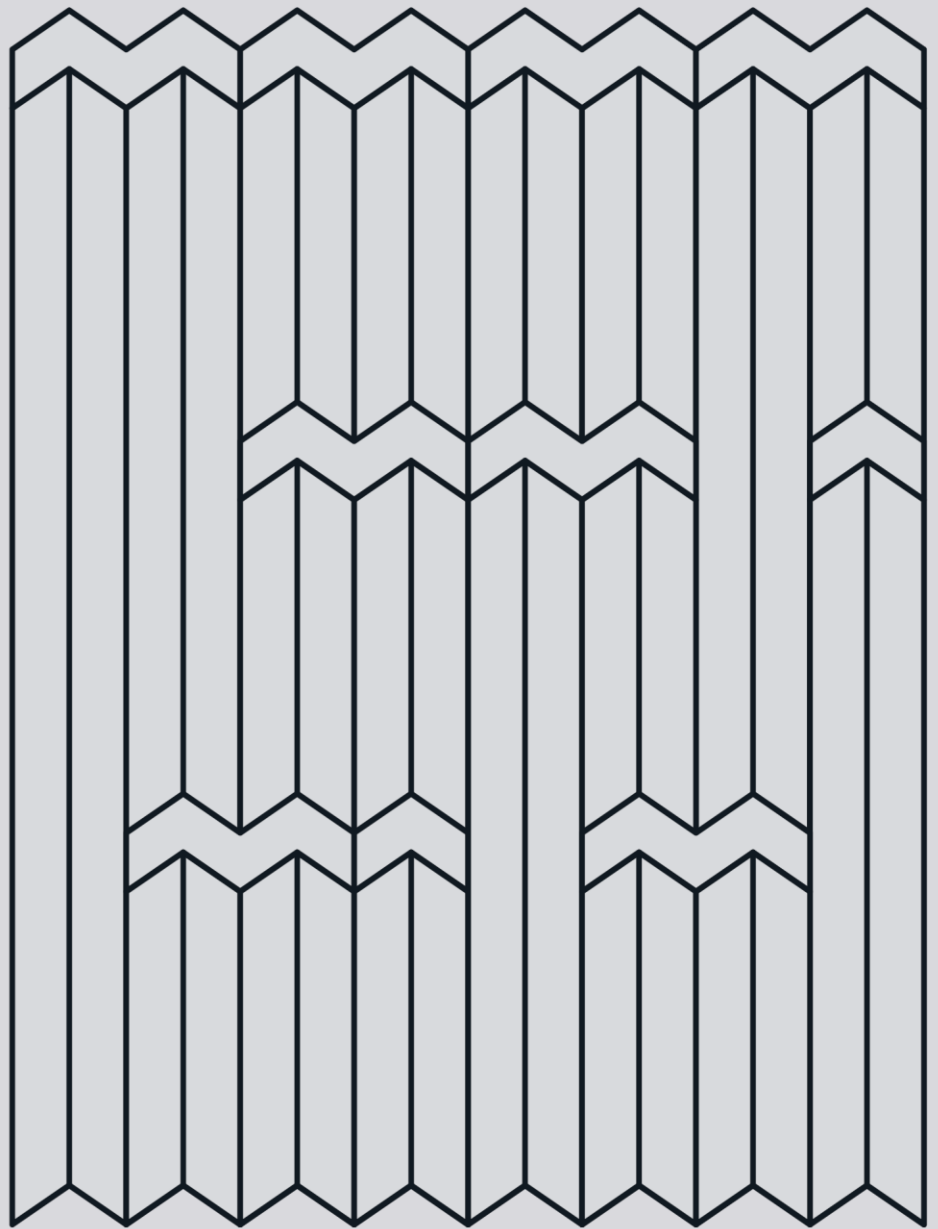




Maynard
Marks



Evaluation Report

**10 Hurley Street, Christchurch Central,
Christchurch**

Body Corporate 552171

DOCUMENT CONTROL

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Client Body Corporate 552171

Date of Report February 2026 Job Ref. AM03.05632.000

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AUTHORITY TO ISSUE ON BEHALF OF

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For and on behalf of Maynard Marks Consulting Limited

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1.0 GENERAL INFORMATION

1.1 Introduction

This Evaluation report has been prepared by Daniel Kennett of Maynard Marks on behalf of Body Corporate 552171 (**the BC**) as per our Offer of Service dated 27 February 2025 and signed Fee Variation dated 6 November 2025.

This report is a detailed document summarising:

- Review of Christchurch City Council (**CCC**) property file.
- Site investigation, which included the following:
 - Geotechnical investigation work undertaken by Pattle Delamore Partners Ltd (**PDP**).
 - Ground Penetrating Radar scan of the ground floor slab by Cook Costello Ltd (**CoCo**).
 - A visual inspection of the dwelling internally and externally.
 - Limited invasive investigations, assisted by Miles Construction Ltd (**Miles**), to confirm construction details.
- Prepare a Statement of Professional Opinion report.

General particulars of this report are as follows:

Commissioned by	Body Corporate 552171
Site Address	10 Hurley Street, Christchurch Central, Christchurch
Inspection Date and Weather	3 November 2025, fine weather 8 December 2025, fine weather
Inspection by	Daniel Kennett
Other Persons Present	Maurice Lawry, Miles Construction Ltd Oliver Anselmi, Cook Costello Ltd Ethan Walsh, Pattle Delamore Partners Ltd

1.2 Formal Dialogue

Formal dialogue has been undertaken between Maynard Marks and the following parties in connection with this report:

- Courtney Dupont, Pitcaithly Body Corporate Services Ltd.
- Mark Newcome and Maurice Lawry, Miles Construction Ltd.
- Oliver Anselmi, CoCo.

- Izak Breytenbach, Matt Engel and Ethan Walsh, PDP.

1.3 Reporting Conditions

This report has been prepared under the following conditions of engagement:

- This report is provided for Body Corporate 552171 and may not be used by others without written permission. Maynard Marks accepts no liability to third parties who may act on the contents of this report.
- The report focuses on structural engineering matters.
- The report does not generally include minor faults, defects or minor maintenance issues, which, in view of the age, type or condition of the residential building, would not require substantial repairs or would be attended to during normal maintenance. With the exception of some specific concerns noted, the report also does not comment on non-structural defects, including but not limited to weathertightness, mechanical and fire.
- We have not inspected timber framing or other parts of the structure or services which are covered, unexposed or inaccessible, except as expressly noted. We are therefore unable to report that any such part of the structure is free from defect.

1.4 Exclusions

This report does not include comment about the following:

- (a) The surrounding neighbourhood.
- (b) The value of the property.
- (c) Electrical, heating and ventilation systems.
- (d) Illegal works.
- (e) Any building services.
- (f) Elements that are covered, hidden or below ground (except as specifically noted).
- (g) Accuracy of site boundaries and other cadastral matters.
- (h) Assessment of hazardous materials such as asbestos containing materials.
- (i) Passive or active fire protection provisions.

Additionally, no search has been made of:

- (a) Council rates.
- (b) Government valuation.
- (c) LIM or PIM reports.
- (a) Body Corporate files and records.

1.5 Items Reviewed

The following is a list of the structural items covered by the Producer Statement Construction Review (PS4) issued by Mr Adrian Collis:

- Foundations
- Bracing walls
- Lintels
- Block walls

1.6 List of Documentation Reviewed

- CCC Property File, in particular the following documents:
 - BCN/2018/7630 Approved Plans.
 - BCN/2018/7630 Approved Supporting Documents.
 - BCN/2018/7630 Amendment 1 Approved Plans.
 - Mike Wilton Consulting Site Instructions and Inspections.
 - Mike Wilton Consulting Producer Statement PS4 dated 2 February 2022.
 - Mike Wilton Consulting Producer Statement PS4 dated 21 February 2022.
 - Mike Wilton Consulting Producer Statement PS4 dated 28 February 2022.
 - Code Compliance RFI email exchange between Grant McIntyre (CCC), Kevin Maher (CCC) and Mike Wilton.
 - CCC Inspection Site Notices.

2.0 INITIAL REVIEW

2.1 Property Details

Property Address	10 Hurley Street, Christchurch Central, Christchurch
Description of property and site	Four attached two storey townhouses. Flat site located within the Avon loop.
Foundation type	Steel fibre reinforced concrete Ribraft slab over gravel raft.
Building type and construction	Vertical shiplap cedar or 50mm AAC panel cladding over lightweight structural timber framing. Light weight coloursteel T-Rib roofing over an engineered timber truss (timber rafters in part) roof.

2.2 Bearing Capacity Beneath Foundation

The foundation for the property consists of a steel fibre and mesh reinforced concrete Ribraft slab over an 800mm deep compacted gravel raft. A geotechnical ultimate bearing capacity of 200kPa was required beneath the gravel raft, and the building consent required that this be confirmed by a geotechnical engineer.

During the application for a Certificate of Code Compliance, CCC raised concerns over a lack of geotechnical testing to confirm the bearing capacity at the base of the compacted gravel raft, which was a condition of the building consent. After a series of emails between CCC and Mike Wilton, CCC accepted that the bearing capacity was adequate on the basis of a note being added to the PS4 (signed by Adrian Collis) that states *'ground bearing tested & considered satisfactory.'* The testing referred to was completed by Mike Wilton *'probing a 10mm deformed rod into the excavated ground approx 600mm or deeper to check for any soft spots.'*

The testing described by Mike Wilton is not a recognised method of confirming bearing capacity.

Because the bearing capacity at the base of the gravel raft was not adequately confirmed during construction, the BC engaged PDP to carry out geotechnical testing. The PDP geotechnical report is included as Appendix B.

The testing undertaken by PDP was not undertaken directly beneath the gravel raft, however it indicated that 200kPa geotechnical ultimate bearing capacity, as required for the raft, was not achieved at the level of the base of the raft. We have therefore been unable to confirm by testing that bearing capacity beneath the gravel raft is satisfactory.

The building is now approximately 4 years old. There are no signs of settlement, cracking, or other distress caused by foundation movement. On this basis, and given that CCC accepted the explanation and unorthodox testing method of Mike Wilton when the Certificate of Code Compliance was processed, it may be judged to be reasonable to accept the gravel raft without further investigation.

2.3 Ribraft Slab

The Ribraft slab was to be steel fibre reinforced concrete, with additional SE62 steel mesh reinforcement, and conventional reinforcing bars placed in ribs.

The BC engaged CoCo to carry out ground penetrating radar scanning to the Ribraft slab. The CoCo report is included as Appendix C.

The CoCo report confirms that steel fibre reinforced concrete was used, and that additional reinforcing is present, though the additional reinforcing is unable to be confirmed due to interference from the steel fibre concrete mix.

2.4 Superstructure

The superstructure elements included in the Producer Statement PS4 sign-off by Adrian Collis includes the following:

- Bracing walls
- Lintels
- Block Walls

We address each of these elements in turn.

2.4.1 Bracing Walls

Limited invasive investigations were undertaken with, assistance from Miles, to review bracing wall hold-down details in specific locations. Following the completion of these invasive investigations all finishes were reinstated by Miles and their subcontractors in accordance with the consented documents and Gib guidelines. In addition, rare earth magnets were used to confirm corner fixing spacings in selected locations. No concerns with corner fixing spacings were identified.

The investigations found that all bracing walls observed had hold-downs in approximately the locations required by the design, though in some cases the positioning had reduced the bracing length available. Specifically, on the ground floor, bracing elements M1 were designed as 1.5m long whereas on site only approximately 1.35m of wall was available, and the positioning of the Gib Handibrac hold-down means that the wall would only be effective as approximately a 1.2m long bracing element. On the first floor, bracing elements O2 and Q1 were designed as 0.6m long despite only 0.5m of wall being available, and the positioning of the Gib Handibrac hold-down means that the wall would only be effective as approximately a 0.4m long bracing element.

This finding has prompted a review of the bracing design, to determine if there was sufficient reserve capacity available in other parts of the bracing system.

Our review of the bracing design found that as designed (i.e. in the calculations included in the approved supporting documents), the ground floor transverse bracing capacity (i.e. lower across) was approximately 98% of the design demand, which would generally be considered acceptable. On review of the drawings, it was found that the as drawn (i.e. the bracing design documented on the drawings) differed to that shown in the calculations, and the ground floor transverse bracing capacity was only approximately 87% of the design demand. When adjustments are considered for the actual site conditions (i.e. actual length of bracing elements, actual building dimensions), the capacity/demand ratio reduces to approximately 78%.

A review of the site wind speed was then undertaken, to confirm that the High wind zone adopted in the design was appropriate. The ultimate limit state site wind speed was found to be 37.35 m/s (refer to calculations in Appendix D). NZS3604 describes the High wind zone as having a maximum ultimate limit state wind speed of 44 m/s and the Medium wind zone as having a maximum ultimate limit state wind speed of 37 m/s. Therefore, the site is correctly designated as in the High wind zone, however it is only marginally within the High wind zone. BRANZ Maps (<https://branz.maps.arcgis.com/home/index.html>) accurately indicates the site to sit on the boundary between the Medium and High wind zones.

We have reviewed the bracing demand for the building if the site were to be considered as being Medium wind zone. In carrying out this review, we have also adjusted the building dimensions in the Gib EzyBrace software, as the dimensions used in the original design appeared slightly unconservative. If the as constructed bracing capacity is considered against the demand for the same building in the Medium wind zone (further adjusted to

account for more accurate building dimensions), the capacity/demand ratio becomes 110%. The actual wind demand based on the ultimate limit state design wind speed of 37.4 m/s is 102% of the Medium wind zone demand. Refer to calculations contained in Appendix D.

The earthquake bracing capacity/demand ratio remains acceptable based on the adjusted building dimensions, at 111%. Refer to calculations contained in Appendix D.

On this basis, we consider it to be reasonable to accept that the wall bracing as constructed complies with the requirements of the Building Code, albeit there are issues with the consented design and minor issues with the construction not aligning with the consented drawings.

For the sake of clarity, the bracing is the only aspect of the design that Maynard Marks have reviewed, as the design generally falls outside the scope of this report.

2.4.2 Lintels

As for bracing wall, limited invasive investigations were undertaken in an attempt to view selected lintels, however these were not successful. Our assessment is therefore based on the performance of the building to date, which shows no signs of excessive deflections or cracking relating to lintels, along with review of the photographs taken during CCC's inspections during construction, and the Mike Wilton Consulting site inspection records.

On this basis we have no reason to believe that there are any issues relating to the lintels.

2.4.3 Block Walls

No invasive investigations have been undertaken in relation to block walls and neither has any scanning been undertaken. Our assessment is based on the performance of the building to date, which shows no signs of cracking in block walls, along with review of the photographs taken during CCC's inspections during construction, and the Mike Wilton Consulting site inspection records.

On this basis we have no reason to believe that there are any issues relating to the block walls.

3.0 CONCLUSION

Based on our limited invasive investigations, visual inspections, and documentation review, along with the investigations carried out and reported on by PDP and CoCo respectively, we conclude the following:

- The geotechnical ultimate bearing capacity directly beneath the compacted gravel raft cannot be confirmed, however there are no signs of settlement, cracking, or other distress caused by foundation movement, therefore it may be considered reasonable to accept the gravel raft without further investigation.
- Steel fibre reinforced concrete was used for the Ribraft slab, and additional reinforcement is present in the slab. In combination with the lack of any observed cracking or other issues, it is considered reasonable to accept the Ribraft slab.
- While issues have been identified with the bracing design and to a lesser extent the construction, it is considered reasonable to accept the wall bracing as it is on the basis that it is sufficient when considering the ultimate limit state site wind speed calculated in accordance with AS/NZS 1170.2:2011.
- There is no reason to believe that there are any issues with either the lintels or block walls.

APPENDIX A

Photographs



Photograph 1. Hurley Street (north) elevation.



Photograph 2. Northeast corner.



Photograph 3. Typical invasive investigation .



Photograph 4. Typical bracing panel fixing check.

APPENDIX B

PDP Geotechnical Report

APPENDIX C

Cook Costello Report



Geophysical Report

Project

10 Hurley Street GPR
Investigation

Job No.

17883

Client

Maynard Marks New
Zealand Ltd

Revision

1.0

Date of issue

23/01/2026

COOK COSTELLO

DOCUMENT

CONTROL RECORD

Client: Body Corporate 552171 c/ - Maynard Marks New Zealand Ltd

Address: 10 Hurley Street, Christchurch Central City, Christchurch 8011

CCL Reference: 17883

Project description: GPR concrete floor scan to confirm slab construction, including reinforcement depth and spacing, slab thickness and any slab defects.


Document Name: 17883 – Body Corporate 552171 c/ - Maynard Marks New Zealand Ltd - 10 Hurley Street Christchurch 8011, GPR investigation

Date of issue: Friday, 23 January 2026

Status: Don't unhighlight till For Issue
sendoff



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Version	Date	Comment	Responsible
1.0	20/01/2026	Final Draft	Oliver Anselmi
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1.2	23/01/2026	Issued	Oliver Anselmi

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- ✓ APPENDIX A – GPR Site Maps
- ✓ APPENDIX B – Example GPR Interpretations

1 INTRODUCTION

Cook Costello Ltd has been contracted by Maynard Marks New Zealand Ltd to conduct a Ground Penetrating Radar (GPR) investigation of the concrete floor slab at 10 Hurley Street Christchurch. The Aim of this Investigation was to confirm the concrete slab construction. This included:

- 1) Slab steel reinforcing depth and spacing
- 2) Concrete slab thickness
- 3) Any slab defects

To conduct this investigation, GPR lines were run in a grid formation orientated North - South and East - West at 0.4-0.6 m spacing depending on site constraints (furniture and other obstructions).

This report contains the following information:

- Site location
- GPR investigation overview
- Site map
- Annotated GPR profiles

This geophysical report must be read in its entirety. The report has been compiled based on interpretations using data from the onsite ground investigations undertaken on 8th December 2025.

This report comments solely on the ground conditions in the area covered by the GPR investigation and shall not be extrapolated to areas outside the survey boundaries. The reliance by other parties on the information or our opinions contained in the report shall, without our prior review and agreement in writing, be at such parties' sole risk.

2 BACKGROUND INFORMATION

2.1 General Setting

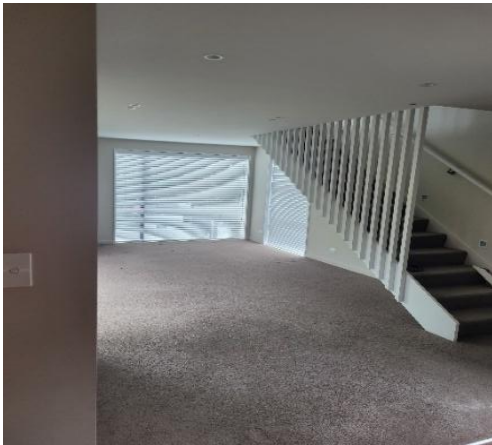
The investigated site is located at 10 Hurley Street, Christchurch. The site is located just north of the city centre and consists of four two-storey dwellings, all connected by a shared concrete slab foundation. The properties were constructed around 2020 on rib raft slab foundations with steel reinforcement.



