Stewart McGeady Rick Wray Brad Seghers

Flood Control Certificate

Date: 03.06.2022 Job No. 2204099 Client: Your Style Engineer: HS

Site: 11 Manuella Place, Curl Curl

NB Consulting Engineers has assessed the architectural plans prepared by *Your Style* (dated April 2022) for proposed first floor additions at the above site address in reference to potential flood issues. A survey prepared by Detailed Surveys (dated 04/10/2020) was also assessed.

Flood levels have been obtained from Council. This assessment has been based on the *Dee Why and Curl Curl Lagoons Floodplain Risk Management Study 2005* information and has considered that the development is within the predicted flood extent and flood affected area.

Northern Beaches Council flood management information (refer appendix A) indicates the following:

Flood CategoryFlood life hazard classificationH1

Provisional Flood Hazard
 Low – Medium Risk

1% AEP Flood Level (Max)
1% AEP Flood Depth (Max)
0.23 m

1% AEP Flood Velocity (Max)

Flood Planning Level (FPL) (Max)
Probable Maximum Flood Level (PMF) (Max)
6.18 m AHD
6.12 m AHD

Probable Maximum Flood Depth (PMF) (Max) 0.67m

Probable Maximum Velocity (Max)
 N/A

As per the architectural plans (refer Appendix B) the proposed first floor additions and existing ground floor (FFL 6.40m AHD) are both above the Flood Planning Level (FPL) 6.18m AHD and outside the 1% AEP flood extent. Therefore, the development is not envisaged to have a detrimental effect on neighboring properties.

The proposed development is in general accordance with *Warringah Council DCP*.

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

NORTHERN BEACHES CONSULTING ENGINEERS P/L

Michael Wachjo

Senior Engineer | Director | B.E.(Civil), MIEAust.
\MBADS\Company\Synergy\Projects\2204099 11 MANUELA PLACE, CURL CURL\ENG Design\2204099 Flood Control Certiticate 2022-06-03.doc



Appendix A - Councils flood management information



FLOOD INFORMATION REPORT - BASIC

Property: 11 Manuela Place CURL CURL NSW 2096

Lot DP: Lot 6 DP 240232 **Issue Date:** 30/05/2022

Flood Study Reference: Dee Why and Curl Curl Lagoons Floodplain Risk

Management Study 2005, Lyall & Associates

Flood Information for lot 1:

Flood Risk Precinct - See Map A

Flood Planning Area - See Map A

Maximum Flood Planning Level (FPL) 2, 3, 4: 6.18 m AHD

1% AEP Flood - See Flood Map B

1% AEP Maximum Water Level ^{2, 3}: 5.70 m AHD

1% AEP Maximum Depth from natural ground level³: 0.23 m

1% AEP Maximum Velocity: N/A m/s

1% AEP Hydraulic Categorisation: N/A See Flood Map D

Probable Maximum Flood (PMF) - See Flood Map C

PMF Maximum Water Level 4: 6.12 m AHD

PMF Maximum Depth from natural ground level: 0.67 m

PMF Maximum Velocity: N/A m/s

Flood Life Hazard Category - See Map E

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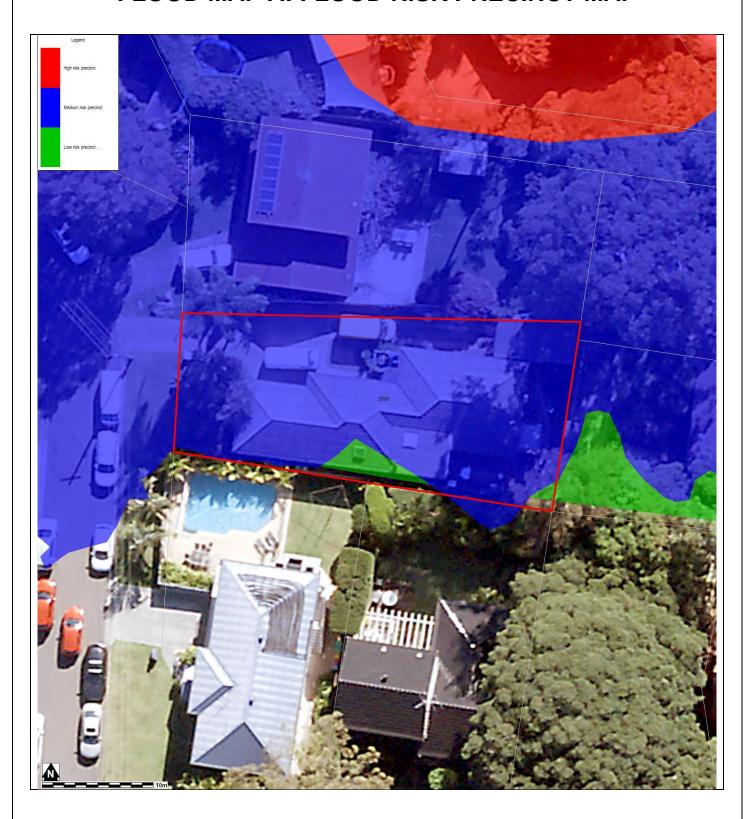
- ¹ The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.
- ² Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning Level may be in a different location to the maximum 1% AEP flood level.
- ³ Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.
- ⁴ Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or FPL.

General Notes:

- All levels are based on Australian Height Datum (AHD) unless otherwise noted.
- This is currently the best available information on flooding; it may be subject to change in the future.
- Council recommends that you obtain a detailed survey of the above property and surrounds to AHD by
 a registered surveyor to determine any features that may influence the predicted extent or frequency of
 flooding. It is recommended you compare the flood level to the ground and floor levels to determine the
 level of risk the property may experience should flooding occur.
- Development approval is dependent on a range of issues, including compliance with all relevant provisions of Northern Beaches Council's Local Environmental Plans and Development Control Plans.
- Please note that the information contained within this letter is general advice only as a detail survey of
 the property as well as other information is not available. Council recommends that you engage a
 suitably experienced consultant to provide site specific flooding advice prior to making any decisions
 relating to the purchase or development of this property.
- The Flood Studies on which Council's flood information is based are available on Council's website.

