Flood Risk Management Plan

24 October 2024
Revision: A

11 Darius Avenue
North Narrabeen
NSW 2101

We acknowledge the Guringai people of the land of the Garigal, upon those ancestral lands we work & live. We acknowledge the Traditional Custodians as the first place makers on this land. We pay our respects to Elders past and present, acknowledging them as the Traditional Custodians of knowledge of these lands, waterways and Country.

TAYLOR

CONTENTS

APPENDICES

1.0 INTRODUCTION

11 Darius Avenue, North Narrabeen is identified by Northern Beaches Council as being flood affected for the 1 in 100 year storm event and Probable Maximum Flood (PMF) events. This document details the measures to be taken to ensure that the risks to both the site buildings and occupants are managed and minimised in accordance with Council's Development Control Plan requirements.

It is the intention of the author that copies of this plan are kept on site by The Owner where it can be produced for action in case of a significant storm event.

It is also intended that the emergency response signage be fixed to a wall in a clearly visible location. The Owner will ultimately be responsible for the implementation of this plan. The Owner will also be responsible for ensuring tasks are undertaken (or the delegation of those tasks) for major flood events.

The technical data referred to in this Section is drawn from the Narrabeen Lagoon Flood Study 2013, BMT WBM.

2.0 SITE DESCRIPTION

The site is located in the suburb of North Narrabeen and the eastern boundary faces Darius Avenue. A site locality map is included in Appendix A.

The site covers 557m^2 in area which is generally flat with minor fall from the (rear) western to the (front) eastern boundary. The site currently contains an existing one storey dwelling with suspended timber floor frames as well as an existing studio and metal shed.

2.1 PROPOSED WORKS

The proposed works could be summarised as:

- Internal alterations to existing ground floor level of the main dwelling
- Proposed storage adjacent to the studio.

- Proposed shelter-in-place platform located in auxiliary building
- Proposed rear deck extension
- Proposed minor carport extension

Architectural plans for the proposed works are attached in Appendix B.

3.0 FLOOD EVENTS

The site is identified as being flood affected for the 1 in 100 year and Probable Maximum Precipitation (PMP) storm events and maps illustrating subsequent flood hazard extents for the site are contained within Appendix C.

3.1 FORECASTS AND WARNINGS

There are usually no specific warnings issued by the Bureau of Meteorology for North Narrabeen and as such the monitoring of general warnings for the Sydney metropolitan area with respect to severe weather warnings will be critical in the process of managing risks to the site.

The Bureau of Meteorology website (www.bom.gov.au) has rainfall forecast maps and also any warnings for predicted severe weather events.

The Owner and other relevant occupants should have their mobile phone numbers added to the SES contact list for the issue of SMS alerts for severe weather warnings.

3.2 FLOOD DATA FOR THE SITE

The site is categorised by the 2013 Narrabeen Lagoon Flood Study as being affected by the 1 in 100 year storm event and Probable Maximum Flood (PMF) events. A summary of Council flood information for the site is as follows:

MAP B: FLOODING - 1% AEP EXTENT & KEY POINTS

Flood Levels

ID	5% AEP Max WL (m AHD)	5% AEP Max Depth (m)	1% AEP Max WL (m AHD)	1% AEP Max Depth (m)	1% AEP Max Velocity (m/s)	Flood Planning Level (m)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	2.65	0.89	3.02	1.27	0.37	3.52	4.85	3.09	0.41
2	2.65	0.80	3.02	1.17	0.07	3.52	4.85	3.00	0.22
3	2.65	0.77	3.02	1.15	0.05	3.52	4.85	2.97	0.16
4	2.65	0.47	3.02	0.85	0.04	3.52	4.85	2.68	0.07
5	2.65	0.56	3.02	0.94	0.04	3.52	4.85	2.77	0.08
6	2.65	0.74	3.02	1.11	0.12	3.52	4.85	2.94	0.12
7	2.65	0.60	3.02	0.97	0.04	3.52	4.85	2.80	0.12
8	2.65	0.65	3.02	1.02	0.03	3.52	4.85	2.85	0.11

Climate Change Flood Levels (30% Rainfall intensity and 0.9m Sea Level Rise)

ID	CC 1% AEP Max WL (m AHD)	CC1 % AEP Max Depth (m)
1	3.89	2.13
2	3.89	2.04
3	3.89	2.02
4	3.89	1.72
5	3.89	1.81
6	3.89	1.98
7	3.89	1.84
8	3.89	1.89

WL – Water Level
PMF – Probable Maximum Flood
N/A - No Peak Water Level/Depth/Velocity Available.

- Flood Risk Precinct: **High**
- Flood Life Hazard Classification: **H5**
- 1% Flood Hydraulic Category: **Flood Storage**
- 1 in 100 year Maximum Flood Level: **3.02m A.H.D**.
- 1 in 100 year Maximum Depth from natural ground level: **1.34m**
- 1 in 100 year Maximum Flood Planning Level (FPL): **3.52m A.H.D.**
- Existing floor level: **2.60m A.H.D. approx**
- Probable Maximum Flood level (PMF): **4.85m A.H.D.**

Note that the complete Council issued flood data for the site is contained within Appendix C.

3.3 FLOOD BEHAVIOUR

The site sits within the South Creek, Narrabeen Lagoon catchment. The Narrabeen Lagoon Flood Study has determined that the site is at risk of significant inundation during major flood events.