Figure 1: Aerial view of 10 Hurley Street, Christchurch Central City, Christchurch 8011.
The Red rectangle indicates the investigation area.

2.2 Site Conditions

Below are a selection of photographs showing the overall site conditions across the four scanned units. The units were labelled 1-4 along the property with Unit 1 being the northern most unit (closest to Hurley Street), and Unit 4 being the southernmost unit (furthest from Hurly Street). The occupied units were reasonably tidy at the time of the onsite investigation, with only a few obstructions such as couches or tv cabinets, needing to be worked around to conduct the survey. Survey lines were adjusted slightly for each unit to best work around these obstructions and maximise the information gathered.



Unit 1: Unoccupied northern most unit at the front of the property.



Unit 2: A lightly furnished unit.



Unit 3: An occupied unit.



Unit 4: An occupied unit at the southern end of the property.

4 INTERPRETATION & RESULTS

4.1 Area one scan:

A total of 346 lines were collected with the 2700MHz GPR within the four unit structure. The data collected were of average quality, with limited penetration into the subsurface (10-15 cm) rather than the anticipated 30-40 cm. A map of the investigation areas and the location of representative GPR profiles are shown in Appendix A, with annotated interpretations of select GPR radargrams given in Appendix B. An example of the features observed in the 2700 MHz GPR profiles is shown below. The dark blue dots indicate interpretable steel reinforcing bars present within the concrete slab. Due to the slab's composition effecting the signal quality, only the steel reinforcing bars that were confidently identifiable have been marked. The orange dotted lines within the slab indicate the tops of the polystyrene blocks and the purple line shows the interpreted base of the slab, where imaged.

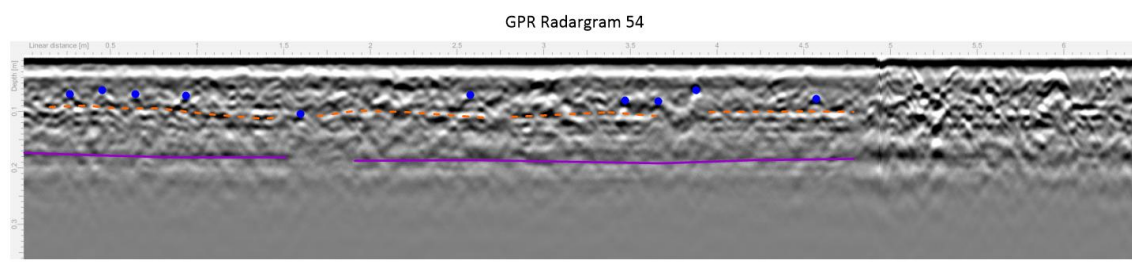


Figure 3: Example radargram from Unit 2 GPR survey. Features are labelled as described in the text above.

The results of the interior investigation of all four units are as follows:

Unit 1-4

- Where imaged, the slab thickness varies between 180-210 mm across the four units.
- Reinforcing steel is identified throughout the slab at varying depths between 20-100 mm. The spacing between the reinforcing bars cannot be confidently determined due to steel fibre concrete mix used for the slab.
- No slab defects were identified within the scanned areas.

5 CONCLUSIONS & RECOMMENDATIONS

Based on the results of the presented GPR investigations Cook Costello Ltd draws the following conclusions:

- slab thickness varies between 180-210mm across the four units.
- Reinforcing steel is identified throughout the slab at varying depths between 20-100 mm. The spacing between the reinforcing bars cannot be confidently determined due to steel fibre concrete mix used for the slab.
- No slab defects were identified within the scanned areas.

For more in-depth information regarding GPR methodologies and limitations, please refer to Sections 6 and 7 of this report. A site map showing relevant GPR line locations within the concrete floor slab, with several annotated example GPR profiles shown in Appendix B. More GPR lines were collected during onsite investigations however, they have not been added to this report for simplicity of reading but are available upon request.

6 GROUND PENETRATING RADAR (GPR)

GPR works based on the dielectric properties (electrical permittivity) of the ground or material that is investigated. For a GPR survey to be successful in detecting a target, a sufficient contrast of the electrical permittivity between the target and the surrounding/neighbouring ground material is required. Strong reflectors are generally air or water and metallic objects.

Whether a target can be identified or not will depend on its shape, diameter, length, and the depth that it is buried at. GPR operates using different antenna frequencies. The higher the frequency, the higher the resolution, but the lower the penetration depth will be, and vice versa. Hence, the smaller a target, the closer to the surface it must be to be detectable by GPR. Our proposals give indications of the expected vertical and horizontal resolution.

With the GPR method, the actual depth of investigation is very difficult to predict ahead of a survey. Penetration depth is, apart from the chosen radar frequency, largely controlled by the electrical conductivity of the ground material encountered on site. Therefore electrically conductive material (i.e., Ferrous objects) and water will attenuate GPR signals and can reduce penetration depths from a possible 60 cm down to a few centimetres.

An electromagnetic wave is emitted into the ground and reflected where the dielectric properties change in the underground (e.g., Subsurface voids or ferrous objects). The reflected signal travels back to the surface where it is recorded by the GPR receiver. Based on the polarity and amplitude of the signal pulse an interpretation of the nature of the feature reflecting the signal can be made. Interpretations are always more robust where intrusive ground information is also available, as is the case with any of the geophysical methods.

To find the depth to a target or reflection in GPR data, an equation with two unknowns needs to be solved. The measured, known part of this equation is the time taken for a signal to leave the antenna, get reflected and return to the antenna. This is called two-way-travel time. The two unknown parameters are depth and velocity. To get the depth to an investigative target the velocity of the material or materials the electromagnetic wave travels through needs to be known or estimated. The only way to directly measure the velocity stratigraphy of the ground with GPR is to use a wide-angle reflection and refraction sounding (WARR) which requires a bi-static antenna setup (i.e., transmitting and receiving antennas can be separated). We only have monostatic antennas; hence, it is not possible to directly measure this property and means that either the GPR data needs to be directly correlated with intrusive methods, or we need to estimate the velocity of the material(s) to calculate the depth of a target. The depth accuracy is usually within about $\pm 20\%$. If there are point targets in the ground these

may cause hyperbolas in the GPR data. The aperture of the hyperbola can also be used to indicate the average velocity of the material down to the depth of that target.

Raw field data usually contain a varying level of noise and unwanted signals. These need to be filtered out of the data adequately to produce a GPR image that can be interpreted for features. Depending on the target and the level of noise a few or many filtering steps may be necessary. This is very much dependent on the site conditions and the time needed to process the data is generally difficult to predict ahead of a survey. The filtered GPR images show a series of reflections with either positive or negative polarity. To identify a target from a GPR image, good knowledge of, and experience with the methodology is necessary. As with every geophysical methodology, suitably qualified personnel (i.e., geophysicists) should be used to design, acquire, process, and interpret the data.

7 LIMITATIONS

This report has been prepared for the benefit of Maynard Marks New Zealand Ltd as our client regarding the concrete slab foundation within the investigated site. It shall not be relied upon for any other purpose. The reliance by other parties on the information or opinions contained in this report shall, without our prior review and agreement in writing, be at such parties' sole risk. Geophysical surveys are indirect methods of site investigations that are based on a qualitative approach, and they are not intended to replace by any means direct intrusive methods. Geophysical surveys are complementary methods to direct intrusive methods and can be used to quantify the extent of intrusive site investigations. Limitations of the used geophysical methods are outlined as part of this report.

Opinions and judgments expressed herein are based on our understanding and interpretation of current geophysical standards and should not be construed as legal opinions. Where opinions or judgments are to be relied on, they should be independently verified with appropriate legal advice. Any recommendations, opinions, or guidance provided by Cook Costello in this report are limited to technical engineering requirements and are not made under the Financial Advisers Act 2008.

Recommendations and opinions in this report are based on data collected from a 2700 MHz GPR investigation undertaken on-site. Geophysical surveys complement invasive/destructive methods and provide a tool for investigating the subsurface; they do not produce data that can be taken as representative for all the ground conditions found within the surveyed area and they deliver qualitative results only. The nature and continuity of conditions away from the geophysical profiles are inferred and it must be appreciated that actual conditions could vary from the assumed models. The report represents an interpretation of the geophysical data.

Features that do not produce measurable geophysical anomalies or are hidden by other features may remain undetected. The geophysical models resulting from site data are non-unique. The risk of this inhibiting correct interpretations has been reduced by best practices and knowledge but cannot be guaranteed to be fully omitted.

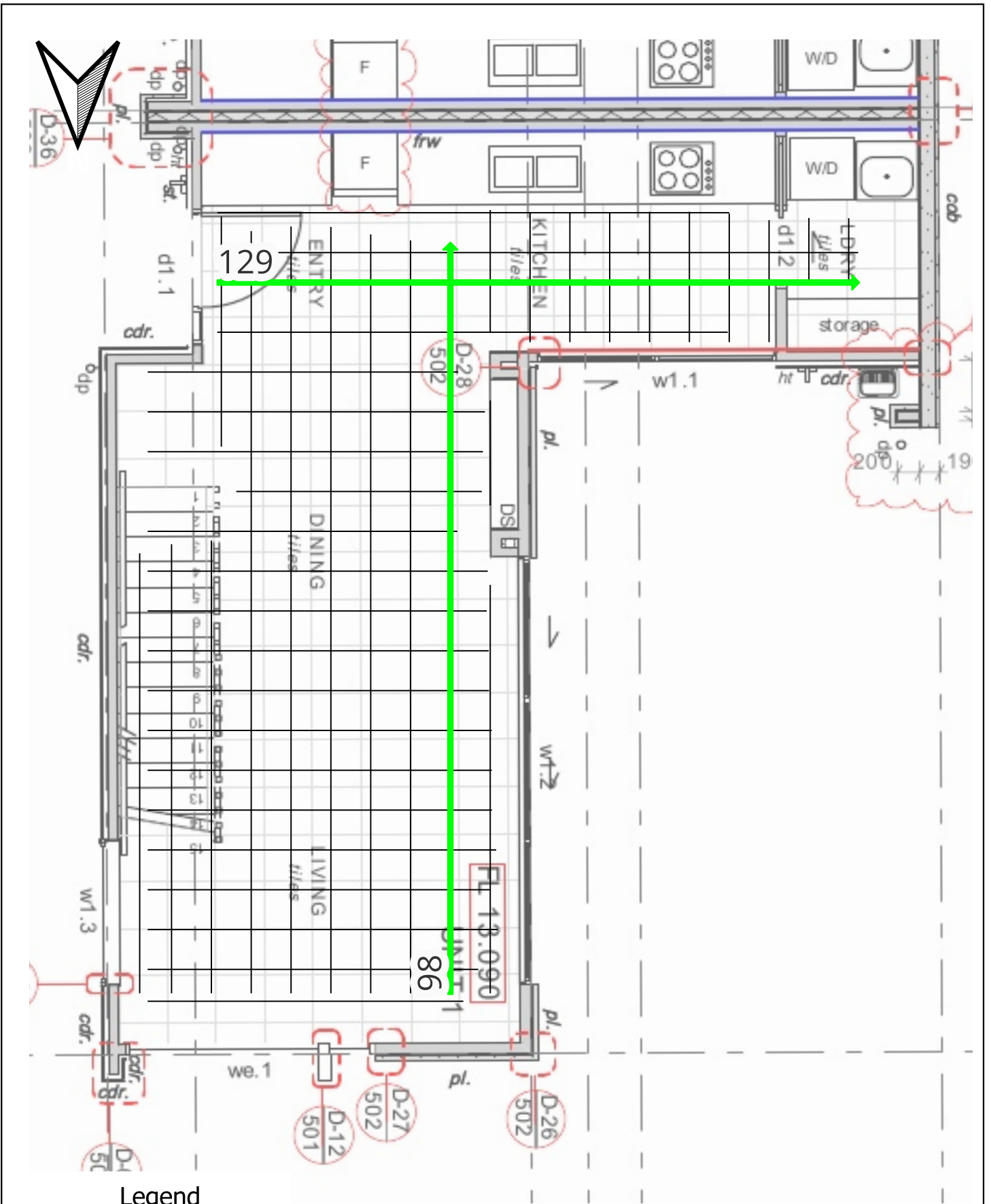
Cook Costello have performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.



17883 10 Hurley Street

APPENDIX A

Site Maps



Legend

Chosen GPR Radagrams

- GPR lines Unit 1

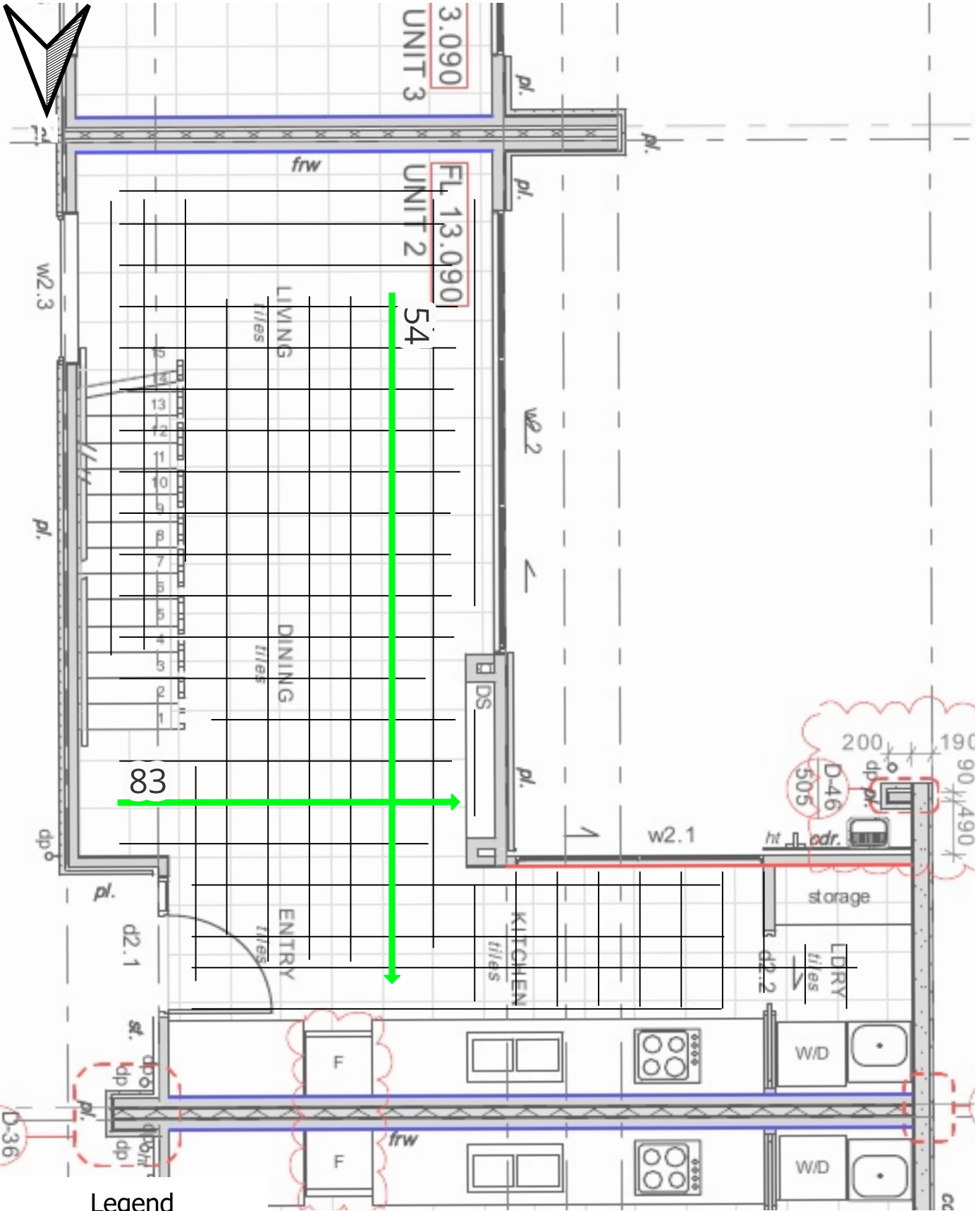
Floor Plan

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1.65

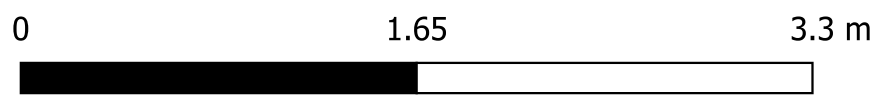
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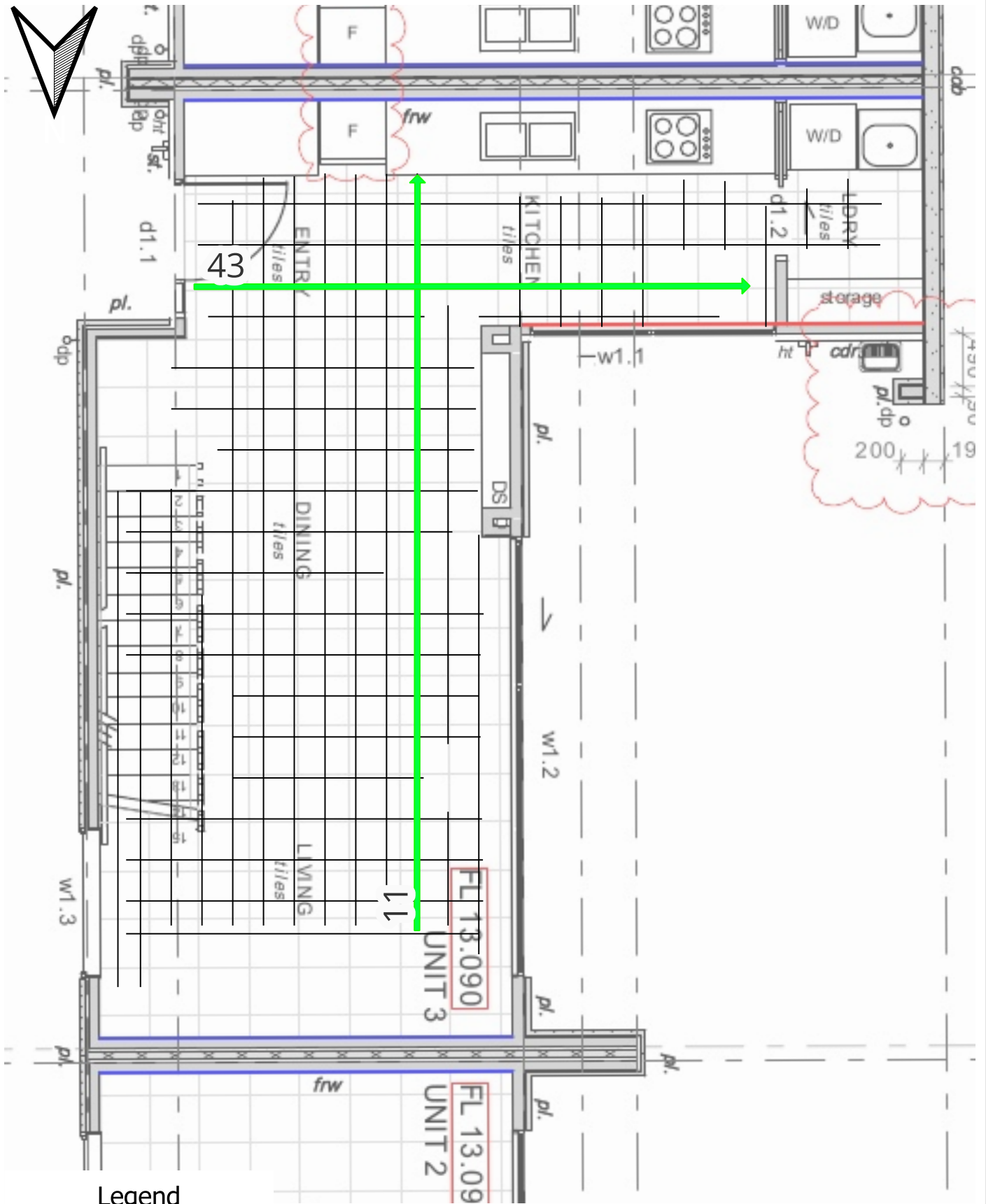