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FLOOD MAP A: FLOOD RISK PRECINCT MAP

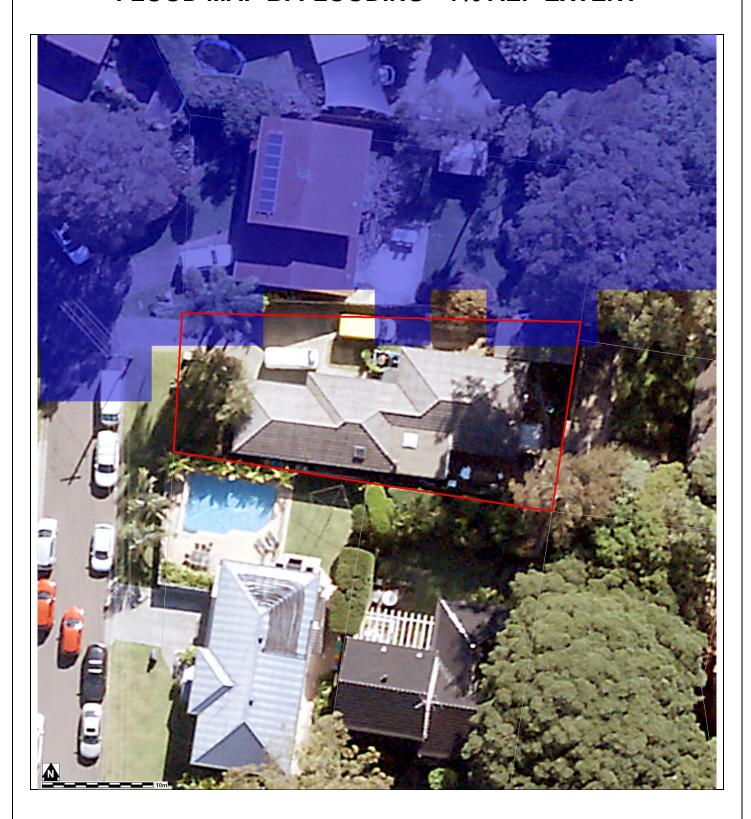


Notes:

- Low Flood Risk precinct means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** means all flood prone land that is (a) within the 1% AEP Flood Planning Area; and (b) is not within the high flood risk precinct.
- **High Flood Risk precinct** means all flood prone land (a) within the 1% AEP Flood Planning Area; and (b) is either subject to a high hydraulic hazard, within the floodway or subject to significant evacuation difficulties (H5 or H6 Life Hazard Classification)
- The **Flood Planning Area** extent is equivalent to the Medium Flood Risk Precinct extent, and includes the High Flood Risk Precinct within it. The mapped extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- None of these mapped extents include climate change.

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FLOOD MAP B: FLOODING - 1% AEP EXTENT



Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Dee Why and Curl Curl Lagoons Floodplain Risk Management Study 2005, Lyall & Associates) and aerial photography (Source: NearMap 2014) are indicative only.

Issue Date: 23/05/2022 Page **4** of **10**

FLOOD MAP C: PROBABLE MAXIMUM FLOOD EXTENT



Notes:

- Extent represents the Probable Maximum Flood (PMF) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Dee Why and Curl Curl Lagoons Floodplain Risk Management Study 2005, Lyall & Associates) and aerial photography (Source: NearMap 2014) are indicative only.

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FLOOD MAP D: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP

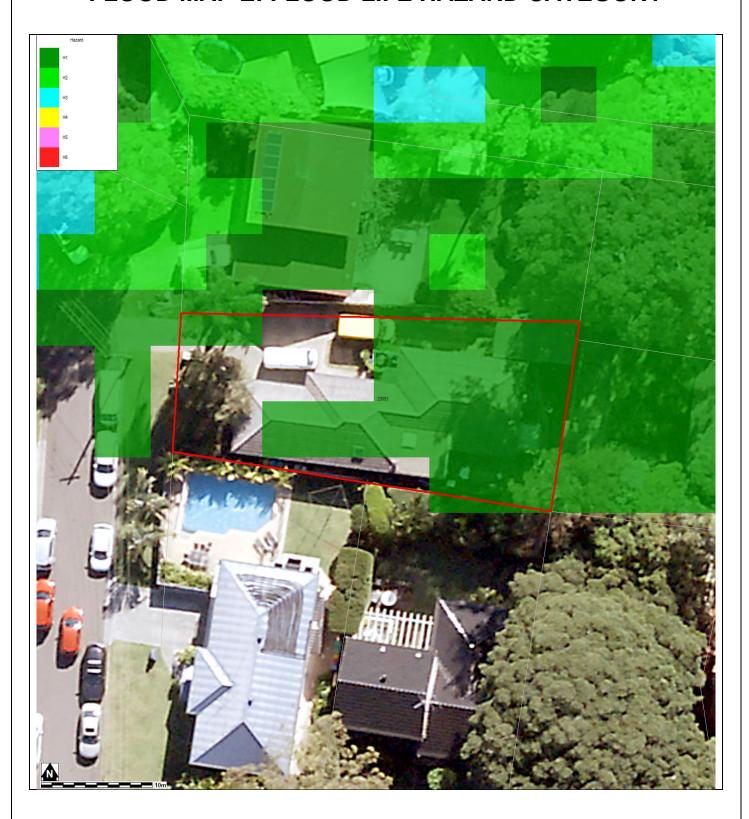
N/A

Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Dee Why and Curl Curl Lagoons Floodplain Risk Management Study 2005, Lyall & Associates) and aerial photography (Source: NearMap 2014) are indicative only.