The study has determined that during major storm events, the water level in Narrabeen Lagoon rises to such a level that the subject site is inundated with floodwaters of low velocity which rise and fall over durations of typically longer than 6 hours.

As the lagoon is situated to the south of the site, flooding could be expected to initially inundate the frontage portion of the site.

The site would be designated as flood storage and subsequently, the management of the flood risks is required to ensure the ongoing protection of life and property.

4.0 EMERGENCY RESPONSE

This Flood Risk Management Plan recognises that protection of life is of primary importance, followed by a secondary philosophy of attempting to minimise damage to the proposed dwellings on the site.

The emergency response to a potential flood event will be initiated upon the occurrence of a certain 'trigger' threshold, upon which the emergency response plan will be actioned.

4.1 THE EMERGENCY TRIGGER

It is critical to the success of this plan that during extremely heavy and intense rainfall events The Owner are able to closely monitor the drainage conditions at the site frontage in Darius Avenue.

The initial trigger for commencement of the emergency response plan follows the observation of stormwater beginning to inundate Darius Avenue following extremely heavy and intense rainfall events.

Upon the visual or media confirmation of this trigger event, the emergency responses described in Section 5 are to be enacted.

4.2 TIME NEEDED TO RESPOND

It is considered that a total period of 5 minutes would be required for The Owner to turn off the relevant mains and services and ensure that all persons within the premises have been notified and are located to the nominated emergency assembly point.

4.3 THE EMERGENCY ASSEMBLY POINT

The emergency response to a flood event is to 'shelter-in-place' in the flood platform located within the auxiliary building with access from the proposed storage area towards the rear of the property or to follow directions of the emergency services.

An emergency response plan showing that the flood platform is easily accessible and adequate to act as a refuge in a significant flood event is provided in Appendix D.

5.0 OWNER RESPONSIBILITIES

The following section describes the on-going responsibilities of The Owner with respect to flood risk management.

5.1 BEFORE THE FLOOD

TRIGGER FOR ACTION: ALWAYS

- The Owner will ultimately be responsible for the implementation of this plan. The Owner will be responsible for ensuring tasks are undertaken or delegating those tasks;
- Through a systematic induction process, all occupants are to be made aware of the possibility of flooding and the procedures to be followed if a flood were to occur;
- A copy of this plan is to be provided to all occupants, together with a single page notice (Appendix D) and an Actions Checklist (Appendix E);
- The Owner should continue to develop detailed procedures to support the actions required by this plan. Procedures will include clear responsibilities in the event of a flood, and back up resources should key persons not be present;
- The emergency response sign is to be permanently affixed to a wall in a highly visible external location.
- Check the facilities within the shelter-in-place area for use in a flood emergency, should occupants need to take shelter there. As a minimum these facilities comprise drinking water, toilets, blankets, powered battery radio and emergency lighting.

5.2 WHEN A FLOOD IS LIKELY

TRIGGER FOR ACTION: When the forecasts predict severe weather or significant amounts of rainfall (land is saturated) are observed.

- The Owner will monitor weather forecasts and warnings; and
- The Owner to enact the emergency response plan
- The Owner should prepare for the emergency evacuation.

5.3 DURING A FLOOD

TRIGGER FOR ACTION: When flood waters are observed inundating the street frontage of the site at Darius Avenue.

The phases of the emergency response shall be:

- The Owner is to request all occupants to evacuate via the emergency evacuation route.
- Follow direction of emergency services including State Emergency Services (SES).
- All occupants should have evacuated by the time the flood water starts to significantly inundate the site.
- The Owner is to sweep the premises following emergency response to ensure that all occupants have evacuated the facility.
- The Owner is to turn off all power and water and other relevant services.
- The Owner is to evacuate via the emergency evacuation route.
- Emergency services to be notified by The Owner of the situation at the site (Appendix F).
- Emergency services may issue general evacuation orders. Their directions are to be followed even with the provision of a shelter-in-place facility.

5.4 AFTER A FLOOD

TRIGGER FOR ACTION: When emergency services give the all clear to return.

- No occupants should be allowed to leave the site while flooding is occurring or has recently occurred;
- Occupants can enter the site only after the all clear has been given by emergency services or Council;
- Where necessary, the site is to be checked by professionals before any re-use of the site;
- Where possible the Owner are to organise the safe removal of any flood debris from the site;
- The Owner is to arrange an inspection of the sub-floor area under the building and remove any flood debris if required.
- A de-brief is to be held between the occupants and The Owner and may involve emergency services and/or council staff. The flood event and response procedures, including the use of this plan, are to be reviewed; and
- Changes may be made to the plan and the requirements for future emergency evacuations should be reviewed and identify any improvements which may be necessary.

6.0 FLOOD COMPLIANCE

It is proposed to develop the site such that the objectives of Council's Flood Risk Management Policy are met.