Legend

- Chosen GPR Radagrams
- GPR lines Unit 2



Floor Plan



Legend

➔ Chosen GPR Radagrams

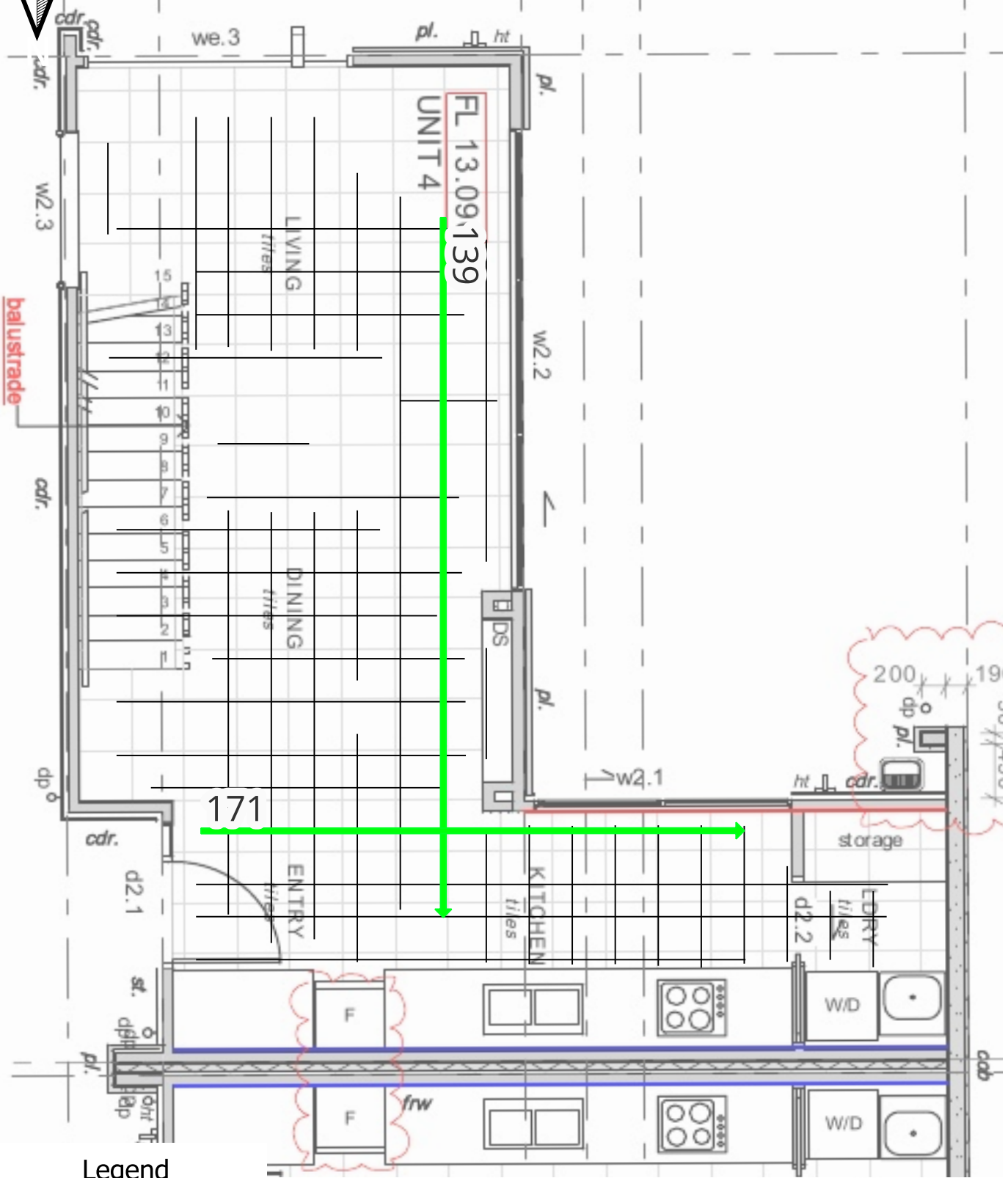
- GPR lines Unit 3

Floor Plan

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1.65

3.3 m



Legend

Chosen GPR Radagrams

- GPR lines Unit 4

Floor Plan

0

1.65

3.3 m

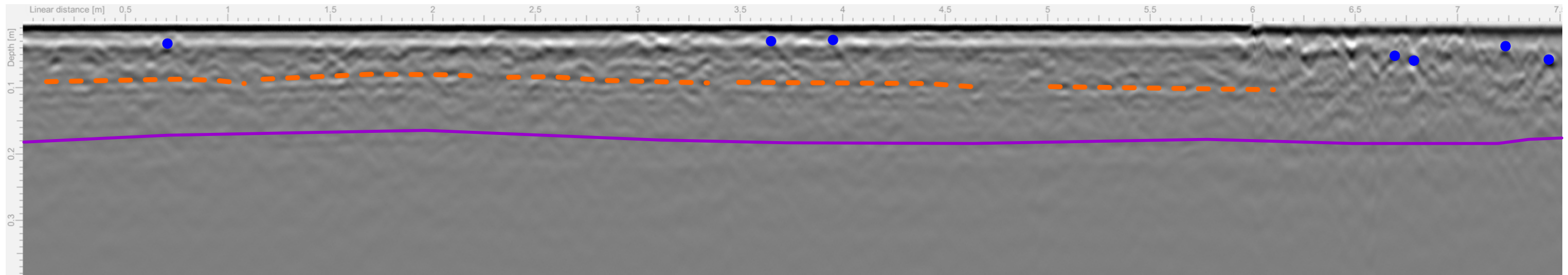




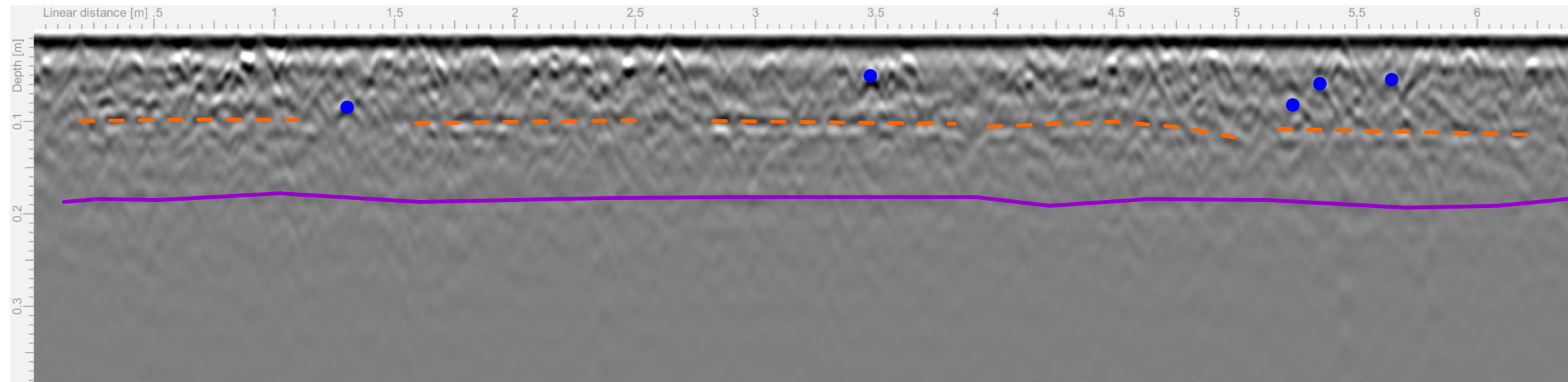
17883 10 Hurley Street

APPENDIX B
GPR Radargrams

GPR Radargram 98



GPR Radargram 129



Legend

- Interpreted base of slab
- - - Interpreted rib-raft pods
- Visible Reinforcing bars



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GPR Radargrams from unit 1 10 Hurley Street

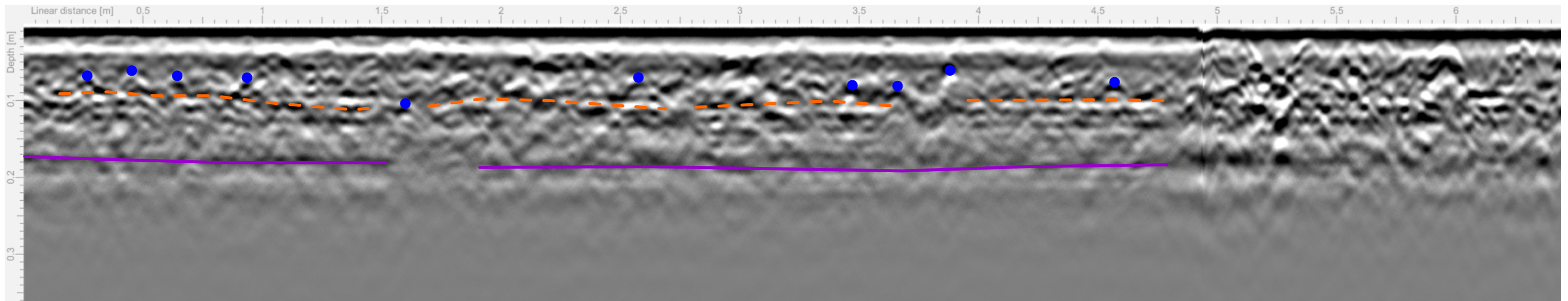
See site map for like locations.

CCL Project No. 17883
10 Hurley Street Christchurch

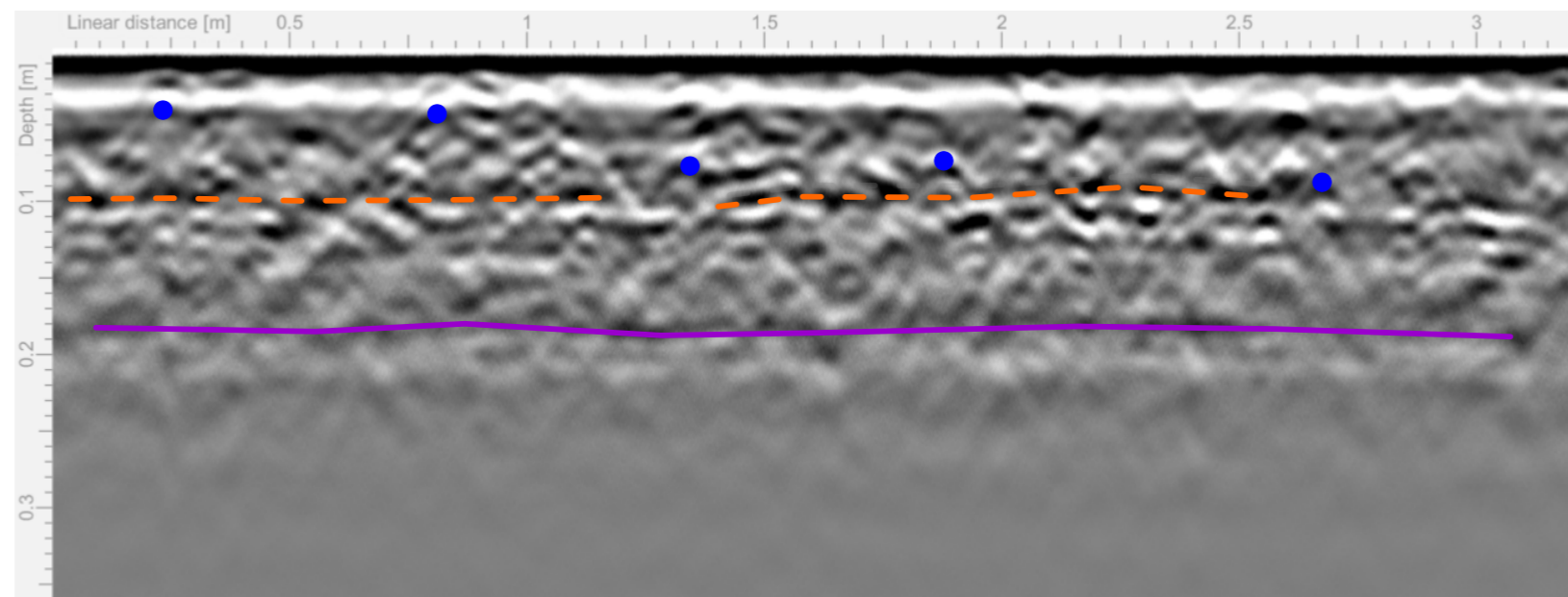
Version 1.0
Original

20/01/2026

GPR Radargram 54



GPR Radargram 83



Legend

- Interpreted base of slab
- - - Interpreted rib-raft pods
- Visible Reinforcing bars



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GPR Radargrams from unit 2 10 Hurley Street

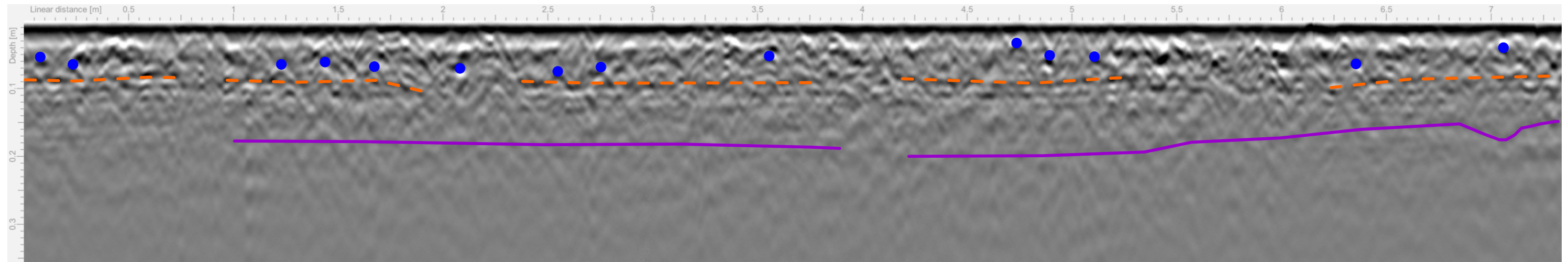
See site map for like locations.

CCL Project No. 17883
10 Hurley Street Christchurch

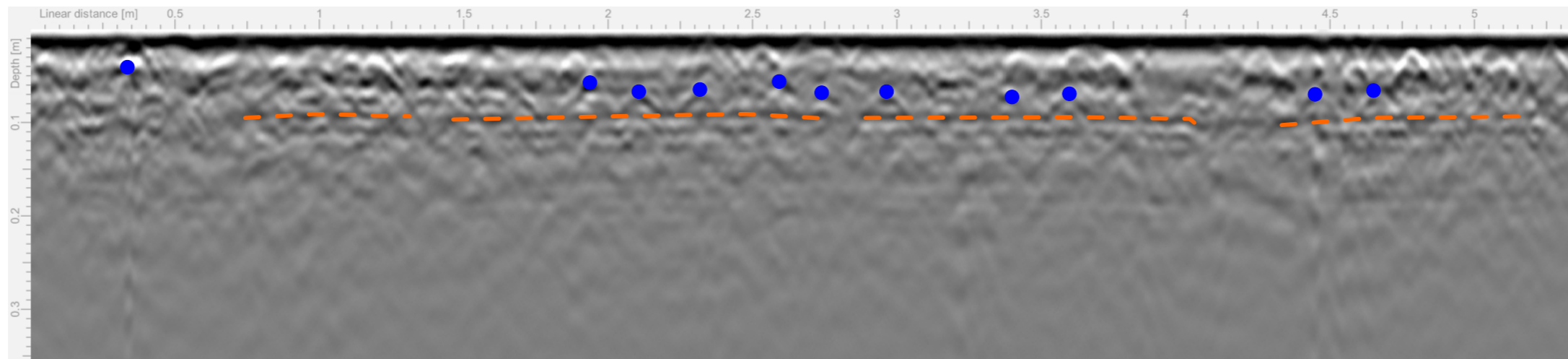
Version 1.0
Original

20/01/2026

GPR Radargram 11



GPR Radargram 43



Legend

- Interpreted base of slab
- - - Interpreted rib-raft pods
- Visible Reinforcing bars



[WWW.COCO.CO.NZ](http://www.coco.co.nz)

Whangarei | Auckland | Wellington | Christchurch

GPR Radargrams from unit 3 10 Hurley Street

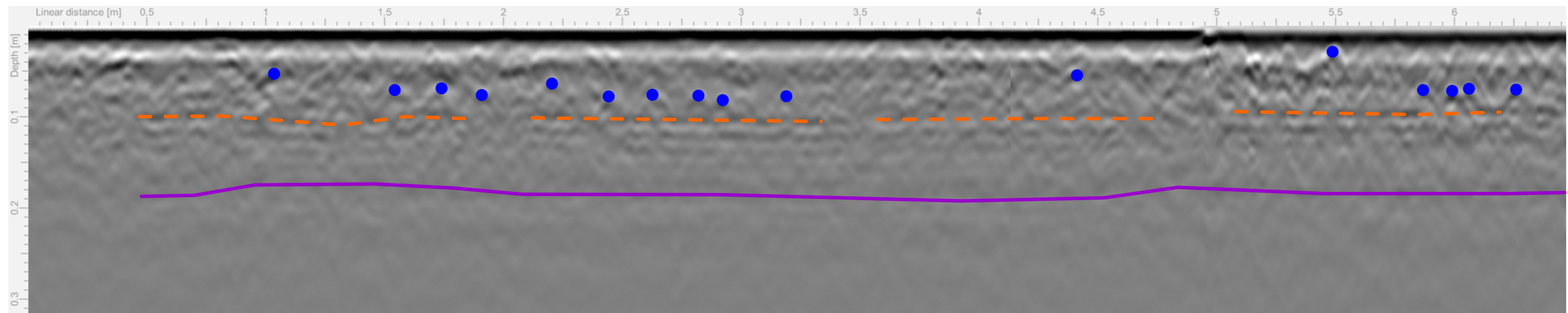
See site map for like locations.