Issue Date: 23/05/2022 Page **6** of **10**

FLOOD MAP E: FLOOD LIFE HAZARD CATEGORY



Notes:

 Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Dee Why and Curl Curl Lagoons Floodplain Risk Management Study 2005, Lyall & Associates) and aerial photography (Source: NearMap 2014) are indicative only.

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Preparation of a Flood Management Report

Introduction

These guidelines are intended to provide advice to applicants on how to determine what rules apply on flood prone land, and how to prepare a Flood Management Report. The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood related planning requirements.

Planning Requirements for Flood Prone Land

Development must comply with the requirements for developing flood prone land set out in the relevant Local Environment Plan (LEP) and Development Control Plan (DCP). There are separate LEPs and DCPs for each of the former Local Government Areas (LGAs), although preparation of a LGA-wide LEP and DCP is currently under way.

The clauses specific to flooding in the LEPs and DCPs are as follows:

LEP Clauses	DCP Clauses		
Manly LEP (2013) - 6.3 Flood Planning	Manly DCP (2013) – 5.4.3 Flood Prone Land		
Warringah LEP (2011) – 6.3 Flood Planning Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land		
Pittwater LEP (2014) – 7.3 Flood Planning Pittwater LEP (2014) – 7.4 Flood Risk Management	Pittwater 21 DCP (2014) – B3.11 Flood Prone Land Pittwater 21 DCP (2014) – B3.12 Climate Change		

^{*} The Warringah LEP (2000) is relevant only for the "deferred lands" which affects only a very small number of properties, mostly in the Oxford Falls area.

Development on flood prone land must also comply with Council's Water Management for Development Policy, and if it is in the Warriewood Release Area, with the Warriewood Valley Water Management Specification. Guidelines for Flood Emergency Response Planning are available for addressing emergency response requirements in the DCP. These documents can be found on Council's website on the Flooding page.

Note that if the property is affected by estuarine flooding or other coastal issues, these need to be addressed separately under the relevant DCP clauses.

When is a Flood Management Report required?

A Flood Management Report must be submitted with any Development Application on flood prone land (with exceptions noted below), for Council to consider the potential flood impacts and applicable controls. For Residential or Commercial development, it is required for development on land identified within the Medium or High Flood Risk Precinct. For Vulnerable or Critical development, it is required if it is within any Flood Risk Precinct.

There are some circumstances where a formal Flood Management Report undertaken by a professional engineer may not be required. However the relevant parts of the DCP and LEP would still need to be addressed, so as to demonstrate compliance. Examples where this may apply include:

- If all proposed works are located outside the relevant Flood Risk Precinct extent
- First floor addition only, where the floor level is above the Probable Maximum Flood level
- Internal works only, where habitable floor areas below the FPL are not being increased

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Note that development on flood prone land will still be assessed for compliance with the relevant DCP and LEP, and may still be subject to flood related development controls.

What is the purpose of a Flood Management Report?

The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood planning requirements, particularly the development controls outlined in the relevant LEP and DCP clauses. The report must detail the design, measures and controls needed to achieve compliance, following the steps outlined below.

A Flood Management Report should reflect the size, type and location of the development, proportionate to the scope of the works proposed, and considering its relationship to surrounding development. The report should also assess the flood risk to life and property.

Preparation of a Flood Management Report

The technical requirements for a Flood Management Report include (where relevant):

1. Description of development

- · Outline of the proposed development, with plans if necessary for clarity
- Use of the building, hours of operation, proposed traffic usage or movement
- Type of use, eg vulnerable, critical, residential, business, industrial, subdivision, etc

2. Flood analysis

- 1% AEP flood level
- Flood Planning Level (FPL)
- Probable Maximum Flood (PMF) level
- Flood Risk Precinct, ie High, Medium or Low
- Flood Life Hazard Category
- Mapping of relevant extents
- Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the relevance to the proposed development

If the property is affected by an Estuarine Planning Level (EPL) which is higher than the FPL, then the EPL should be used as the FPL. If the FPL is higher than the PMF level, then the FPL should still be used as the FPL, as it includes freeboard which the PMF does not.

3. Assessment of impacts

Summary of compliance for each category of the DCP, as per the table below.

	Compliance		
	N/A	Yes	No
A) Flood effects caused by Development			
B) Building Components & Structural Soundness			
C) Floor Levels			
D) Car parking			
E) Emergency Response			
F) Fencing			
G) Storage of Goods			
H) Pools			

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- Demonstration of how the development complies with any relevant flood planning requirements from the DCP, LEP, Water Management for Development Policy, and if it is in the Warriewood Valley Urban Land Release Area, with the Warriewood Valley Water Management Specification (2001)
- For any non-compliance, a justification for why the development should still be considered.
- Calculations of available flood storage if compensatory flood storage is proposed
- Plan of the proposed development site showing the predicted 1% AEP and PMF flood extents, as well as any high hazard or floodway affectation
- Development recommendations and construction methodologies
- Qualifications of author Council requires that the Flood Management Report be prepared by a suitably qualified Engineer with experience in flood design / management who has, or is eligible for, membership to the Institution of Engineers Australia
- Any flood advice provided by Council
- Any other details which may be relevant