6.1 SPECIFIC CONTROLS

Section B3.11 of the Pittwater 21 DCP controls are to be applied to the proposed development:

High Flood Risk Matrix – Residential Category

		High Flood Risk Precinct				
		Vulnerable & Critical Use	Residential Use	Business & Industrial Use	Recreational & Environmental Use	Subdivision & Civil Works
A	Flood effects caused by Development	A1 A2	A1 A2	A1 A2	A1 A2	A1 A2
B	Building Components & Structural	B1 B2 B3	B1 B2 B3	B1 B2 B3	B1 B2 B3	
C	Floor Levels	C2 C3	C1 C3 C4 C6	C1 C3 C4 C6 C7	C3	C5
D	Car Parking	D1 D2 D3 D4 D7	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1
E	Emergency Response	E1 E2	E1	E1	E1	E3
F	Fencing	F1	F1	F1	F1	F1
G	Storage of Goods	G1	G1	G1	G1	
H	Pools	H1	H1	H1	H1	H1

Flood Effects Caused By Development

A1 – ***Development shall not be approved unless it can be demonstrated in a Flood Risk Management Report that it has been designed and can be constructed so that in all events up to the 1% AEP event:***

There are no adverse impacts on flood levels or velocities caused by alterations to the flood conveyance; and

There are no adverse impacts on surrounding properties; and

It is sited to minimise exposure to flood hazard

Major developments and developments likely to have a significant impact on the PMF flood regime will need to demonstrate that there are no adverse impacts in the Probable Maximum Flood.

Outcome – The provisions of this Flood Risk Management Report demonstrate that the flood risks have been adequately addressed in accordance with the provisions of the Flood Prone Land Design Standard.

A2 – *Development shall not be approved unless it can be demonstrated in a Flood Risk Management Report that in all events up to the 1% AEP event there is no net loss of flood storage.*

Consideration may be given for exempting the volume of standard piers from flood storage calculations.

If Compensatory Works are proposed to balance the loss of flood storage from the development, the Flood Management Report shall include detailed calculations to demonstrate how this is achieved.

Outcome – There are no significant ground level works external to the existing dwelling that will reduce the site's flood storage.

Building Components and Structural Soundness

B1 - *All buildings shall be designed and constructed with flood-compatible materials in accordance with "Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas", Hawkesbury-Nepean Floodplain Management Steering Committee (2006).*

Outcome – All new building elements below the Flood Planning Level of 3.52m A.H.D shall be constructed from flood compatible materials.

A table of equivalent flood compatible materials is contained within Appendix G.

B2 – *All new development must be designed and constructed to ensure structural integrity up to the Flood Planning Level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. Where shelter-in-place refuge is required, the structural integrity of the refuge is to be up to the Probable Maximum Flood level. Structural certification shall be provided confirming the above.*

Outcome – All new structural elements are to be designed, constructed and/or modified to ensure structural integrity for immersion and impact of velocity and debris up to the Probable Maximum Flood Level of 4.85m A.H.D including the shelter-in-place facility located within the auxiliary buidling.

B3 – *All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level.*

All existing electrical equipment and power points located below the Flood Planning Level must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Outcome – All new electrical equipment, wiring, fuel lines and any other service pipes and connections are to be waterproofed to the Flood Planning Level of 3.52m A.H.D.

All existing electrical equipment and power points located below the Flood Planning Level will have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Floor Levels

C1 – ***New floor levels within the development shall be at or above the Flood Planning Level.***

Outcome – Complies as no new habitable floors are to be constructed.

The proposed storage area is to have a floor level of 3.02m A.H.D as it is non habitable and the shelter-in-place facility is to be at R.L 4.85m A.H.D and these shall be constructed from flood compatible materials.

All works associated with the proposed alterations will be in accordance with Council's requirements for 'Building Components and Structural Soundness' as previously described in this report.

There is no net loss of flood storage in all events up to the 1% AEP event.

C3 – ***All new development must be designed and constructed so as not to impede the floodway or flood conveyance on the site, as well as ensuring no net loss of flood storage in all events up to the 1% AEP event.***

For suspended pier/pile footings:

The underfloor area of the dwelling below the 1% AEP flood level is to be designed and constructed to allow clear passage of floodwaters, taking into account the potential for small openings to block; and

At least 50% of the perimeter of the underfloor area is of an open design from the natural ground level up to the 1% AEP flood level; and

No solid areas of the perimeter of the underfloor area would be permitted in a floodway

Outcome – There are no significant works proposed below the 1% AEP event that will impede the flow of flood waters. The proposed storage facility is to have an open style foundation to not impede flood waters.

C4 - A one-off addition or alteration below the Flood Planning Level of less than 30 square metres (in total, including walls) may be considered only where:

It is an extension to an existing room; and

The Flood Planning Level is incompatible with the floor levels of existing room; and

Out of the 30sqm, not more than 10 sqm is below the 1% AEP flood level

This control will not be permitted if this provision has previously been utilised since the making of this Plan.

The structure must be flood-proofed to the Flood Planning Level, and the Flood Management Report must demonstrate that there is no net loss of flood storage in all events up to the 1% AEP event.

Outcome - Complies as the proposed extension for storage area is under $30m^2$ and no more than $10m^2$ is below the 1% AEP flood level. Complies as the proposed flood platform within the auxiliary building is above the Flood Planning Level and Probable Maximum Flood level.

Proposed storage area: $24.55m^2$

Proposed storage area floor level: 3.02m A.H.D.

Proposed shelter-in-place platform area: $17.25m^2$

Proposed shelter-in-place platform floor level: 4.85m A.H.D

All new works are to be in accordance with Council's requirements for 'Building Components and Structural Soundness' as previously described in this report.

There is no net loss of flood storage in all events up to the 1% AEP event.

C6 - ***Consideration may be given to the retention of an existing floor level below the Flood Planning Level when undertaking a first-floor addition provided that:***

It is not located within a floodway; and

The original foundations are sufficient to support the proposed final structure above them. The Flood Management Report must include photos and the structural

certification required as per Control B2 must consider whether the existing foundations are adequate or should be replaced; and

none of the structural supports/framing of existing external walls of are to be removed unless the building is to be extended in that location; and

the ground floor is flood-proofed

Outcome - Not applicable as no new habitable floor levels below the Flood Planning Level are proposed.