CCL Project No. 17883
10 Hurley Street Christchurch

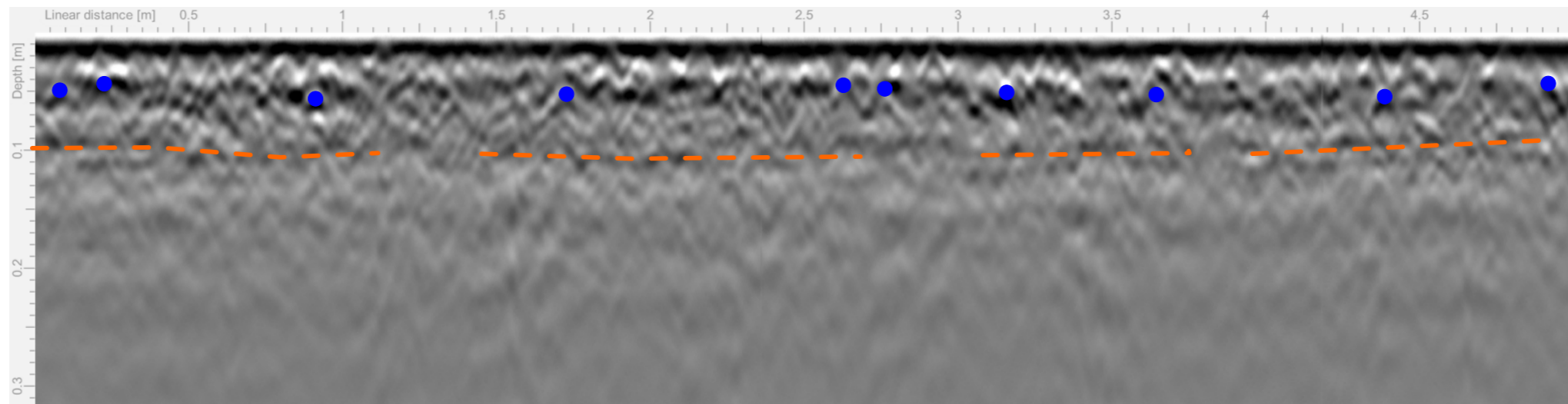
Version 1.0
Original

20/01/2026

GPR Radargram 139



GPR Radargram 171



Legend

- Interpreted base of slab
- - - Interpreted rib-raft pods
- Visible Reinforcing bars



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GPR Radargrams from unit 4 10 Hurley Street

See site map for like locations.

CCL Project No. 17883
10 Hurley Street Christchurch

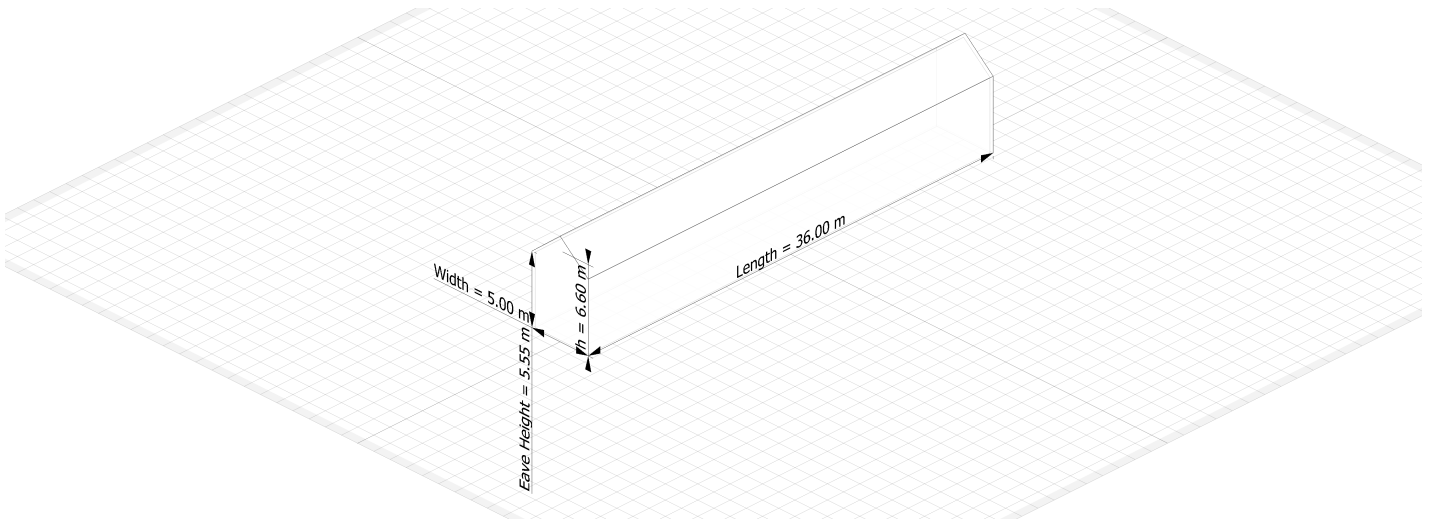
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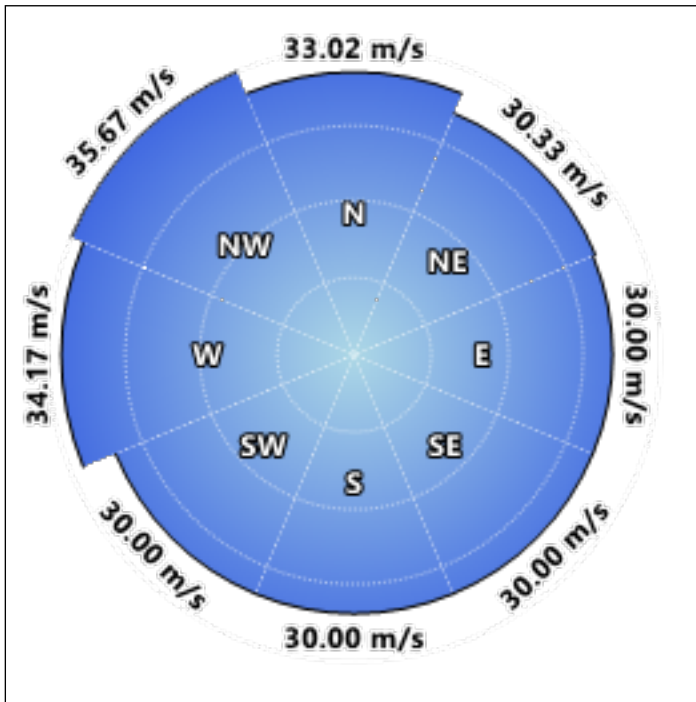
20/01/2026

APPENDIX D

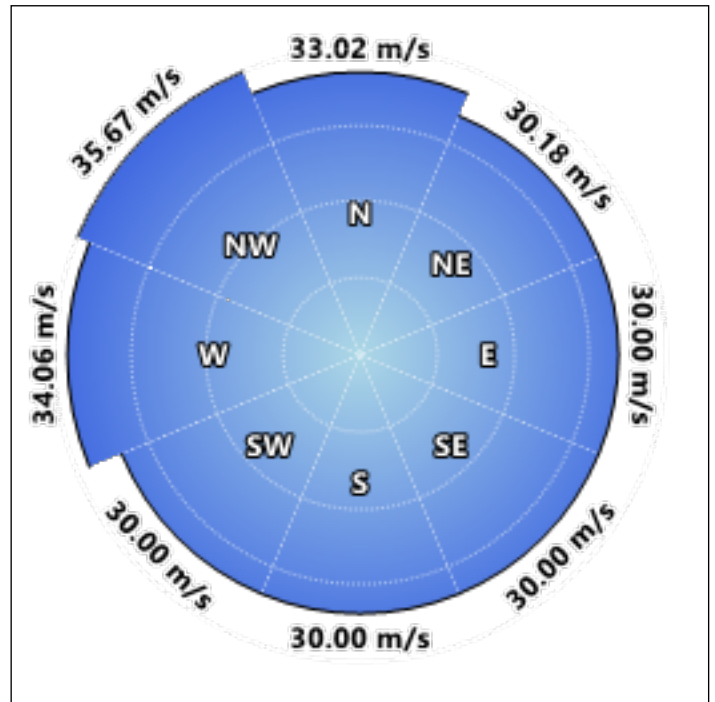
Wind Speed and Bracing Calculations

STRUCTURE:	BUILDING	LATITUDE:	-43.525281	CRITICAL DIRECTION:	North West
ORIENTATION:	0°	LONGITUDE:	172.647099	Md:	1.0
WIDTH:	5.00 m	ELEVATION:	3.50 m	TC:	3.0
LENGTH:	36.00 m			Mz,cat:	0.83
HEIGHT (h):	6.60 m	WIND		Ms:	1.0
BASE RL:	0.00 m	REGION:	A7	Mh:	1.0
		ULTIMATE ARI:	500 YEARS	Mlee:	1.0
IMPORTANCE LEVEL:	2	ULTIMATE VR:	45 m/s	Mel:	1.0
DESIGN LIFE:	50 YEARS	SERVICEABILITY VR:	37 m/s	Mt:	1.0
				Vsit,β:	37.35 m/s
		SNOW		qsit,β:	0.8370 kPa
		REGION:	N4	Vserv,β:	30.71 m/s
		ELEVATION CLASS:	SubAlpine	qserv,β:	0.5659 kPa
		SEISMIC			
		RISK COEFFICIENT:	0.22		