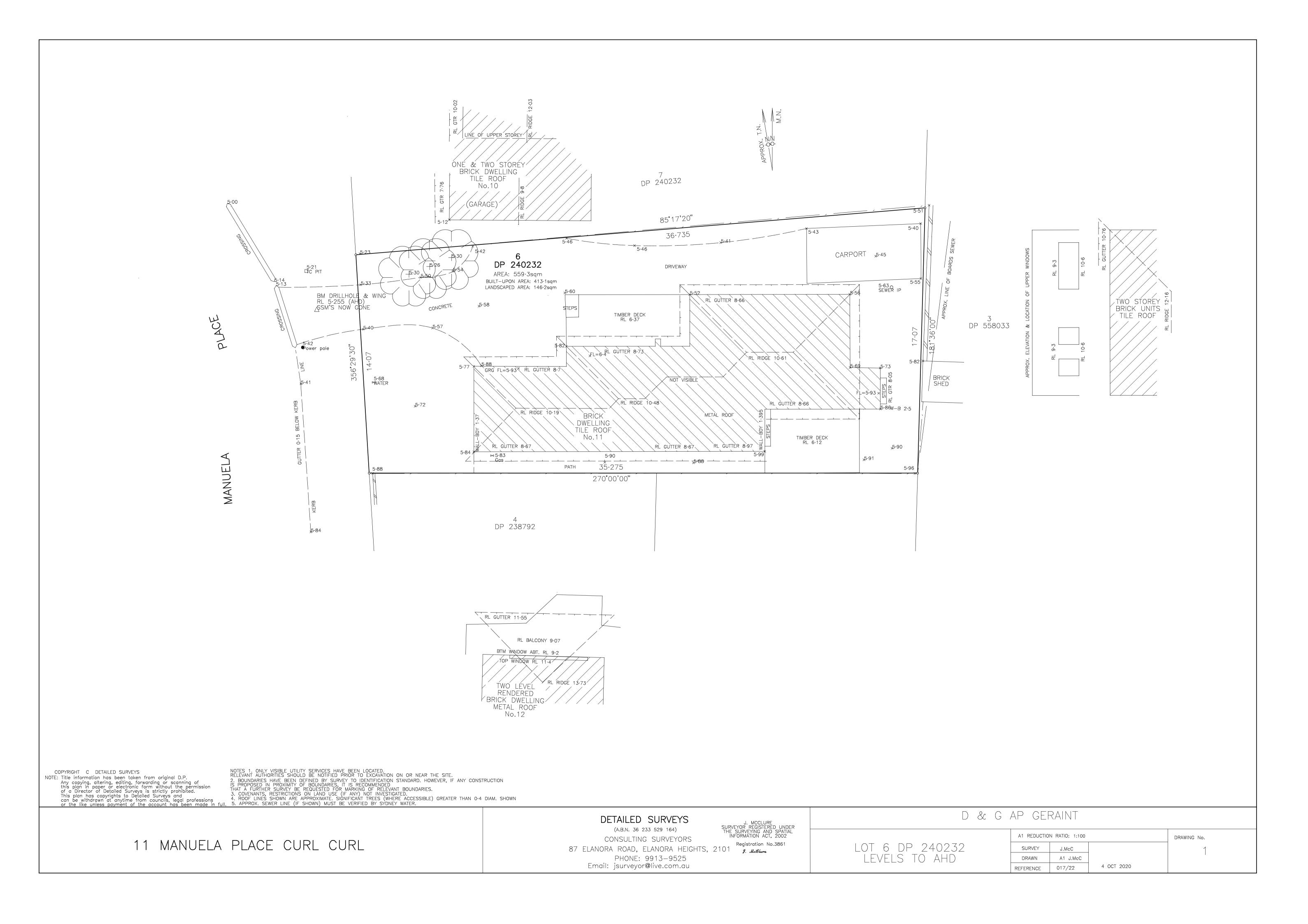
Further information and guidelines for development are available on Council's website at:

https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/development-applications/guidelines-development-flood-prone-land

Council's Flood Team may be contacted on 1300 434 434 or at floodplain@northernbeaches.nsw.gov.au .

Issue Date: 23/05/2022 Page **10** of **10**

Appendix B - Site survey and architectural plans



DESIGN OPTION 1 - GABLE ROOF



INDICATIVE ARTIST IMPRESSION NOT TO BE REFERRED TO FOR CONSTRUCTION PURPOSES



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Client No. : **GER 0322 01 DA**