Car Parking

D1 - ***Open carpark areas and carports shall not be located within a floodway.***

Outcome – Complies as the entire site has been catagorised as flood storage.

D2 - ***The lowest floor level of open carparks and carports shall be constructed no lower than the natural ground levels, unless it can be shown that the carpark or carport is free draining with a grade greater than 1% and that flood depths are not increased.***

Outcome – Complies as the proposed extension to the carport does not alter the existing surface level.

D3 - ***Carports must be of open design, with at least 2 sides completely open such that flow is not obstructed up to the 1% AEP flood level. Otherwise it will be considered to be enclosed.***

When undertaking a like-for-like replacement and the existing garage/carport is located on the street boundary and ramping is infeasible, consideration may be given for dry floodproofing up to the 1% AEP flood level.

Outcome – Complies as the proposed carport will have open ends to allow for the unobstructed flow of floodwater through the site.

D4 - ***Where there is more than 300mm depth of flooding in a car park or carport during a 1% AEP flood event, vehicle barriers or restraints are to be provided to prevent floating vehicles leaving the site. Protection must be provided for all events up to the 1% AEP flood event***

Outcome – Vehicle barriers/bollards will be provided to prevent floating vehicles from leaving the site.

D5 - ***Enclosed Garages must be located at or above the 1% AEP level***

Outcome – Not applicable as no new enclosed garage is proposed.

D6 - ***All enclosed car parks (including basement carparks) must be protected from inundation up to the Flood Planning Level. All access, ventilation, driveway crests and any other potential water entry points to any enclosed car parking shall be above the Flood Planning Level.***

Where a driveway is required to be raised it must be demonstrated that there is no net loss to available flood storage in any event up to the 1% AEP flood event and no impact on flood conveyance through the site.

Council will not accept any options that rely on electrical, mechanical or manual exclusion of the floodwaters from entering the enclosed car park

Outcome – Not applicable as no new enclosed garage is proposed.

Emergency Response

E1 – ***If the property is affected by a Flood Life Hazard Category of H3 or higher, then Control E1 applies and a Flood Emergency Assessment must be included in the Flood Management Report.***

If the property is affected by a Flood Life Hazard Category of H6, then development is not permitted unless it can be demonstrated to the satisfaction of the consent authority that the risk level on the property is or can be reduced to a level below H6 or its equivalent.

If the property is flood affected but the Flood Life Hazard Category has not been mapped by Council, then calculations for its determination must be shown in the Flood Management Report, in accordance with the "Technical Flood Risk Management Guideline: Flood Hazard", Australian Institute for Disaster Resilience (2012).

Where flood-free evacuation above the Probable Maximum Flood level is not possible, new development must provide a shelter-in-place refuge where:

- ***a) The floor level is at or above the Probable Maximum Flood level; and***
- ***b) The floor space provides at least 2m^2 per person where the flood duration is long (six or more hours) in the Probable Maximum Flood event, or 1m^2 per person for less than 6 hours;***
- ***c) It is intrinsically accessible to all people on the site, plainly evident, and self-directing, with sufficient capacity of access routes for all occupants without reliance on an elevator; and***
- ***d) It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; torch with spare batteries; and a first aid kit***

Class 10 classified buildings and structures (as defined in the Building Codes of Australia) are excluded from this control.

In the case of change of use or internal alterations to an existing building, a variation to this control may be considered if justified appropriately by a suitably qualified professional.

Note that in the event of a flood, occupants would be required to evacuate if ordered by Emergency Services personnel regardless of the availability of a shelter-in-place refuge.

Outcome – The emergency response as detailed in this report is to 'shelter-in-place' within the proposed flood platform within the refuge during significant flood events, or otherwise off-site as directed by Emergency Services.

The proposed shelter-in-place flood platform floor level is at R.L. 4.85m A.H.D and is located in the facility towards the rear of the property and is accessible by occupants of both the main dwelling and the studio.

The proposed development complies with a) to c). The Owner of the site should provide items as per d) to provide for a shelter-in-place scenario in potential extreme storm events.

Fencing

F1 ***- Fencing, (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be designed so as not to impede the flow of flood waters and not to increase flood affectation on surrounding land. At least 50% of the fence must be of an open design from the natural ground level up to the 1% AEP flood level. Less than 50% of the perimeter fence would be permitted to be solid. Openings should be a minimum of 75 mm x 75mm.***

Outcome – Complies as no new fence elements are proposed.

Storage of Goods

G1 ***– Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level unless adequately protected from floodwaters in accordance with industry standards.***

Outcome – The Owners are to ensure storage of toxic or potentially polluting goods, materials or other products, which may be hazardous or pollute floodwaters, will not be permitted below the Flood Planning Level of 3.52m A.H.D.

Pools

H1 ***- Pools located within the 1% AEP flood extent are to be in-ground, with coping flush with natural ground level. Where it is not possible to have pool coping flush with natural ground level, it must be demonstrated that the development will result in no net loss of flood storage and no impact on flood conveyance on or from the site.***

All electrical equipment associated with the pool (including pool pumps) is to be waterproofed and/or located at or above the Flood Planning Level.

All chemicals associated with the pool are to be stored at or above the Flood Planning Level.