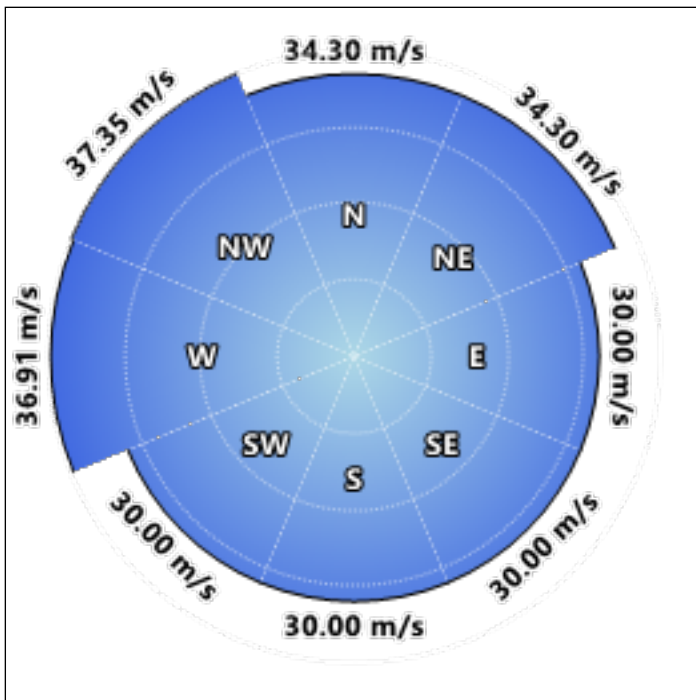




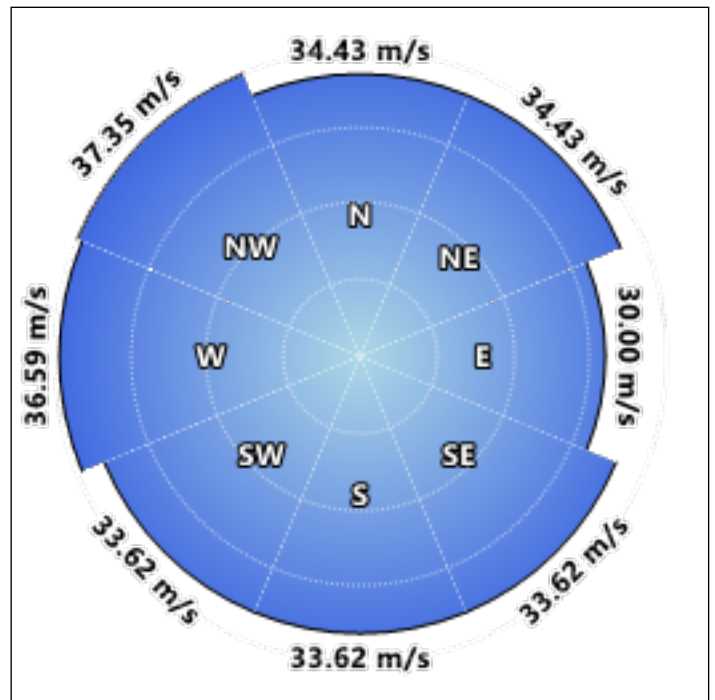
Wind Rose @ z = 0.00 m



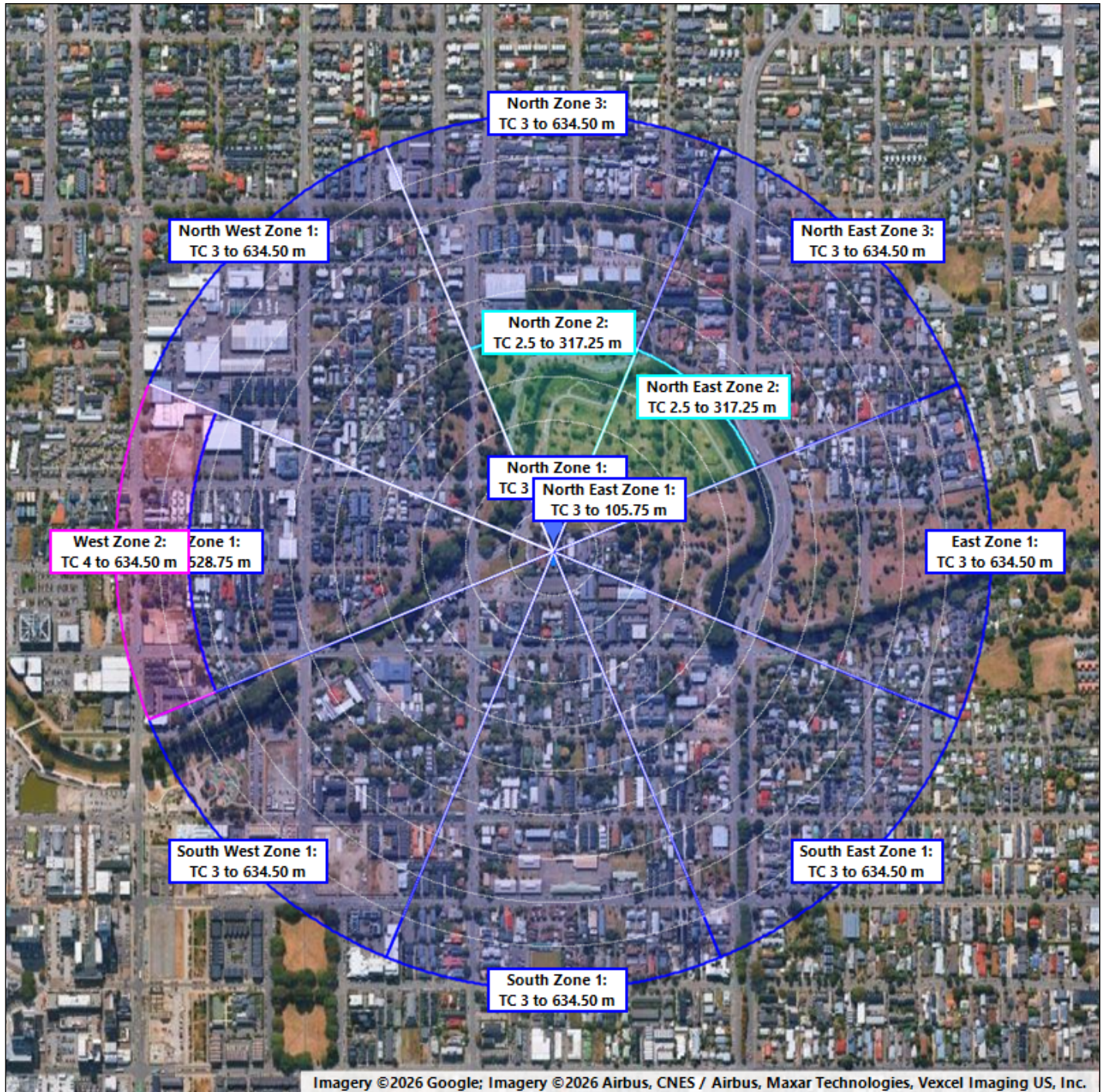
Wind Rose @ z = 2.20 m

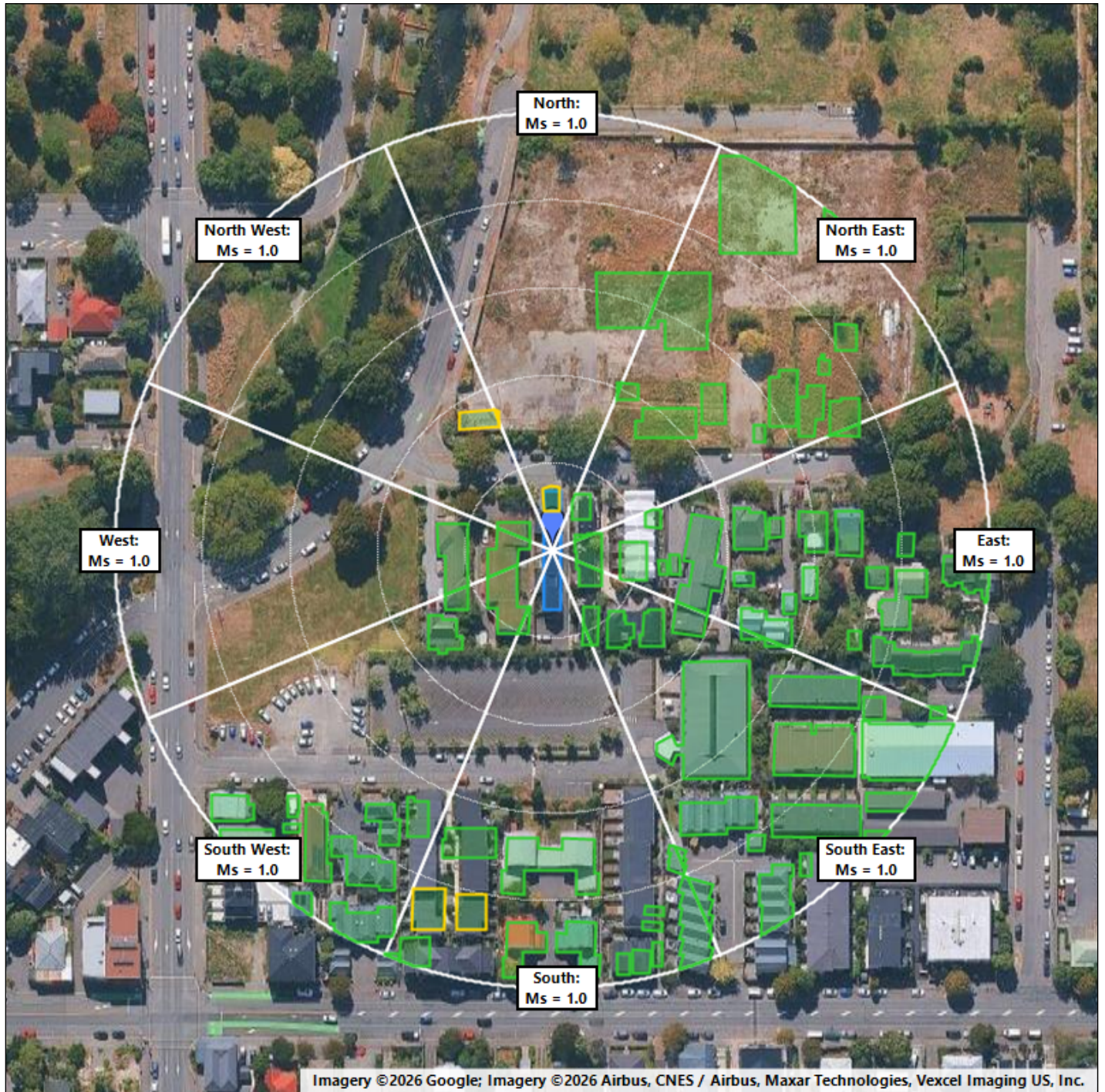


Wind Rose @ z = 4.40 m



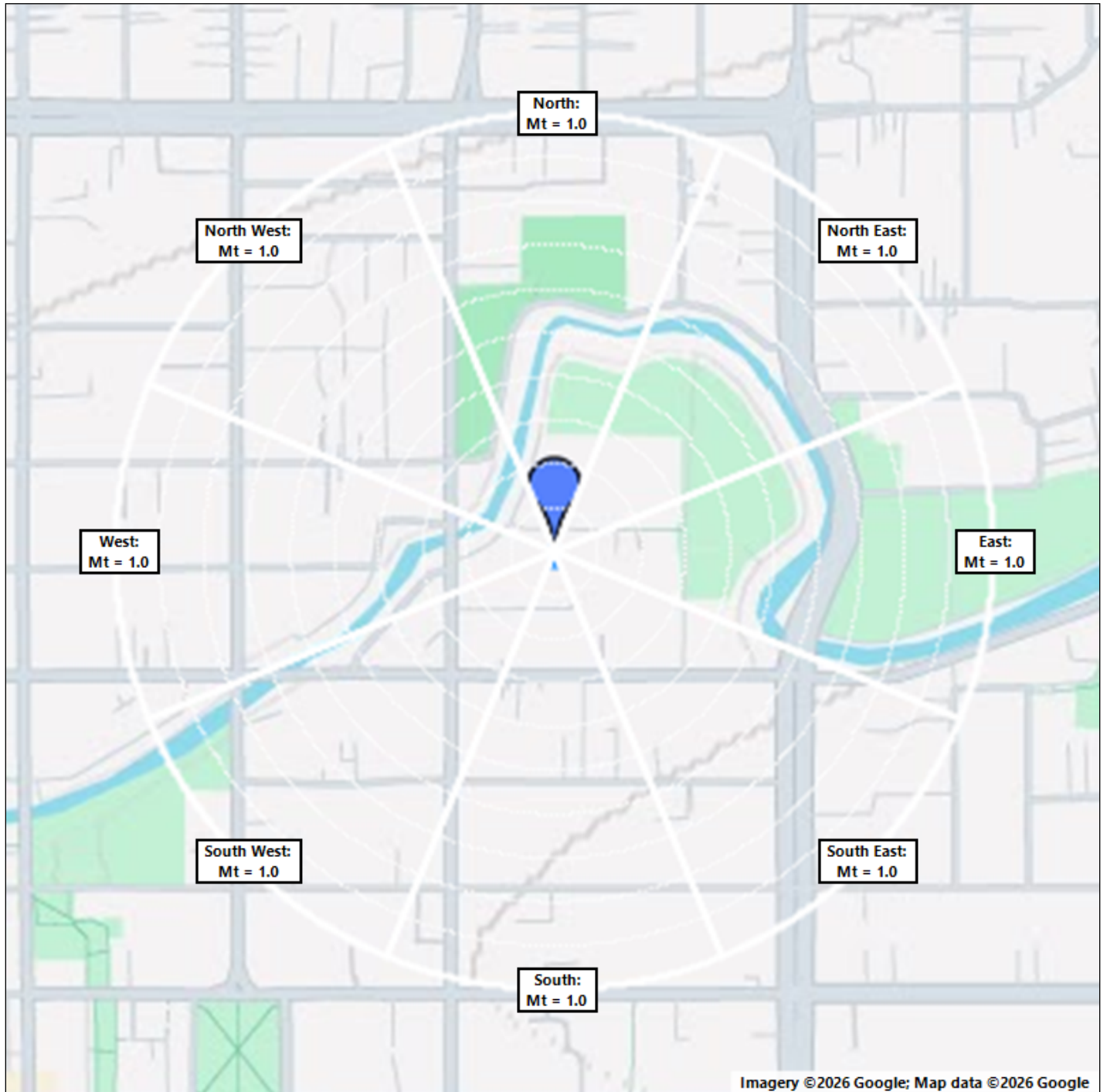
Wind Rose @ z = 6.60 m

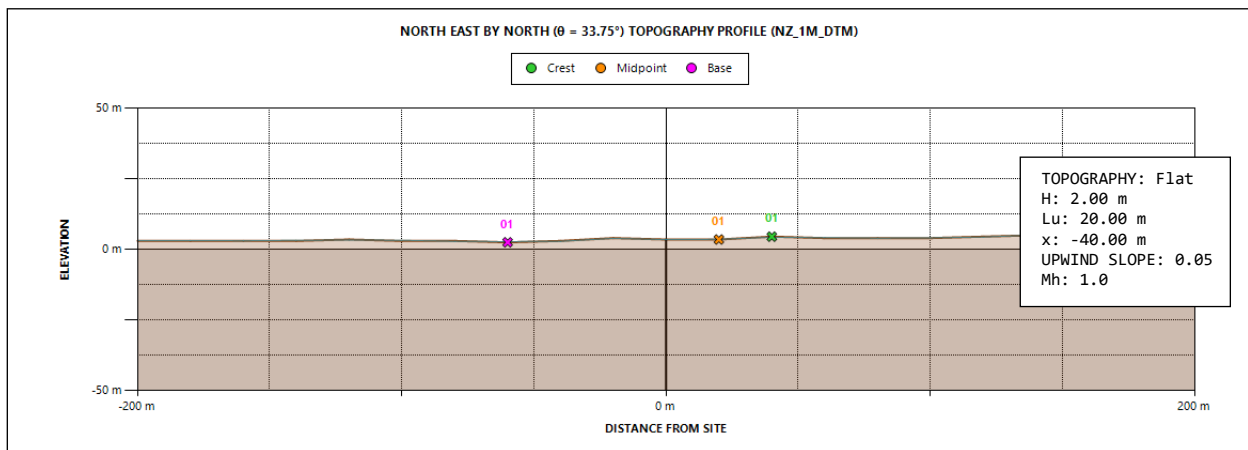
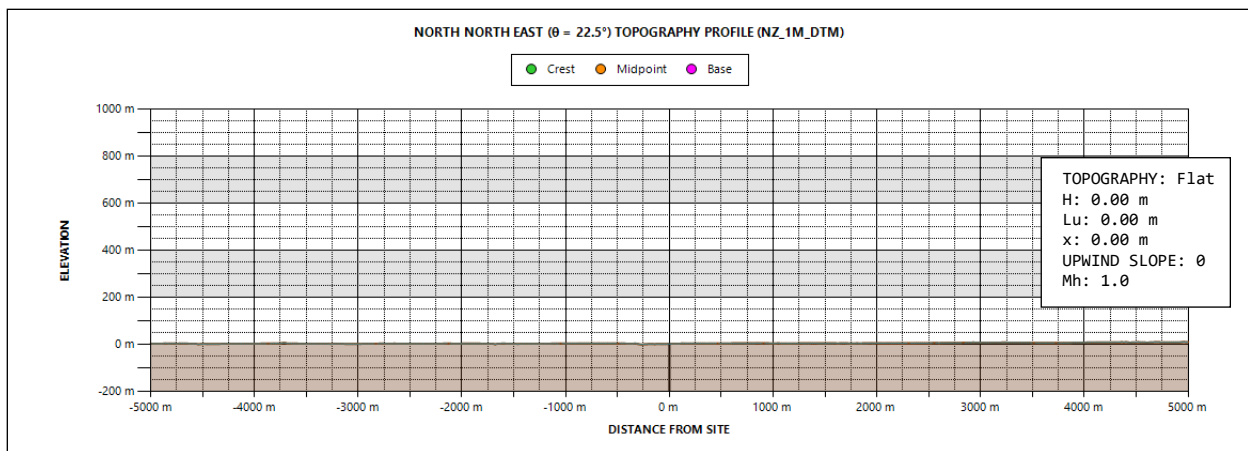
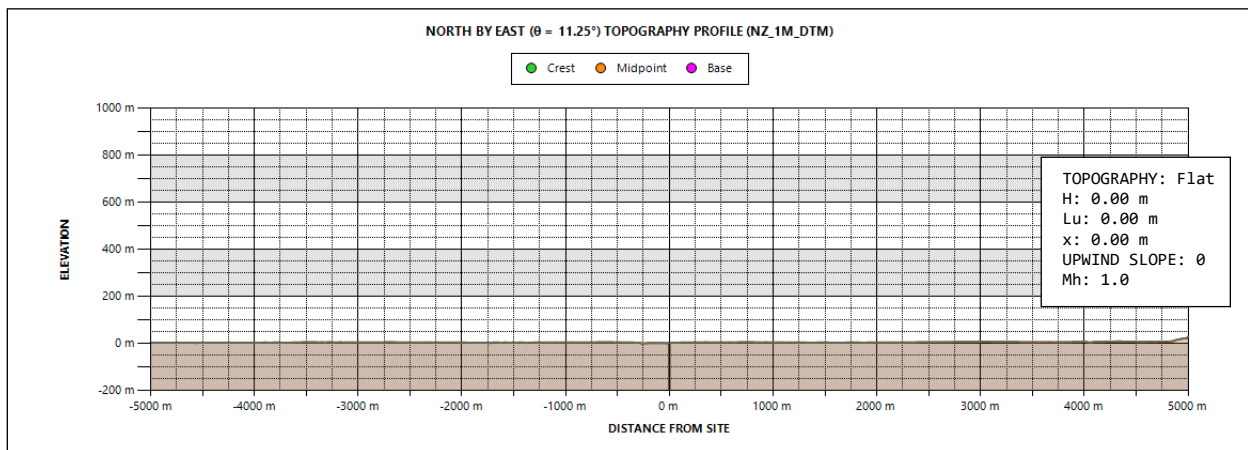
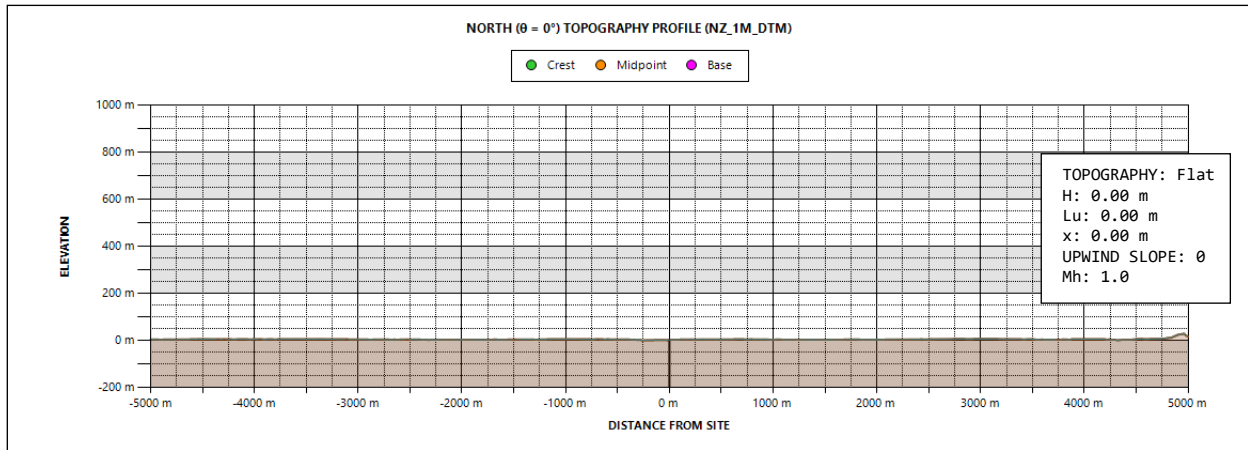


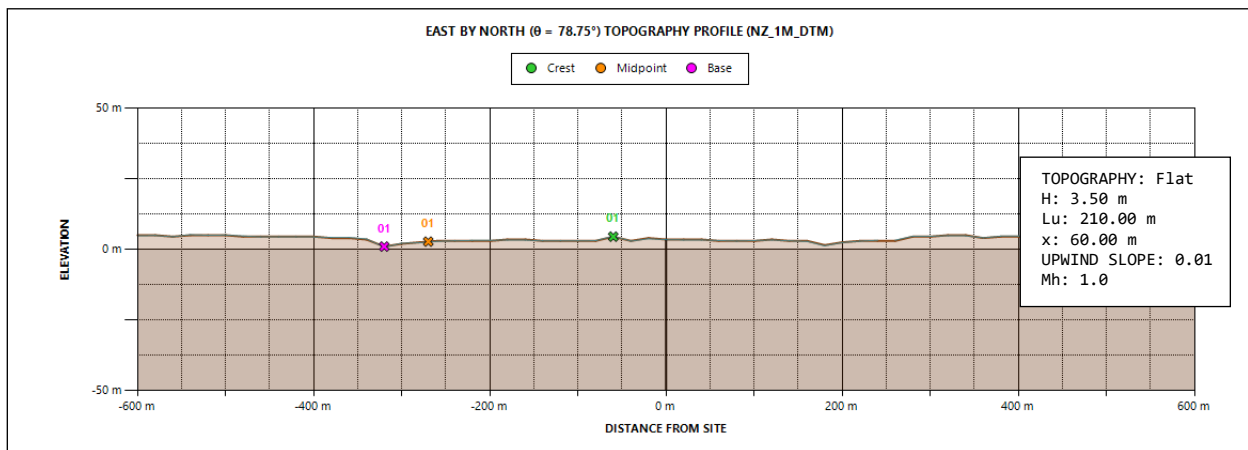
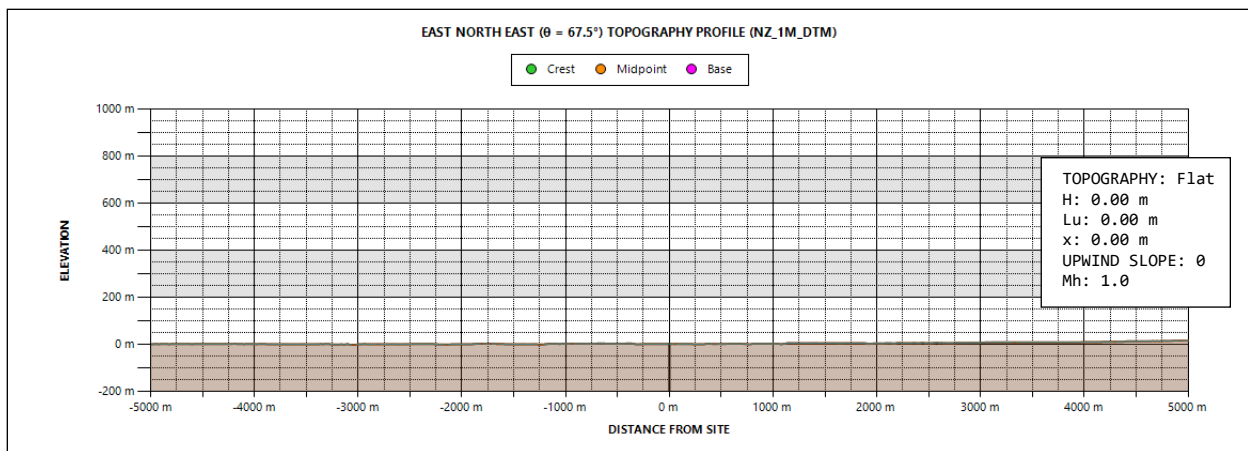
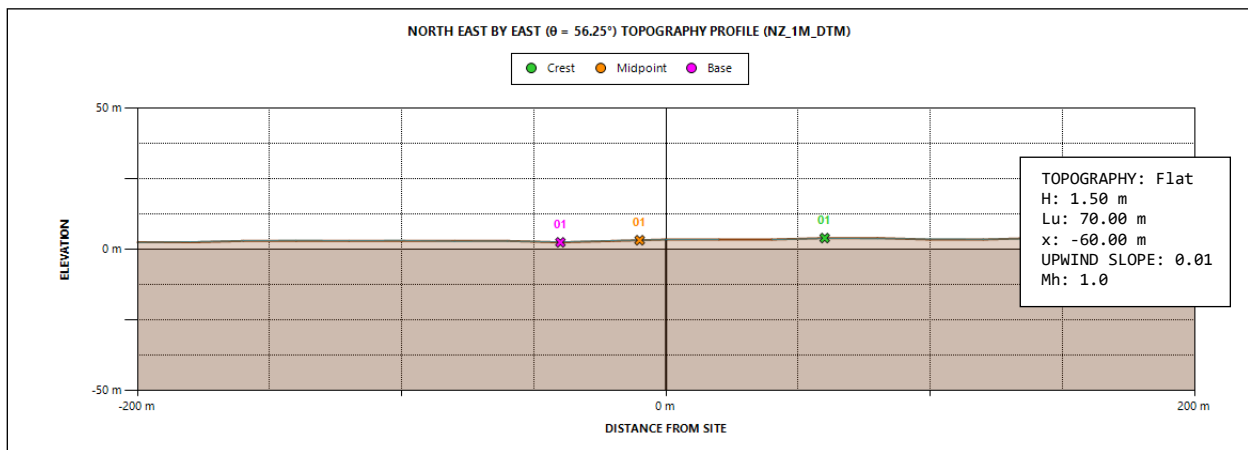
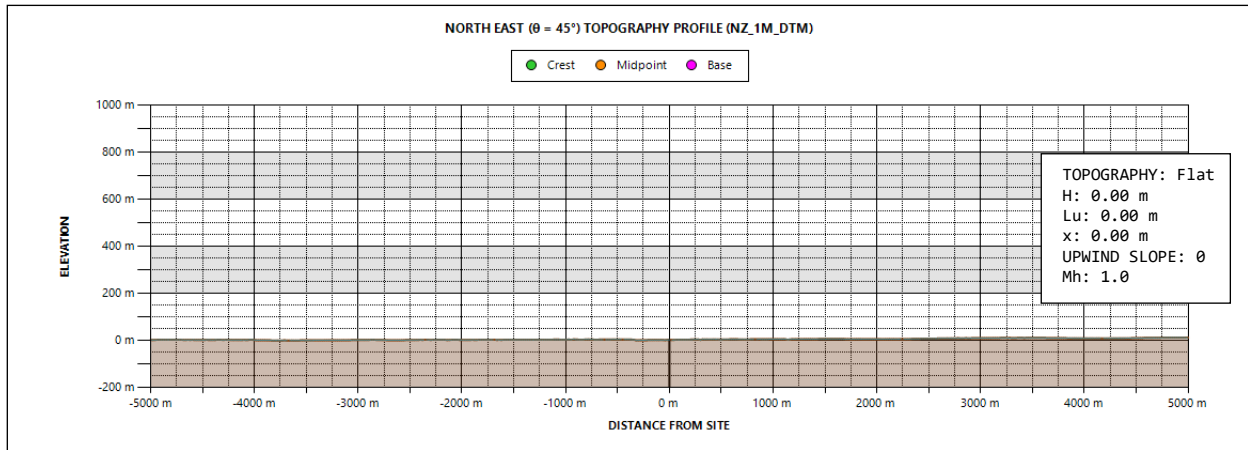