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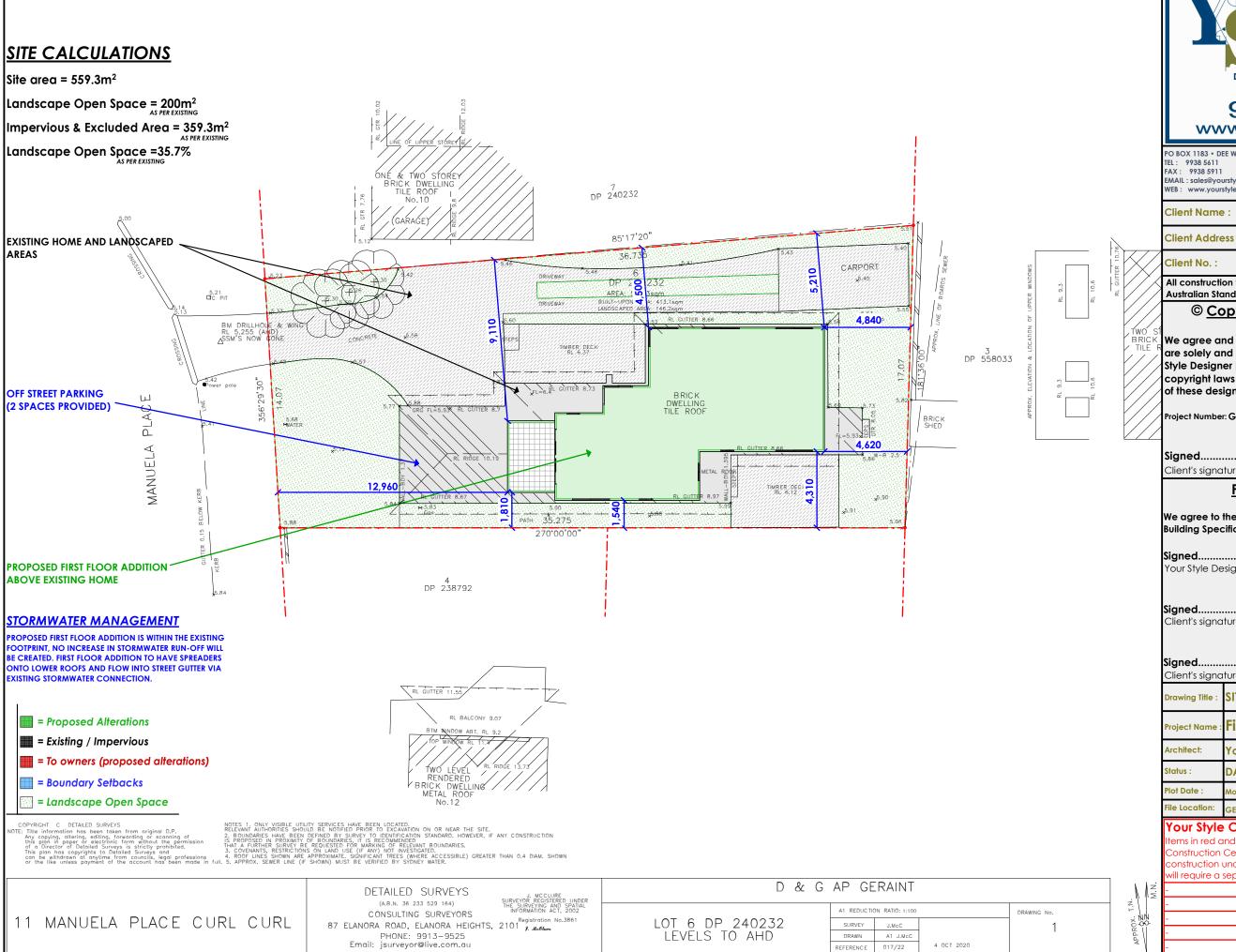
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PERSPECTIVES First Floor Addition Project Name Architect: Your Style Designer Home Additions tatus : DA STAGE Plot Date : onday, 30 May 2022 Drawina No. ile Location: GER 0322 01 DA.pln