Outcome – Complies as no new pool is proposed

7.0 SUMMARY

This report is a plan for the site for major flood events to be incorporated by The Owner into the on-going management protocols for the site to manage the flood risks.

The report contains procedural information to ensure the safety of occupants during flood events and also to ensure the satisfactory performance of any new building elements.

The recommendations and strategies within this report ensure compliance with Pittwater 21 Development Control Plan, Section B General Controls, Part B3.11 'Flood Prone Land'.

Should you have any questions or queries please do not hesitate to contact the undersigned.

TAYLOR CONSULTING

D M SCHAEFER - Director
B.E. Civil (Hons) M.I.E. Aust. N.E.R.

Appendix A

Locality Map - 11 Darius Avenue, North Narrabeen

Appendix B

DRAWING SCHEDULE

PROPOSED DA APPLICATION

11 DARIUS AVENUE NORTH NARRABEEN 2101

LOT 6/-/DP28354

DRAWING TITLE	DRAWING No.	SCALE	ISSUE	PAPER SIZE
COVER SHEET	5161-24-00	NTS	P4	A3
LOCALITY MAP & SITE PHOTOS	5161-24-01	NTS	P4	A3
EXISTING SITE CONTEXT AND ANALYSIS PLAN	5161-24-02	NTS	P4	A3
EXISTING SURVEY PLAN	5161-24-03	NTS	P4	A3
EXISTING SITE PLAN/ GFA CALCULATION PLAN	5161-24-04	NTS	P4	A3
EXISTING GROUND FLOOR PLAN	5161-24-05	NTS	P4	A3
EXISTING ROOF PLAN	5161-24-06	NTS	P4	A3
EXISTING ELEVATIONS - SHEET 1	5161-24-07	NTS	P4	A3
EXISTING ELEVATIONS - SHEET 2	5161-24-08	NTS	P4	A3
EXISTNG SECTIONS A-A & B-B	5161-24-10	NTS	P4	A3
PROPOSED GFA CALCULATION	5161-24-12	NTS	P4	A3
PROPOSED SITE PLAN / GROUND FLOOR PLAN	5161-24-13	NTS	P4	A3
PROPOSED GROUND FLOOR PLAN	5161-24-14	NTS	P4	A3
PROPOSED ROOF PLAN	5161-24-15	NTS	P4	A3
PROPOSED STREETSCAPE ELEVATION	5161-24-16A	NTS	P4	A3
PROPOSED ELEVATIONS - SHEET 1	5161-24-16	NTS	P4	A3
PROPOSED ELEVATIONS - SHEET 2	5161-24-17	NTS	P4	A3
PROPOSED SECTIONS / OPTION 2	5161-24-19B	NTS	P4	A3
PROPOSED DEMOLITION PLAN	5161-24-22	1:100	P3	A3
PROPOSED 3D IMAGE - SHEET 1	5161-24-23	NTS	P4	A3
PROPOSED 3D IMAGE - SHEET 2	5161-24-24	NTS	P4	A3
PROPOSED 3D IMAGE - SHEET 3	5161-24-25	NTS	P4	A3

NOTES:

1. FOR COMPLYING DEVELOPMENT CERTIFICATE ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

2. BYDA BEFORE YOU DIG FOR ANY UNDERGROUND SERVICES WWW.BYDA.COM.AU

3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CONSULTANTS DRAWINGS & SPECIFICATIONS.

4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
Member Australian Institute of Architects
The Association of Consulting Engineers Australia

Client: **BRENDAN STOUT**

11 DARIUS AVENUE NORTH NARRABEEN 2101

COVER SHEET

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 00 of	Issue: P4
Passed By: EMMC	Date of Issue:		

P1 SOURCE : apps.nearmap.com

P2 SOURCE : apps.nearmap.com

P3 SOURCE : apps.nearmap.com

P4 SOURCE : apps.nearmap.com

P5 SOURCE : www.realestate.com.au

P6 SOURCE : www.realestate.com.au

SITE LOCATION PLAN

SCALE - 1:2000 (A3)

0m 20m 50m

SOURCE : apps.nearmap.com

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101

LOCALITY MAP & SITE PHOTOS

Design By	EMMC
Drawn By	EMMC
Reviewed By	EMMC
Passed By	EMMC
Job No.	5161-24
Scale	NTS
Date	20/09/2024
Date of Issue	
Sheet No.	01 of
Issue	P4

SOURCE : apps.nearmap.com

SITE CONTEXT PLAN

SCALE - 1:500 (A3)

PROPERTY DETAILS

Address:	11 DARIUS AVENUE NORTH NARRABEEN 2101
Lot/DP:	6/-/DP28354
SITE AREA:	557.0m^2
COUNCIL:	NORTHERN BEACHES COUNCIL

CONTROLS UNDER LEP 2014

HEIGHT LIMIT	8.5m
ZONING	R2 - LOW DENSITY RESIDENTIAL
FSR	N/A

EXEMPT AND COMPLYING DEVELOPMENT CODES DEVISION 3:

CONTROL	DIMENSION
3.8 MAXIMUM BUILDING HEIGHT:	8.5M
3.9 MAXIMUM GFA	25% of Lot Area + 150 = 289.25m^2
3.10.1 PRIMARY ROAD SETBAKS:	AVERAGE (MIN) 4.5m
3.10.4 SIDE SETBACKS	MIN 900mm GROUND FLOOR 10-18m WIDE
REAR SETBACK	3m