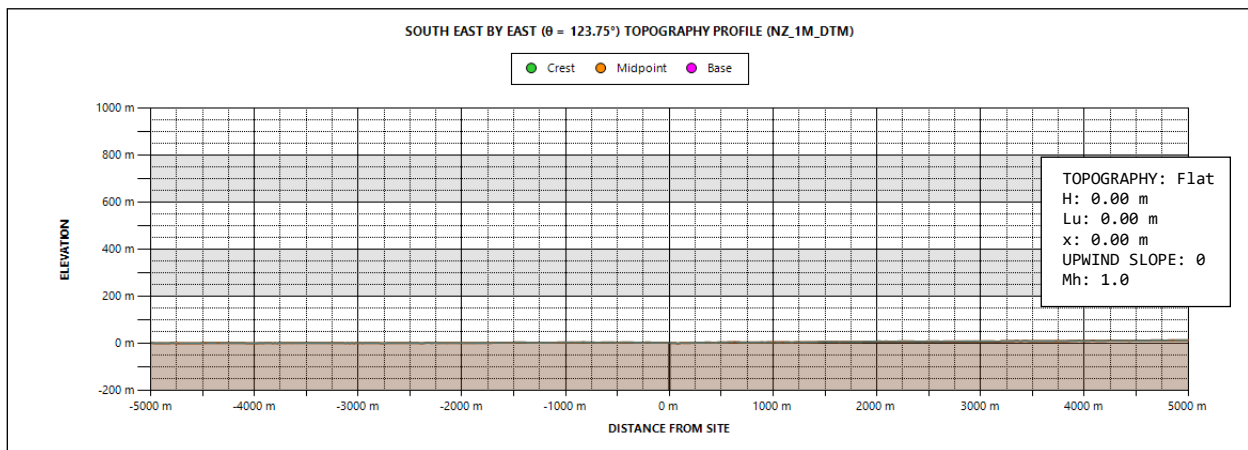
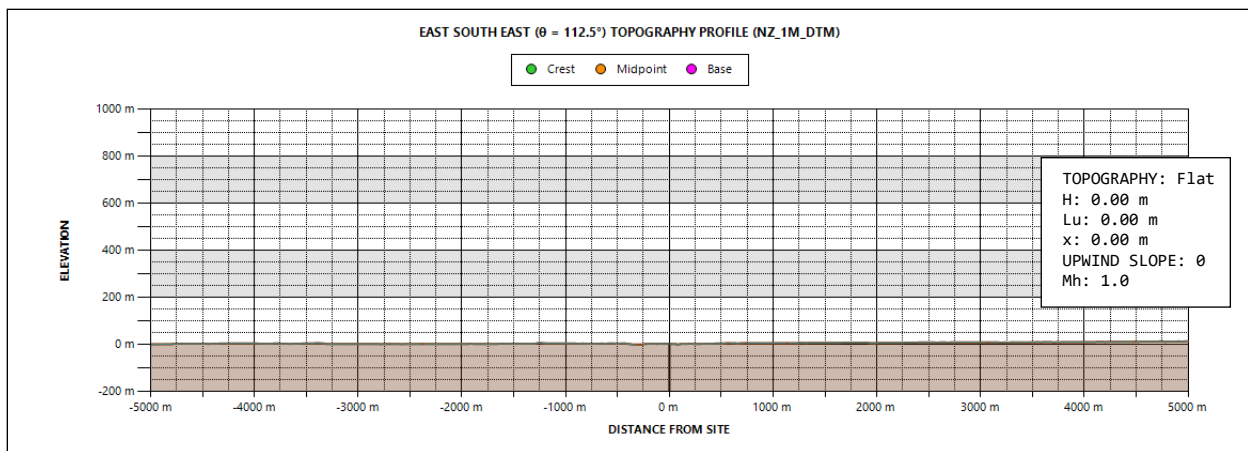
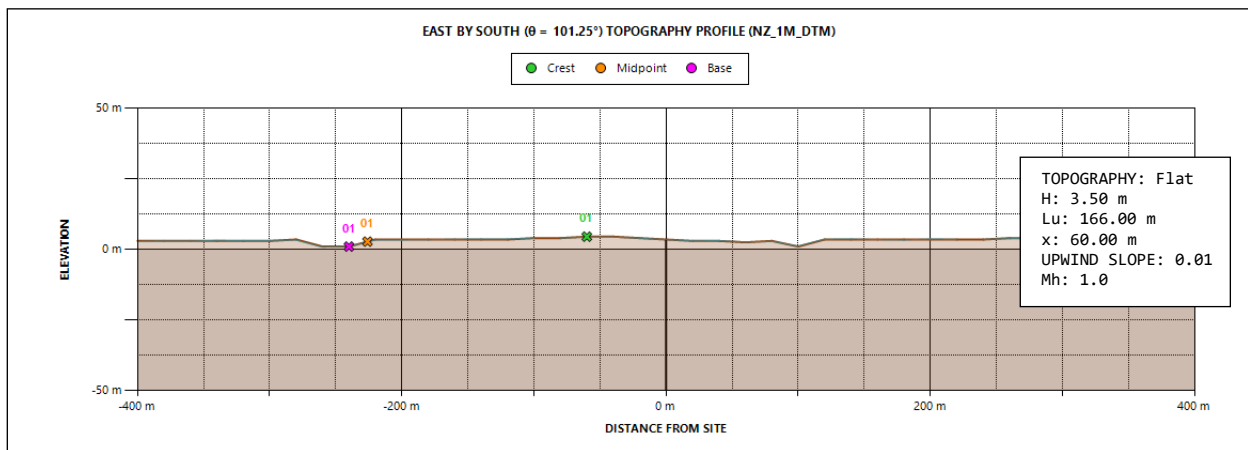
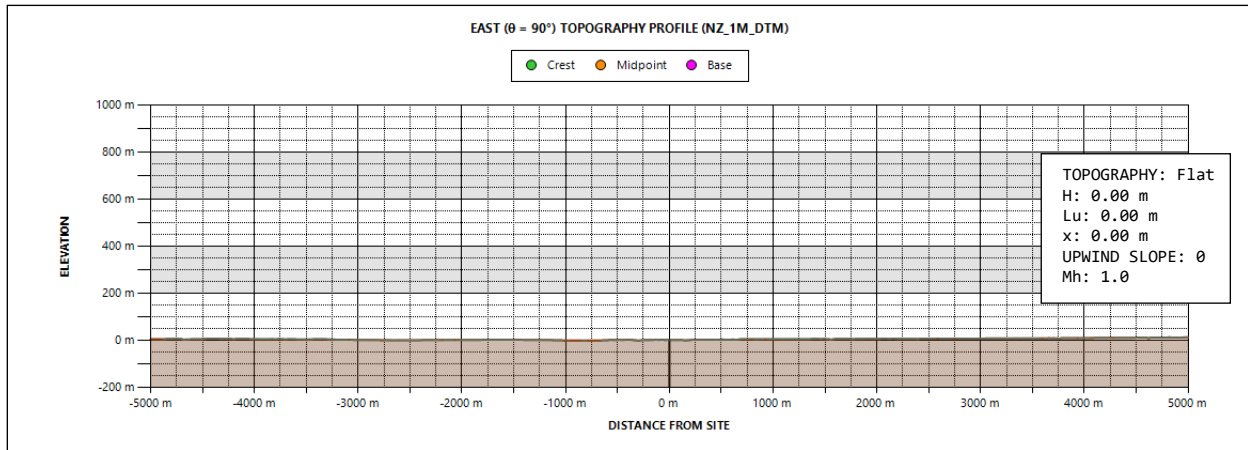
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PROJECT:
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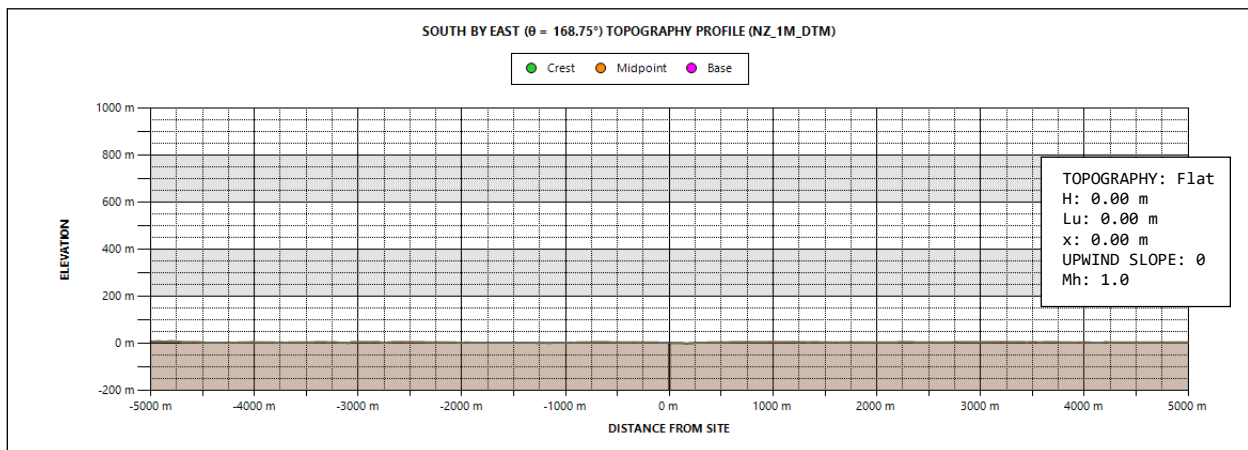
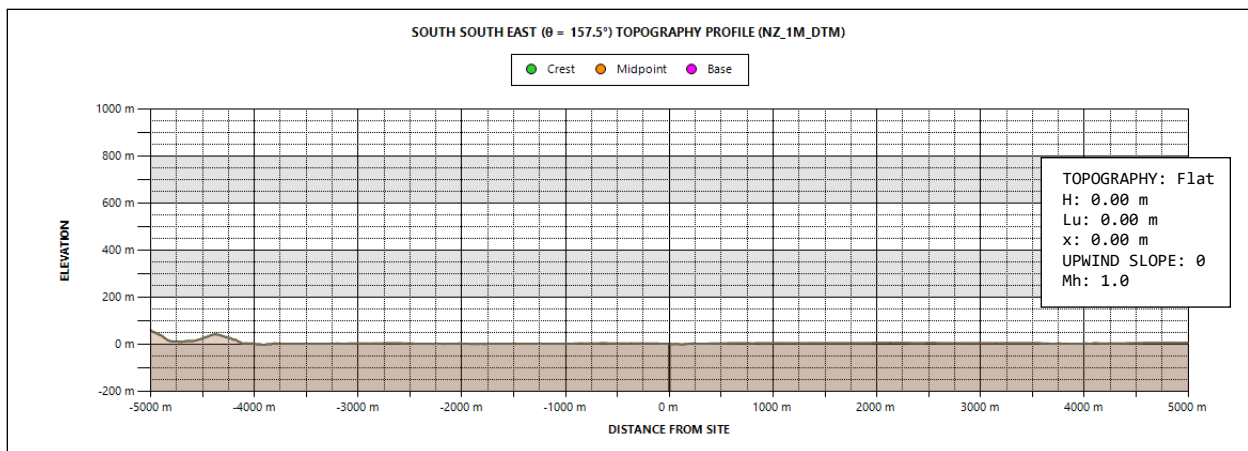
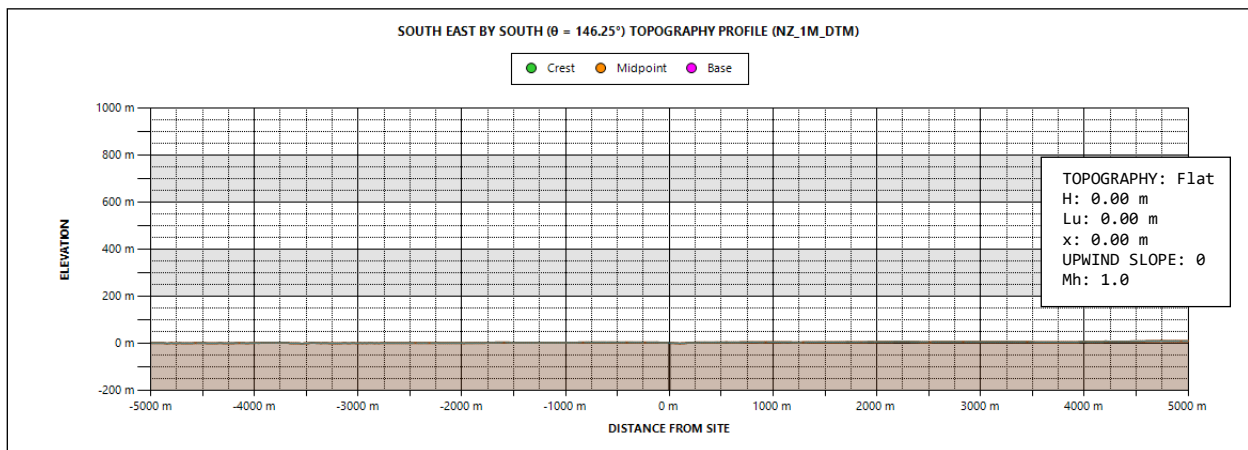
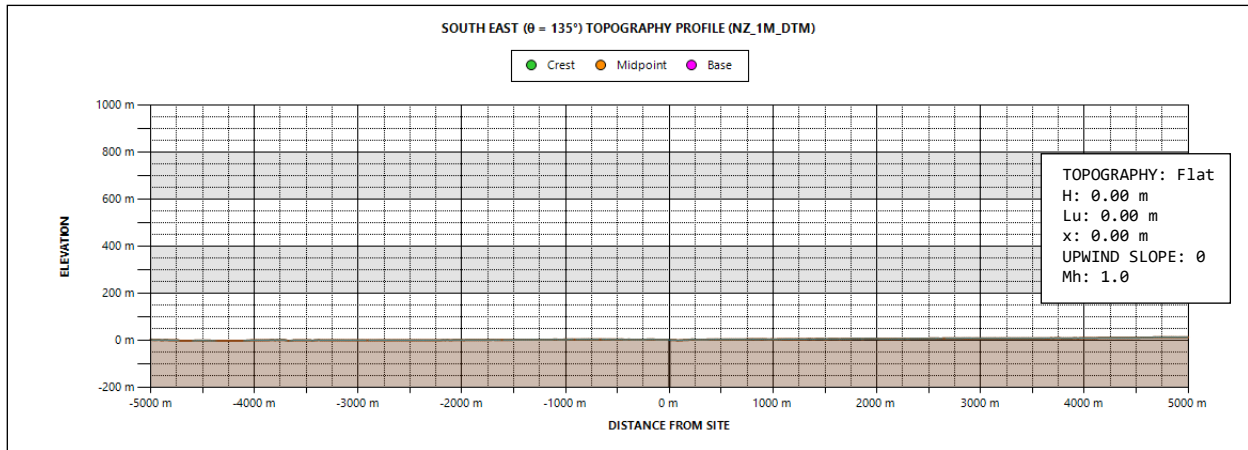
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Thursday, February 19, 2026 1:26:31 PM
Daniel Kennett @ Maynard Marks