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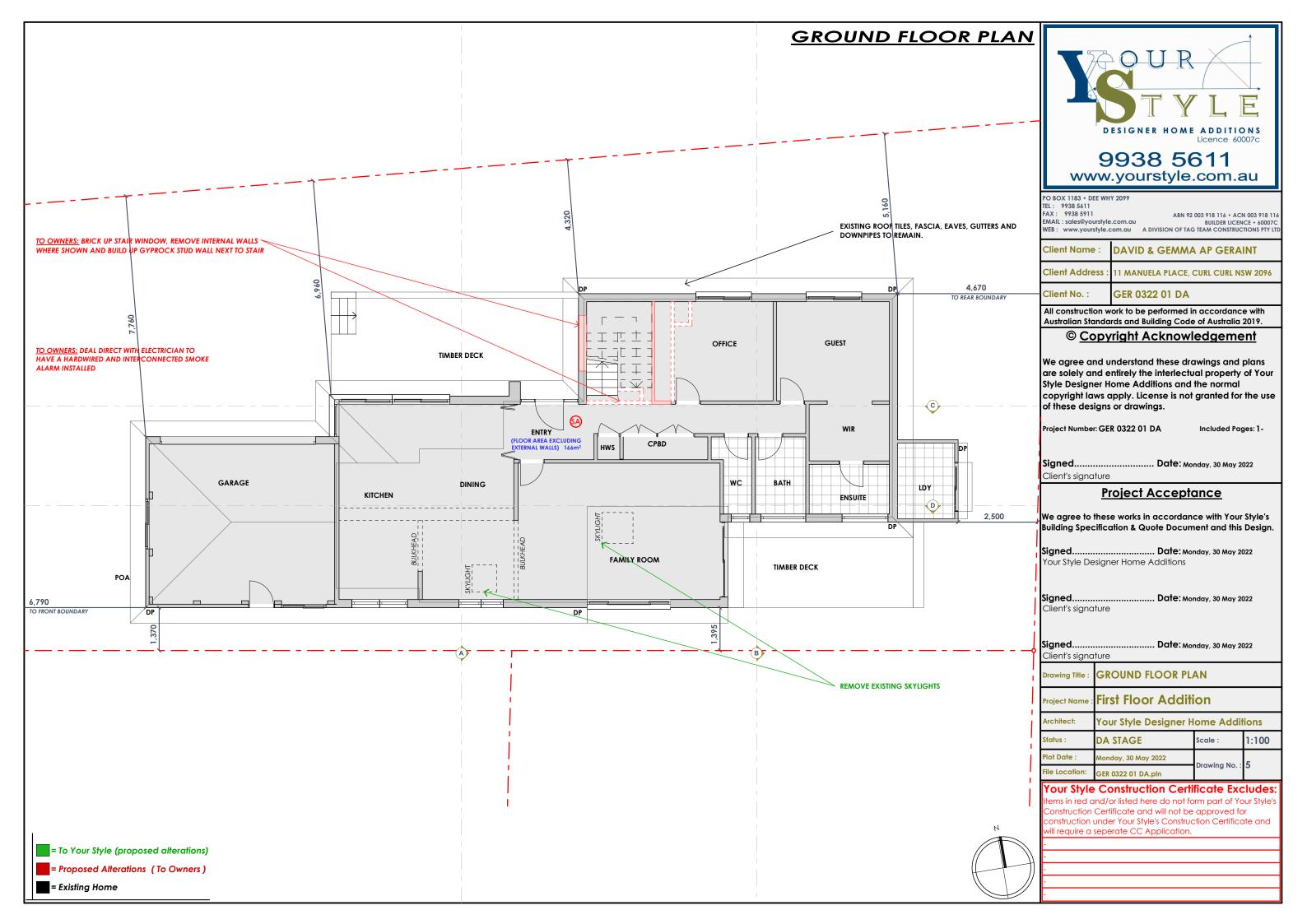
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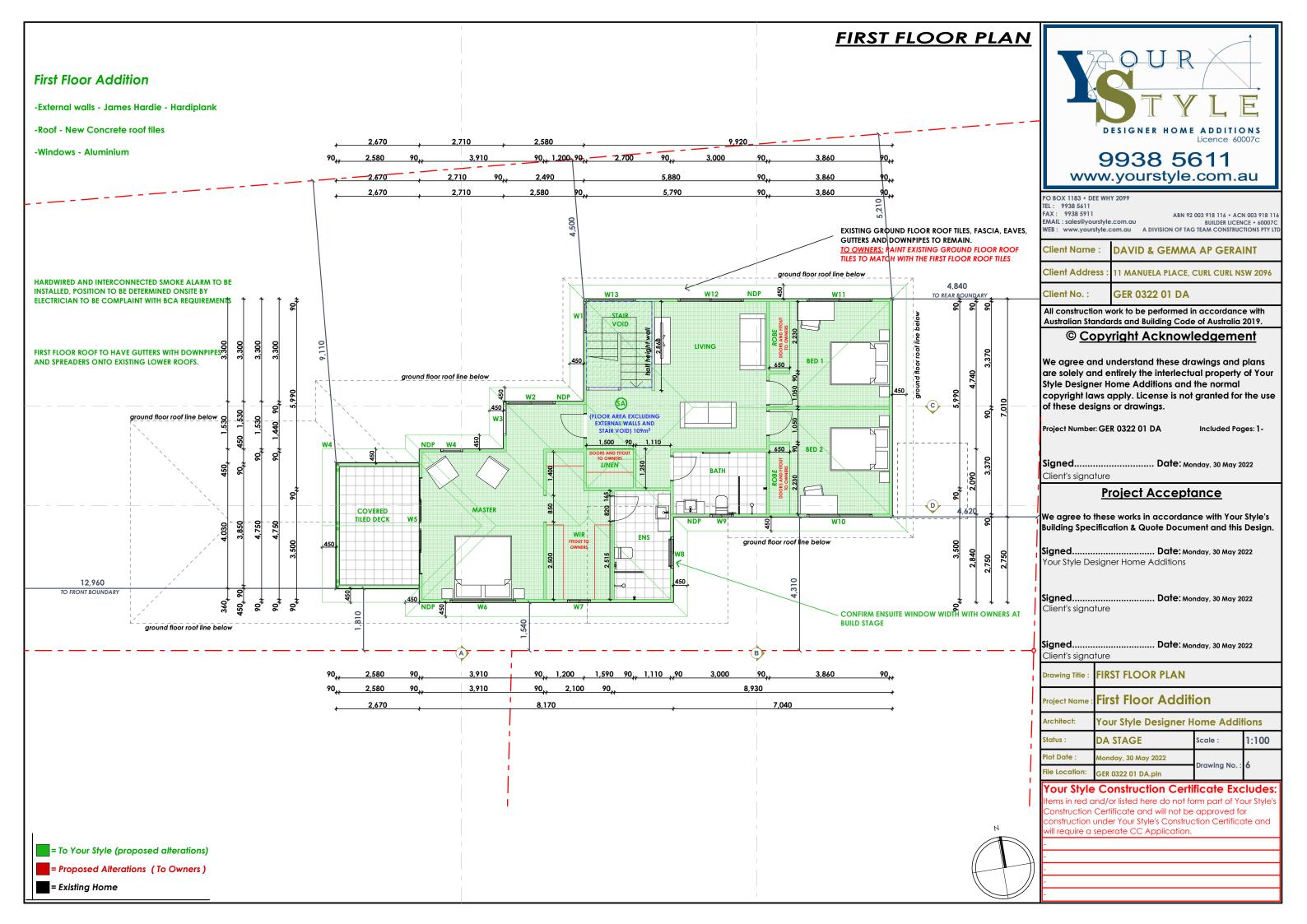
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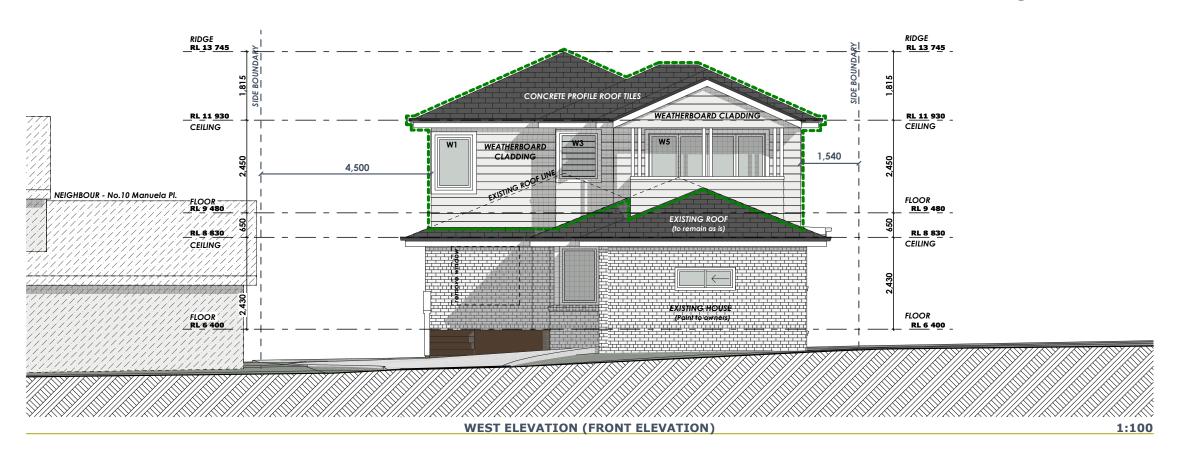
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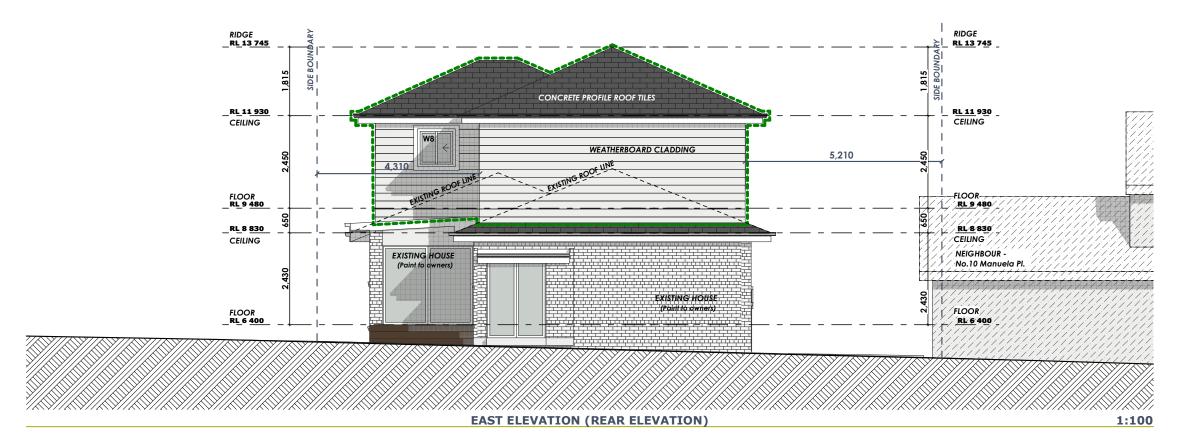
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ELEVATIONS (EAST & WEST)