NOTE: SURVEY PLAN PREPARED BY URBAN SURVEYING

FOR SITE PHOTOS REFER TO DRAWING 5161-24-01

LEGEND

- SUBJECT SITE
- SOLAR SUN PATH
- PREVAILING SUMMER /WINTER WIND
- PREVAILING WINTER WIND
- OVERSHADOWING

N

0m 5m 15m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

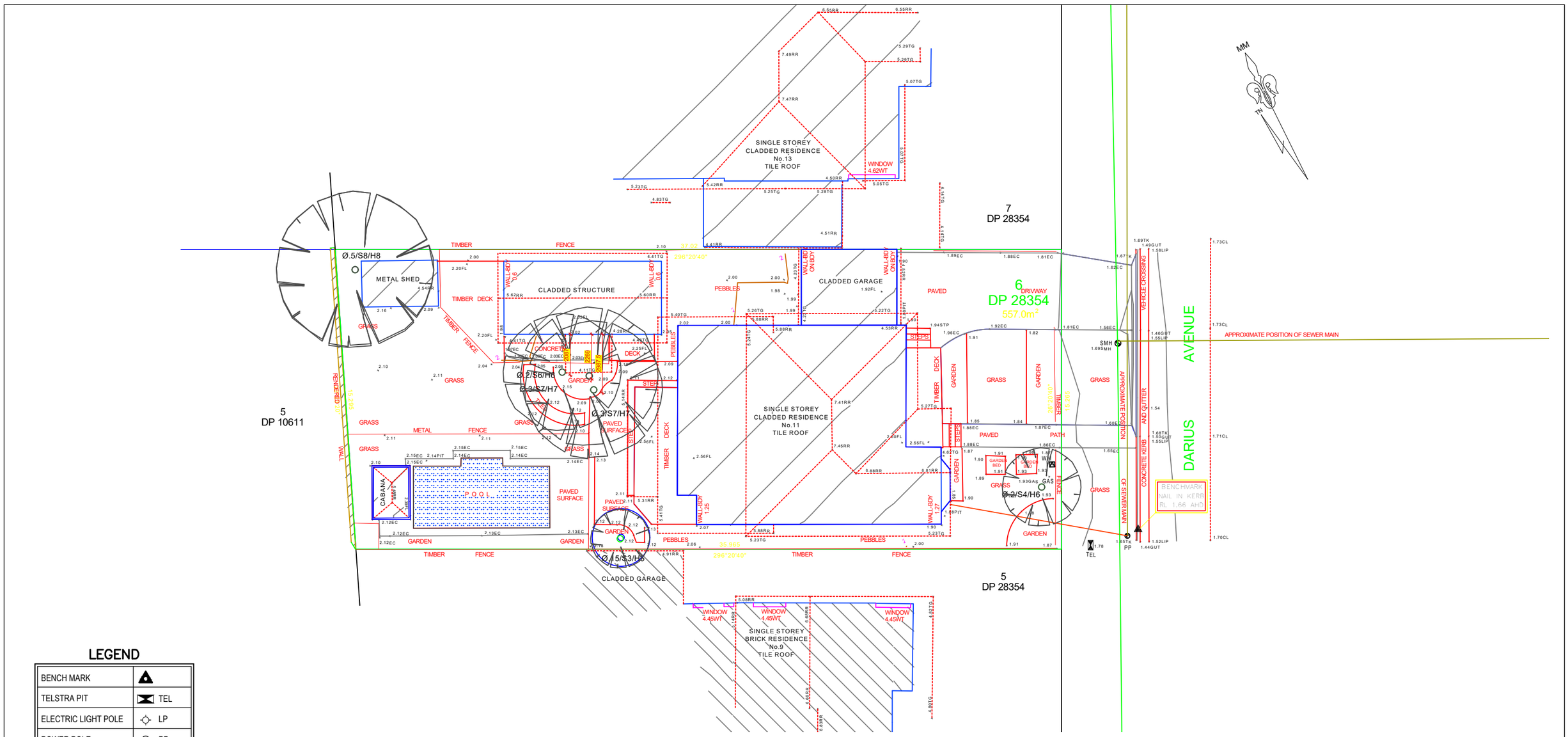
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTING SITE CONTEXT AND ANALYSIS PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 02 of	Issue: P4
Passed By: EMMC	Date of Issue:		



LEGEND

BENCH MARK	
TELSTRA PIT	TEL
ELECTRIC LIGHT POLE	LP
POWER POLE	PP
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER VENT	SEWER
MANHOLE	MH
SEWER MANHOLE	SMH
STOP VALVE	SV
WATER HYDRANT	HYD
WATER METER	WM
GAS METER	GM
STATE SURVEY MARK	SSM

LEGEND

EC - EDGE OF CONCRETE
WT - TOP OF WINDOW
TG - TOP OF GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
TOW - TOP OF WALL
SIP - SEWER INSPECTION PIT
TK - TOP OF KERB
GUT - ROAD GUTTER
LIP - LIP OF GUTTER
Ø.4/S10/H16 - TREE DIAMETER/SPREAD/HEIGHT

SURVEY PREPARED BY URBAN SURVEYING

0m 1m 3m 5m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

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Phone: 0452 066 506
Email: gs@urbansurveying.com.au