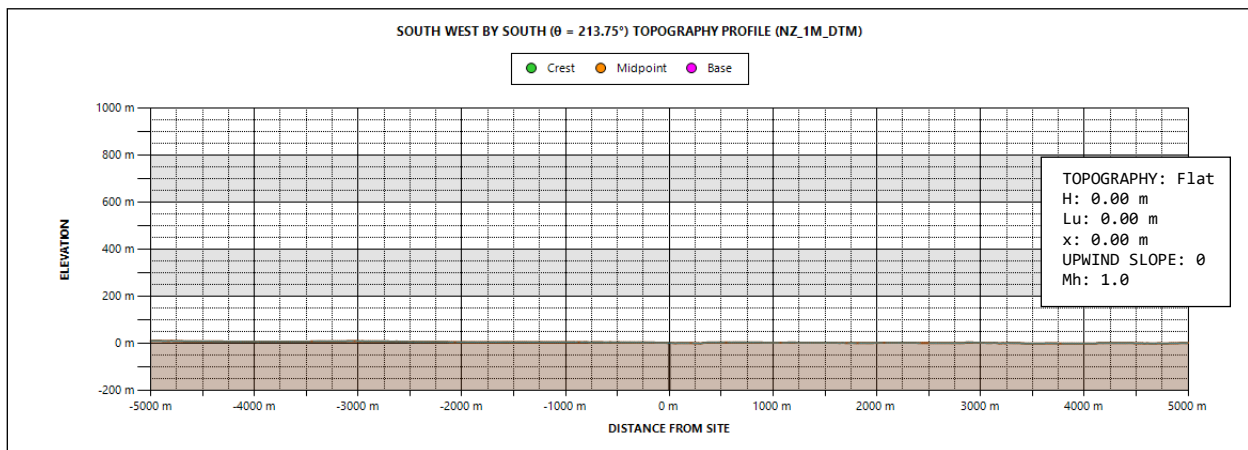
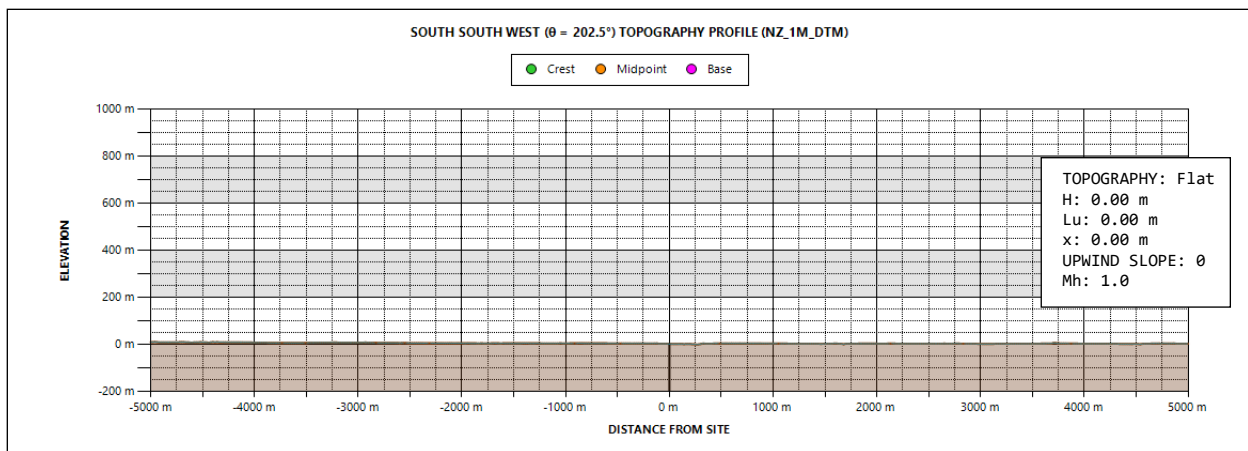
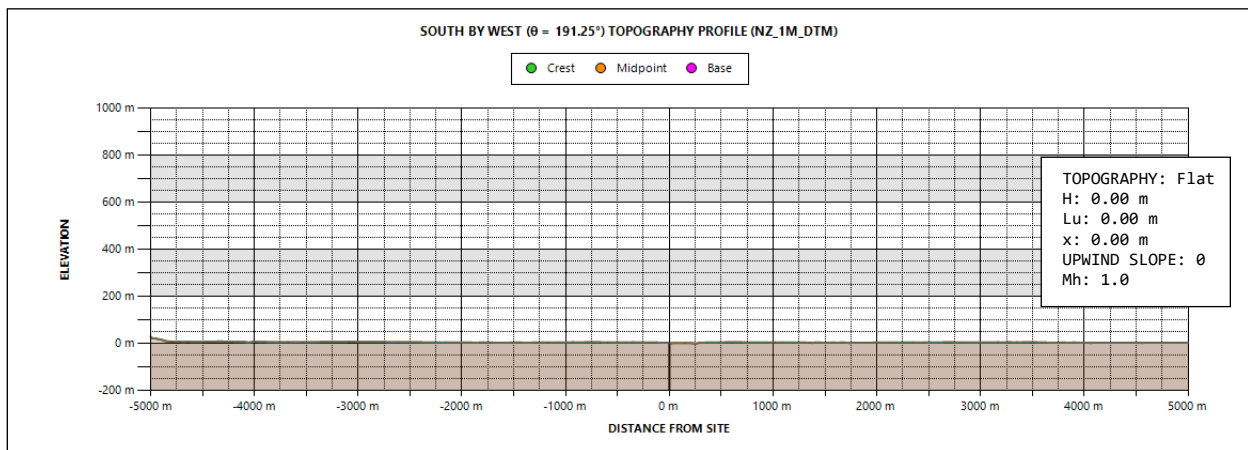
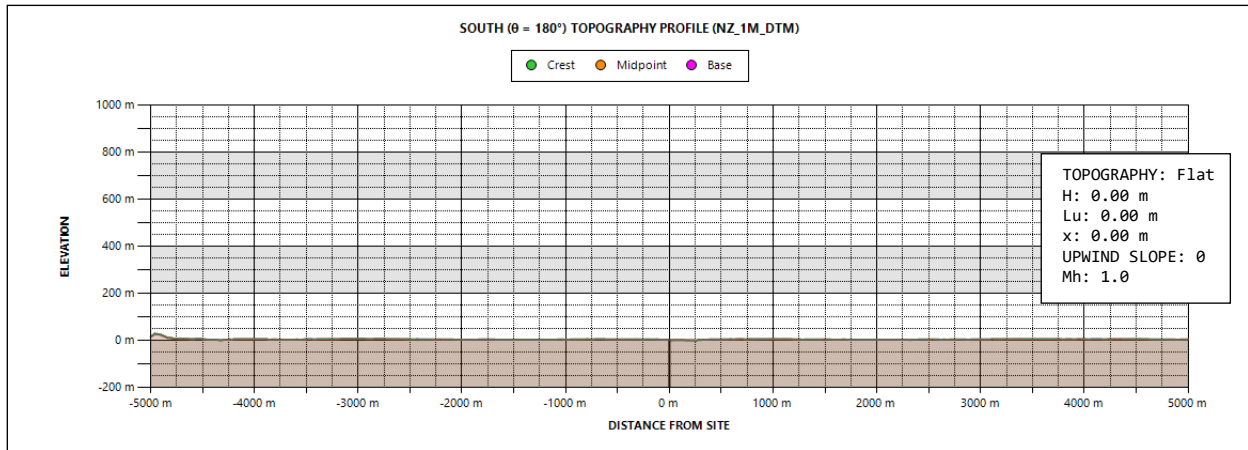


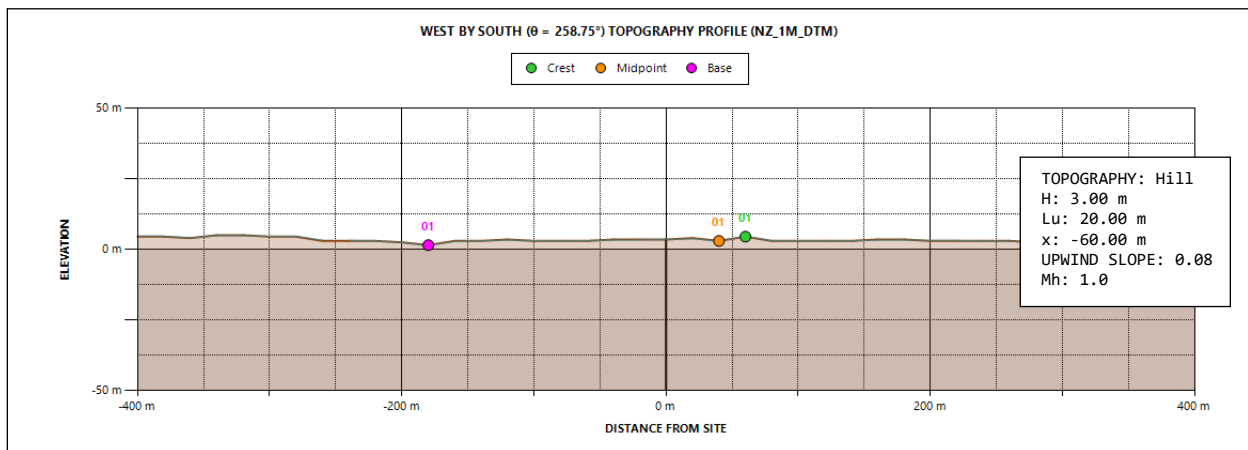
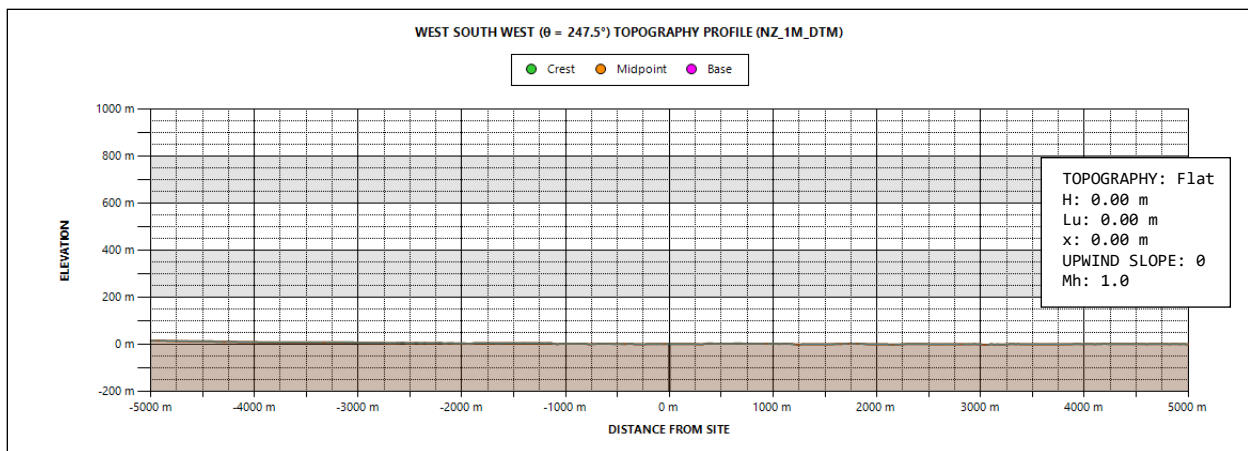
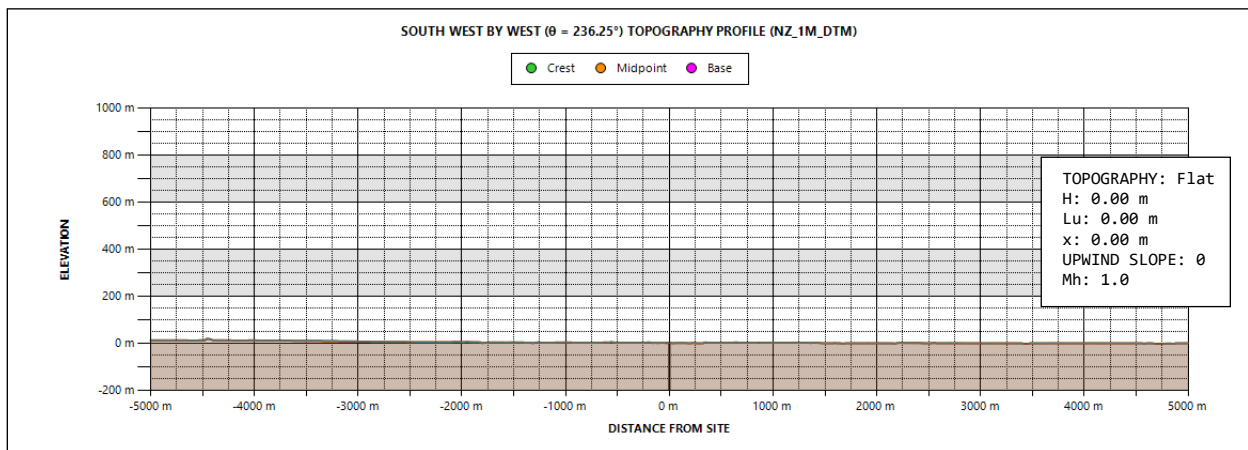
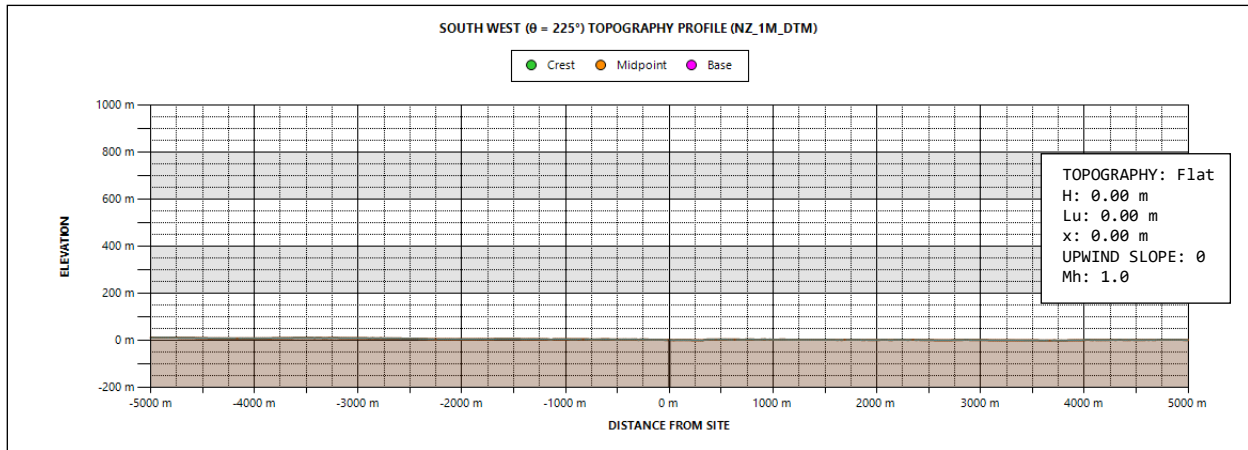


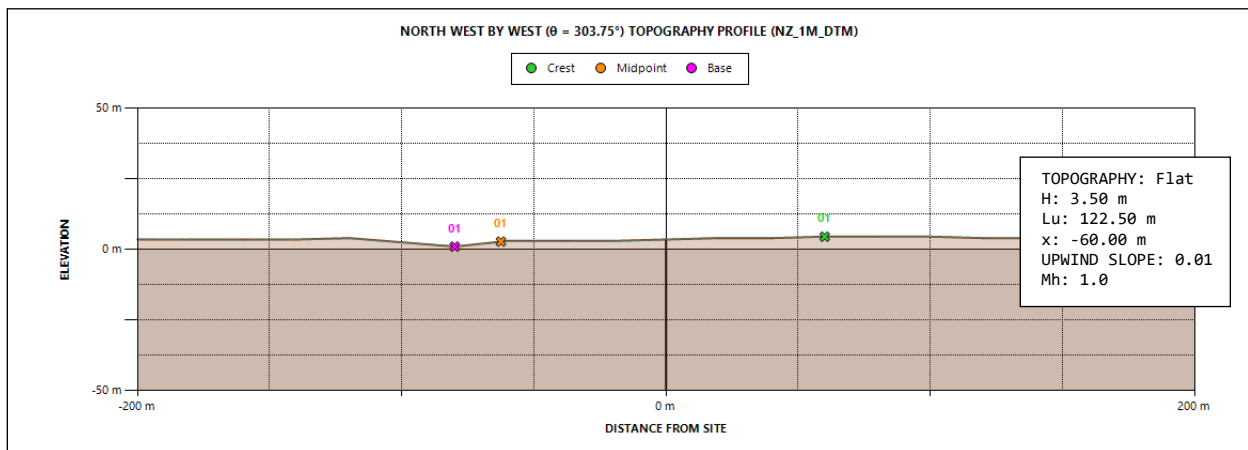
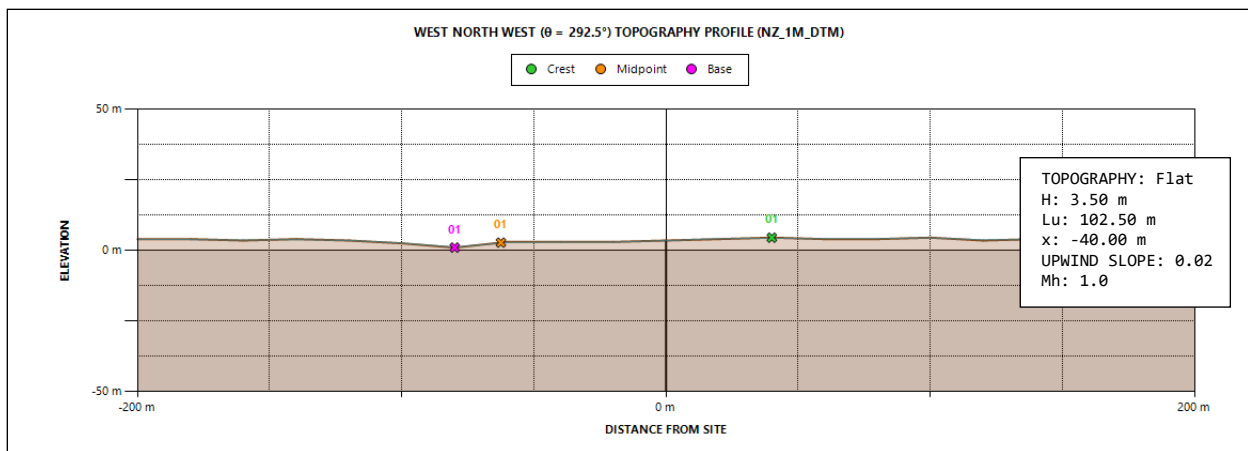
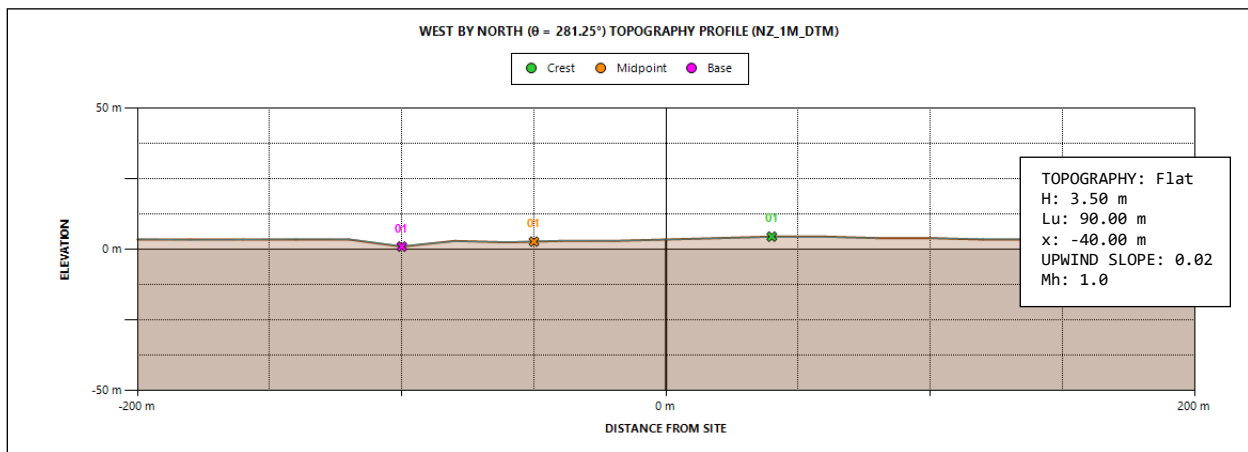
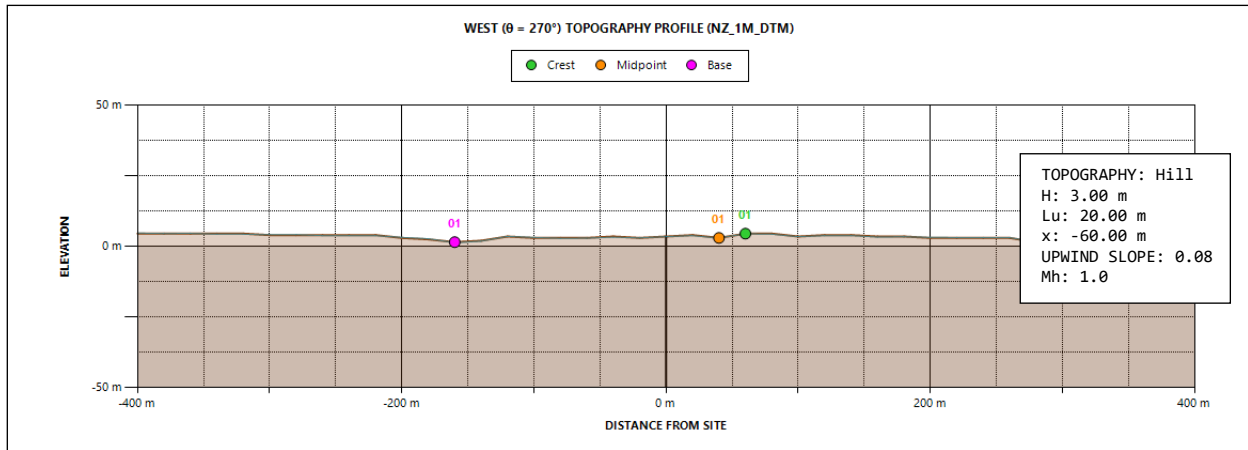