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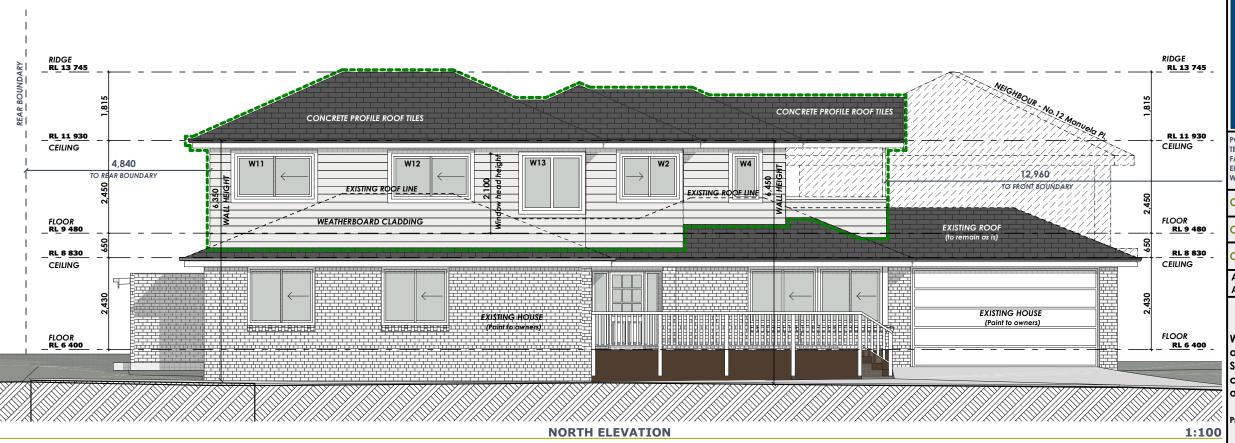
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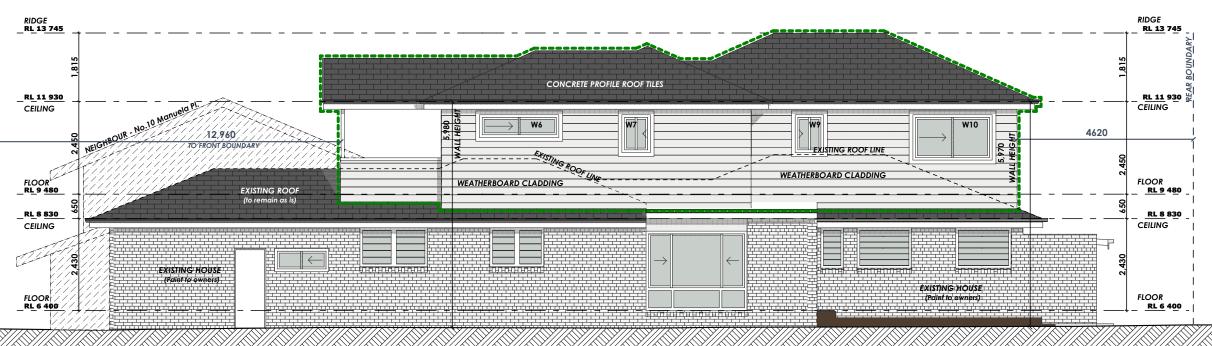
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ELEVATIONS First Floor Addition Project Nam Architect: Your Style Designer Home Additions tatus : DA STAGE 1:100 Plot Date : onday, 30 May 2022 rawina No. ile Location: GER 0322 01 DA.pln