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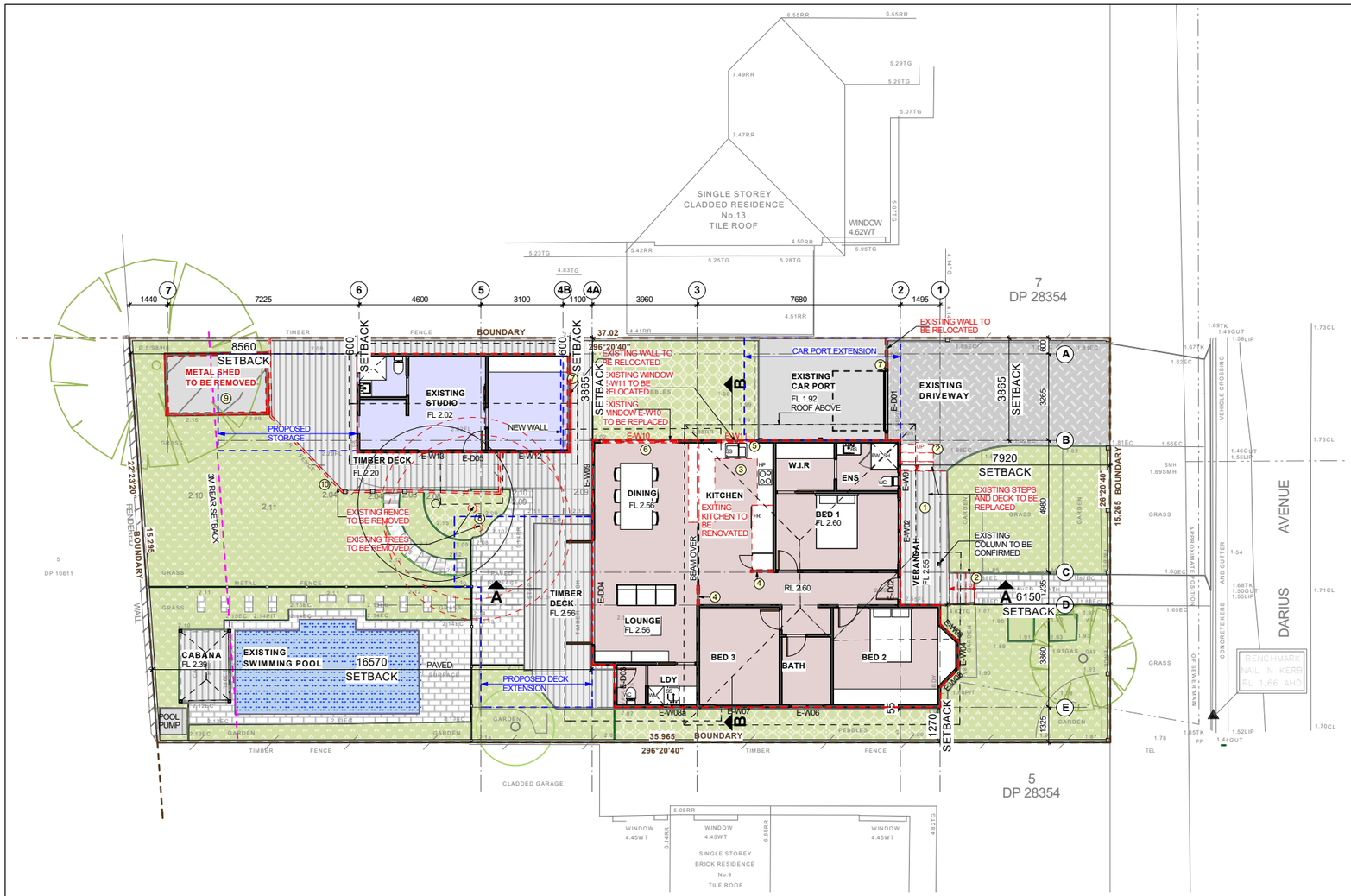
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTING SURVEY PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 03 of	Issue: P4
Passed By: EMMC	Date of Issue:		



TOTAL SITE AREA = 557.0m² (BY TITLE)

EXISTING GFA CALCULATION

EXISTING MAIN HOUSE GFA:	122.83 m²
EXISTING STUDIO GFA:	29.87 m²
TOTAL GFA:	152.7 m²
TOTAL FSR:	0.27:1

EXISTING SITE CALCULATIONS

BUILDING FOOT PRINT			**136.4** m2
	EXISTING BUILDING MAIN OUTLNE (GFA)	122,83	
	EXISTING FRONT VERANDAH (MAIN HOUSE)	9.211	
	EXISTING REAR DECK AREAS	62.718	
	EXISTING STUDIO	29.87	
	EXISTING SHED	9.09	
	EXISTING CABANA	4.68	
	POOL PUMP	1	
	STAIRS	1.06	
	EXISTING CARPORT	18.81	
TOTAL CONCRETE AREAS			**95.2** m2
	PAVED AREAS	35.95	
	POOL	22.78	
	EXISTING DRIVEWAY	36.48	
TOTAL IMPERVIOUS AREA			**231.6** m2
TOTAL PERVIOUS AREA			**325.4** m2
	TOTAL LANDSCAPE AREA	325.4	

NOTES:

1. FOR COMPLYING DEVELOPMENT CERTIFICATE ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

2. BYDA BEFORE YOU DIG FOR ANY UNDERGROUND SERVICES WWW.BYDA.COM.AU

3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CONSULTANTS DRAWINGS & SPECIFICATIONS.