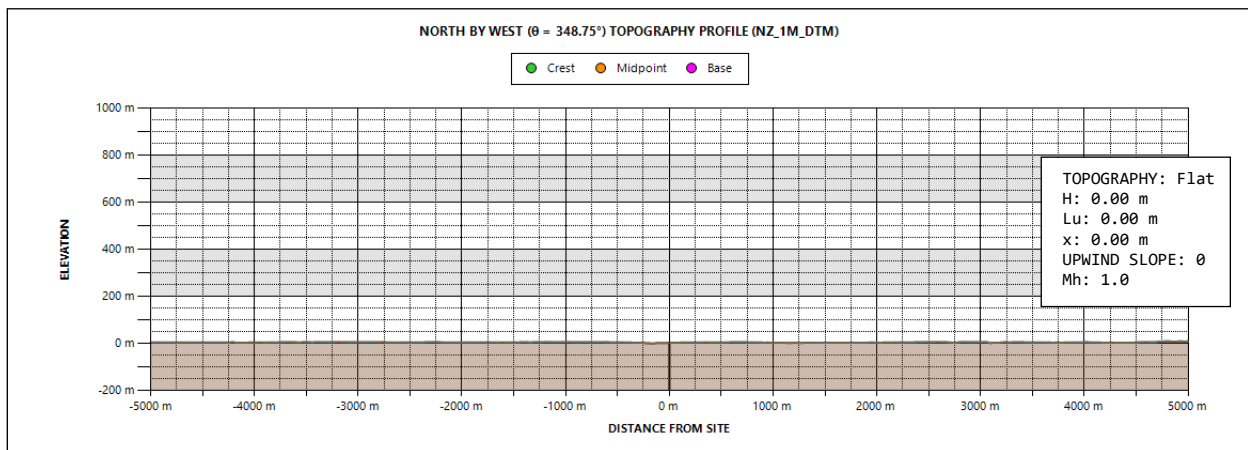
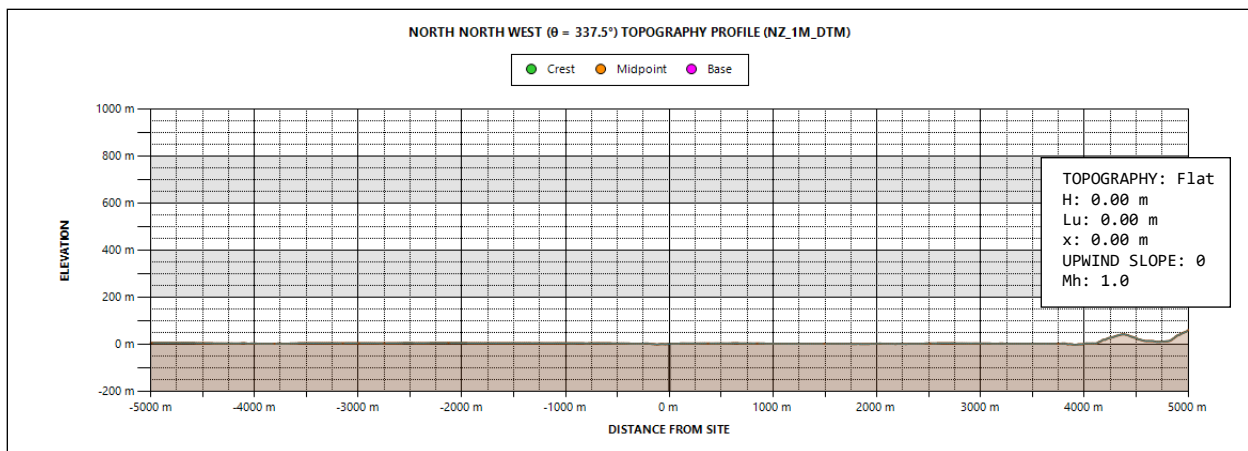
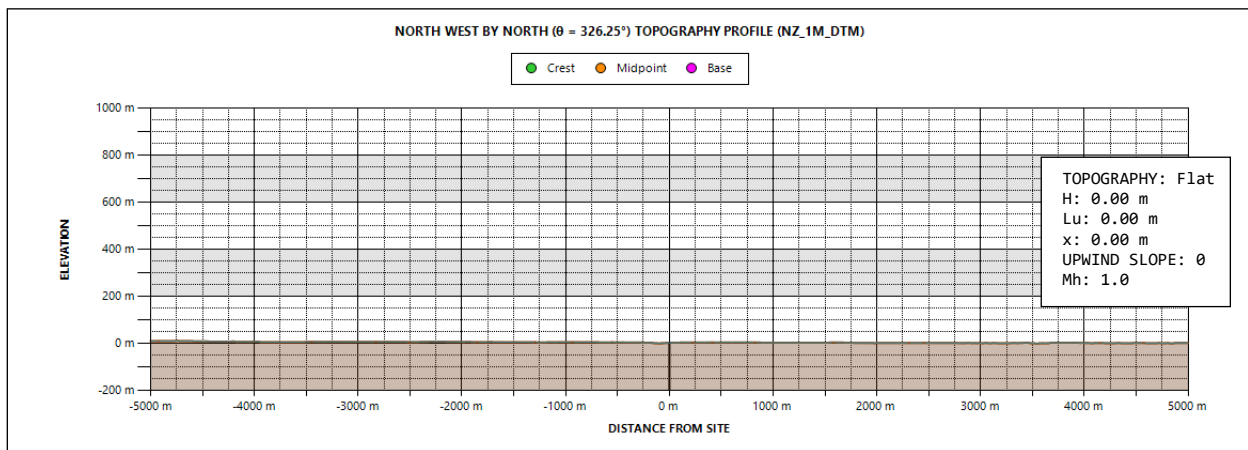
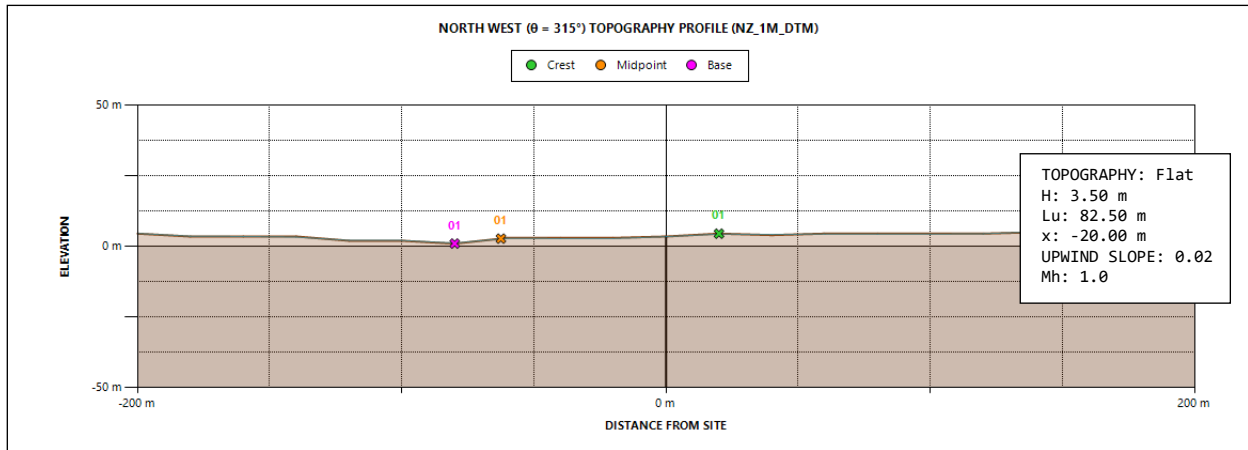












Demand Calculation Sheet

Job Details

Name: BC 552171
 Street and Number: 10 Hurley Street
 Lot and DP Number:
 City/Town/District: Christchurch
 Designer: Daniel Kennett
 Company: Maynard Marks
 Date:

Building Specification

Number of Storeys	2		
Floor Loading	2 kPa		
Foundation Type	Slab		
	Upper	Lower	
Cladding Weight	Medium	Medium	
Roof Weight	Light	Light	
Room in Roof Space	No	No	
Roof Pitch (degrees)	40	40	
Roof Height above Eaves (m)	2.2	2.2	
Building Height to Apex (m)	7.7		Percentage of Upper Storey Area Supported by Lower Storey
Ground to Lower Floor (m)	0.2		
Lower to Upper Floor (m)		2.7	
Average Stud Height (m)	2.4	2.4	
Building Length (m)	18.2	18.2	
Building Width (m)	4.9	7.7	
Building Plan Area (m ²)	84	83	100

Building Location

Wind Zone = High

Earthquake Zone 2

Soil Type D & E (Deep to Very Soft)
 Annual Prob. of Exceedance: 1 in 500 (Default)

Bracing Units required for Wind

	Along	Across
Upper Level	327	982
Lower Level	841	2130

Bracing Units required for Earthquake

	Along & Across
Upper Level	645
Lower Level	1254

Upper Level Along Resistance Sheet

Job Name: BC 552171

Timber Floor Limit of 120 BUs/m Applied

Wind	EQ
Demand	
327	645
Achieved	

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1655 506%	1471 228%
A	1	0.70		2.4	GS1-N	GIB®	41	41		
	2	1.60		2.4	GS1-N	GIB®	110	96		
	3	2.10		2.4	GS1-N	GIB®	145	126		
	4	2.10		2.4	GS1-N	GIB®	145	126		
	5	1.60		2.4	GS1-N	GIB®	110	96		
	6	0.70		2.4	GS1-N	GIB®	41	41		
External Length = 18									593 OK	526 OK
B	1	1.60		2.4	GS1-N	GIB®	110	96		
	2	1.40		2.4	GS1-N	GIB®	97	84		
	3	1.40		2.4	GS1-N	GIB®	97	84		
	4	1.60		2.4	GS1-N	GIB®	110	96		
									414 OK	360 OK
C	1	0.70		2.4	GS1-N	GIB®	41	41		
	2	2.40		2.4	GS1-N	GIB®	166	144		
	3	1.20		2.4	GS1-N	GIB®	83	72		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	5	0.60		2.4	GS1-N	GIB®	34	35		
	6	1.20		2.4	GS1-N	GIB®	83	72		
	7	2.40		2.4	GS1-N	GIB®	166	144		
	8	0.70		2.4	GS1-N	GIB®	41	41		
									648 OK	584 OK

Upper Level Across Resistance Sheet

Job Name: BC 552171

Timber Floor Limit of 120 BUs/m Applied

Wind	EQ
Demand	
982	645
Achieved	

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1793 183%	1588 246%
M	1	1.90		2.4	GS1-N	GIB®	131	114		
	External Length = 4.8								131 OK	114 OK
N	1	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								166 OK	144 OK
O	1	2.40		2.4	GS1-N	GIB®	166	144		
	2	0.60		2.4	BL1-H	GIB®	59	61		
	3	0.80		2.4	GS1-N	GIB®	49	47		
	External Length = 1.5								274 OK	252 OK
P	1	1.80		2.4	GS1-N	GIB®	124	108		
	2	1.80		2.4	GS1-N	GIB®	124	108		
	3	1.80		2.4	GS1-N	GIB®	124	108		
	4	1.80		2.4	GS1-N	GIB®	124	108		
	External Length = 1.5								497 OK	432 OK
Q	1	0.60		2.4	BL1-H	GIB®	59	61		
	2	0.80		2.4	BL1-H	GIB®	87	82		
	3	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								312 OK	286 OK
R	1	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								166 OK	144 OK
S	1	1.80		2.4	GS1-N	GIB®	124	108		
	2	1.80		2.4	GS1-N	GIB®	124	108		
	External Length = 1.5								248 OK	216 OK

Lower Level Along Resistance Sheet

Job Name: BC 552171

									Wind	EQ
									Demand	
									841	1254
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1624 193%	1510 120%
A	1	5.90		2.4	Masonry Wall	Masonry Wall	590	590		
	External Length = 5.9								590 OK	590 OK
B	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	2.00		2.4	GS1-N	GIB®	138	120		
	3	2.00		2.4	GS1-N	GIB®	138	120		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	External Length = 6.7								344 OK	310 OK
C	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	4.50		2.4	GS1-N	GIB®	311	270		
	3	4.50		2.4	GS1-N	GIB®	311	270		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	External Length = 18								689 OK	610 OK

Lower Level Across Resistance Sheet

Job Name: BC 552171

									Wind	EQ
									Demand	
									2130	1254
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1666 Check	1395 111%
M	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 3.9									154 Check
N	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 4.6									154 Check
O	1	5.30		2.4	GS1-N	GIB®	366	318		
	2	5.30		2.4	GS1-N	GIB®	366	318		
									731 OK	636 OK
P	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 4.6									154 Check
Q	1	3.70		2.4	BL1-H	GIB®	474	385		
										474 OK

Demand Calculation Sheet

Job Details

Name: BC 552171
 Street and Number: 10 Hurley Street
 Lot and DP Number:
 City/Town/District: Christchurch
 Designer: Daniel Kennett
 Company: Maynard Marks
 Date:

Building Specification

Number of Storeys	2		
Floor Loading	2 kPa		
Foundation Type	Slab		
	Upper	Lower	
Cladding Weight	Medium	Medium	
Roof Weight	Light	Light	
Room in Roof Space	No	No	
Roof Pitch (degrees)	40	40	
Roof Height above Eaves (m)	2.2	2.2	
Building Height to Apex (m)	7.7		Percentage of Upper Storey Area Supported by Lower Storey
Ground to Lower Floor (m)	0.2		
Lower to Upper Floor (m)		2.7	
Average Stud Height (m)	2.4	2.4	
Building Length (m)	18.2	18.2	
Building Width (m)	4.9	7.7	
Building Plan Area (m ²)	84	83	100

Building Location

Wind Zone = Medium

Earthquake Zone 2

Soil Type D & E (Deep to Very Soft)
 Annual Prob. of Exceedance: 1 in 500 (Default)

Bracing Units required for Wind

	Along	Across
Upper Level	232	697
Lower Level	597	1511

Bracing Units required for Earthquake

	Along & Across
Upper Level	645
Lower Level	1254

Upper Level Along Resistance Sheet

Job Name: BC 552171

Timber Floor Limit of 120 BUs/m Applied

Wind	EQ
Demand	
232	645
Achieved	

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1655 713%	1471 228%
A	1	0.70		2.4	GS1-N	GIB®	41	41		
	2	1.60		2.4	GS1-N	GIB®	110	96		
	3	2.10		2.4	GS1-N	GIB®	145	126		
	4	2.10		2.4	GS1-N	GIB®	145	126		
	5	1.60		2.4	GS1-N	GIB®	110	96		
	6	0.70		2.4	GS1-N	GIB®	41	41		
External Length = 18									593 OK	526 OK
B	1	1.60		2.4	GS1-N	GIB®	110	96		
	2	1.40		2.4	GS1-N	GIB®	97	84		
	3	1.40		2.4	GS1-N	GIB®	97	84		
	4	1.60		2.4	GS1-N	GIB®	110	96		
									414 OK	360 OK
C	1	0.70		2.4	GS1-N	GIB®	41	41		
	2	2.40		2.4	GS1-N	GIB®	166	144		
	3	1.20		2.4	GS1-N	GIB®	83	72		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	5	0.60		2.4	GS1-N	GIB®	34	35		
	6	1.20		2.4	GS1-N	GIB®	83	72		
	7	2.40		2.4	GS1-N	GIB®	166	144		
	8	0.70		2.4	GS1-N	GIB®	41	41		
									648 OK	584 OK

Upper Level Across Resistance Sheet

Job Name: BC 552171

Timber Floor Limit of 120 BUs/m Applied

Wind	EQ
Demand	
697	645
Achieved	

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1793 257%	1588 246%
M	1	1.90		2.4	GS1-N	GIB®	131	114		
	External Length = 4.8								131 OK	114 OK
N	1	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								166 OK	144 OK
O	1	2.40		2.4	GS1-N	GIB®	166	144		
	2	0.60		2.4	BL1-H	GIB®	59	61		
	3	0.80		2.4	GS1-N	GIB®	49	47		
	External Length = 1.5								274 OK	252 OK
P	1	1.80		2.4	GS1-N	GIB®	124	108		
	2	1.80		2.4	GS1-N	GIB®	124	108		
	3	1.80		2.4	GS1-N	GIB®	124	108		
	4	1.80		2.4	GS1-N	GIB®	124	108		
	External Length = 1.5								497 OK	432 OK
Q	1	0.60		2.4	BL1-H	GIB®	59	61		
	2	0.80		2.4	BL1-H	GIB®	87	82		
	3	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								312 OK	286 OK
R	1	2.40		2.4	GS1-N	GIB®	166	144		
	External Length = 1.5								166 OK	144 OK
S	1	1.80		2.4	GS1-N	GIB®	124	108		
	2	1.80		2.4	GS1-N	GIB®	124	108		
	External Length = 1.5								248 OK	216 OK

Lower Level Along Resistance Sheet

Job Name: BC 552171

									Wind	EQ
									Demand	
									597	1254
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1624	1510
									272%	120%
A	1	5.90		2.4	Masonry Wall	Masonry Wall	590	590		
	External Length = 5.9								590 OK	590 OK
B	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	2.00		2.4	GS1-N	GIB®	138	120		
	3	2.00		2.4	GS1-N	GIB®	138	120		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	External Length = 6.7								344 OK	310 OK
C	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	4.50		2.4	GS1-N	GIB®	311	270		
	3	4.50		2.4	GS1-N	GIB®	311	270		
	4	0.60		2.4	GS1-N	GIB®	34	35		
	External Length = 18								689 OK	610 OK

Lower Level Across Resistance Sheet

Job Name: BC 552171

									Wind	EQ
									Demand	
									1511	1254
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1666 110%	1395 111%
M	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 3.9									154 OK
N	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 4.6									154 OK
O	1	5.30		2.4	GS1-N	GIB®	366	318		
	2	5.30		2.4	GS1-N	GIB®	366	318		
									731 OK	636 OK
P	1	1.20		2.4	BL1-H	GIB®	154	125		
	External Length = 4.6									154 OK
Q	1	3.70		2.4	BL1-H	GIB®	474	385		
										474 OK