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SOUTH ELEVATION



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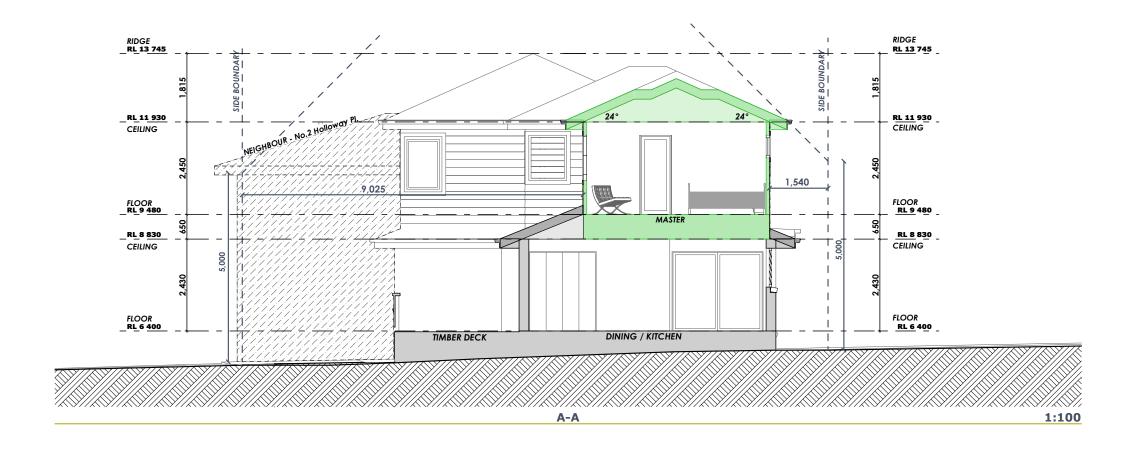
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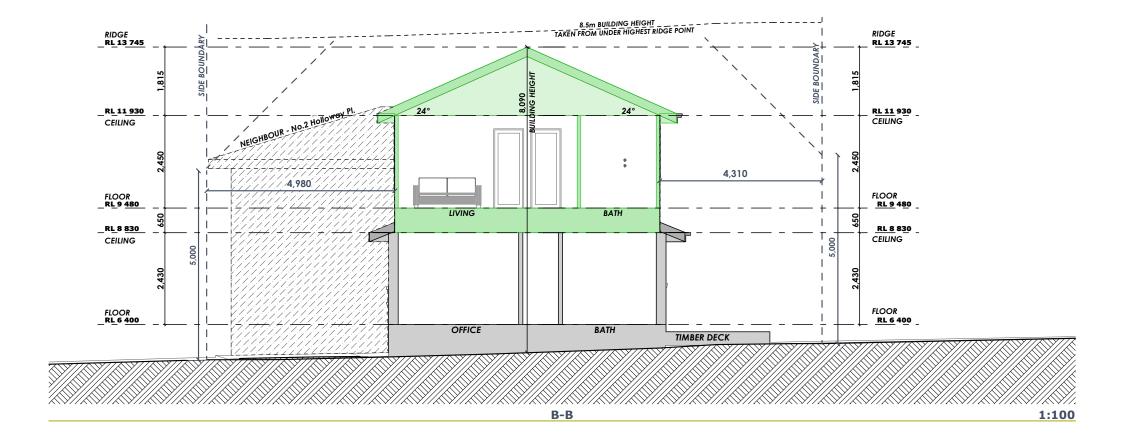
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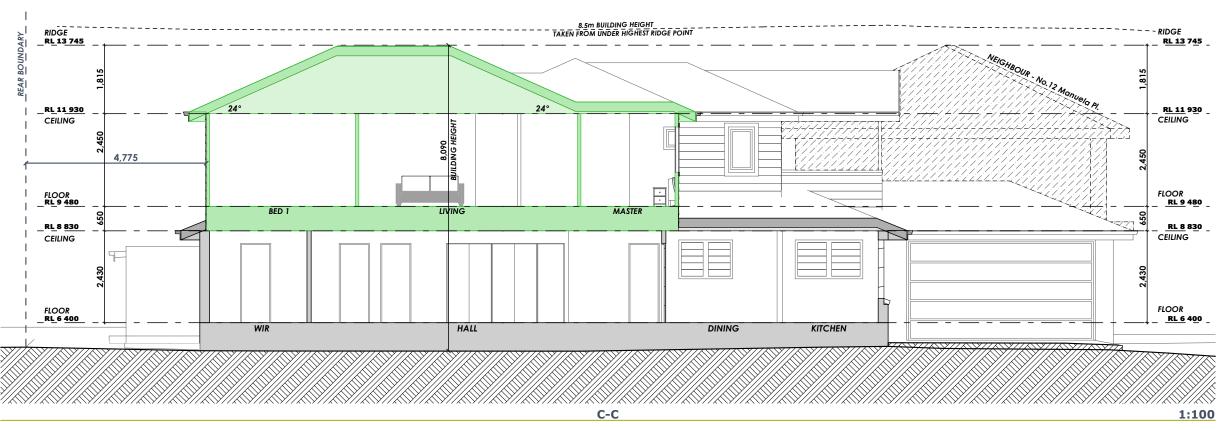
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SECTIONS First Floor Addition Project Nam Architect: Your Style Designer Home Additions tatus : DA STAGE 1:100 Plot Date : onday, 30 May 2022 ile Location GER 0322 01 DA.pln

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SECTIONS (C-C & D-D)





D-D



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