4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

N

0m 1m 3m 5m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

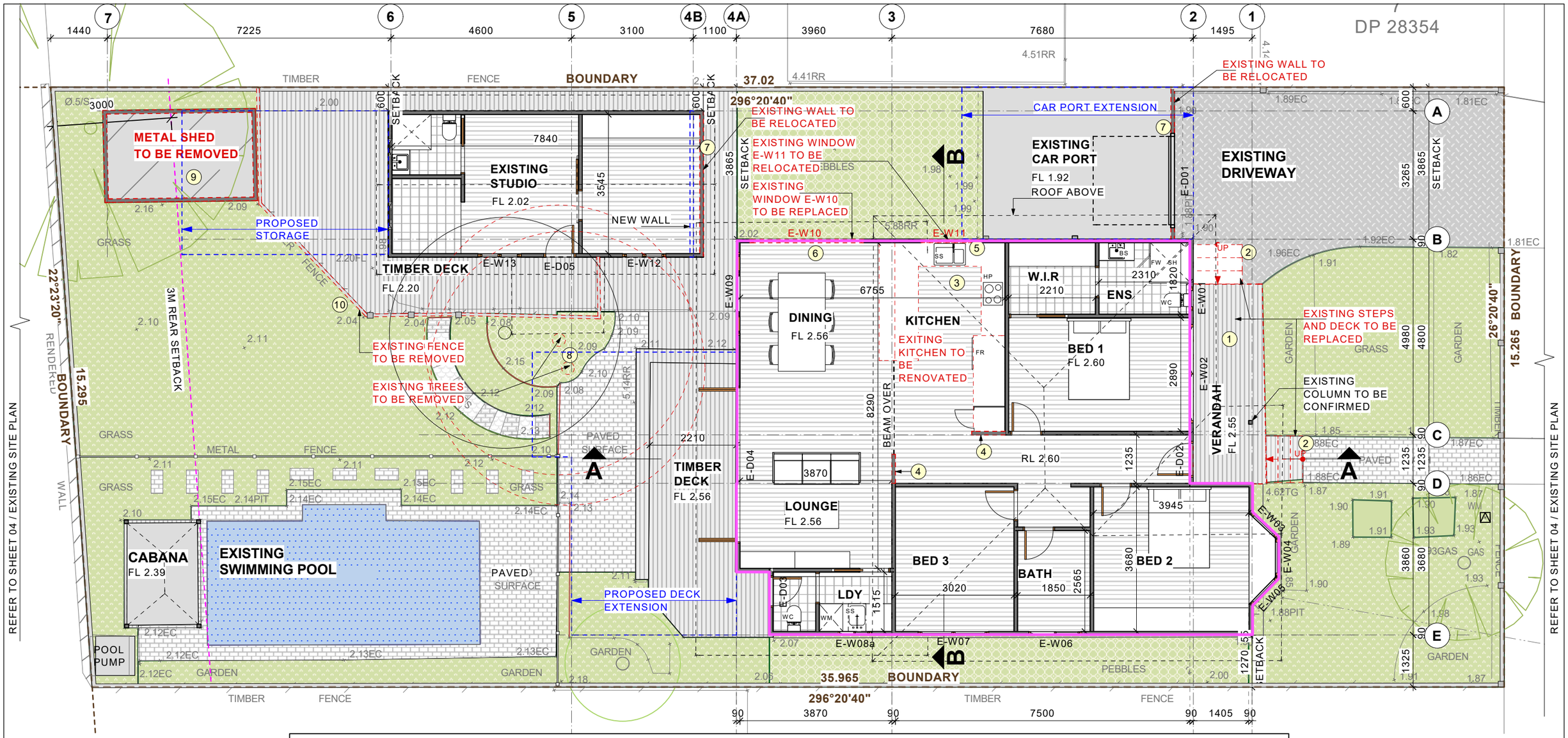
Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
Member Australian Institute of Architects
The Association of Consulting Engineers Australia

Client: **BRENDAN STOUT**

11 DARIUS AVENUE NORTH NARRABEEN 2101

EXISTING SITE PLAN/ GFA CALCULATION PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 04 of	Issue: P4
Passed By: EMMC	Date of Issue:		



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LEGEND:

⌖3.1 CH	CEILING HEIGHT ABOVE FINISHED FLOOR LEVEL
	EXISTING WALLS
	EXISTING WALL TO BE REMOVED
	PROPOSED WORKS OUTLINED
	EXISTING WORKS TO BE REMOVED

(NOTE: FOR EXISITING WALL TYPES AND DIMEINSIONS TO BE CONFIRMED ON SITE DURING CONSTRUCTION)

BS	BASIN
CH	CEILING HEIGHT
DW	DISHWASHER
D	DOOR
E-	EXISTING
FR	FRIDGE
FW	FLOOR WASTE
FP	FIRE PLACE
SH	SHOWER
SS	STAINLESS STEEL SINK
W	WINDOW
WC	WATER CLOSET
WM	WASHING MACHINE

EXISTING WORKS TO BE REMOVED

1. EXISTING DECK TO BE REPLACED
2. EXISTING STAIRS TO BE RELOCATED
3. EXISTING KITCHEN TO BE NOVATEDX
4. EXISTING WALLS TO BE REMOVED
5. EXISTING WINDOW E-W11 TO BE RELOCATED
6. EXISTING WINDOW E-W10 TO BE REPLACED
7. EXISTING WALL TO BE RELOCATED
8. EXISTING 2 TREES TO BE REMOVED
9. EXISTING METAL SHED TO BE REMOVED
10. EXISTING FENCE TO BE REMOVED

N

0m 1m 3m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

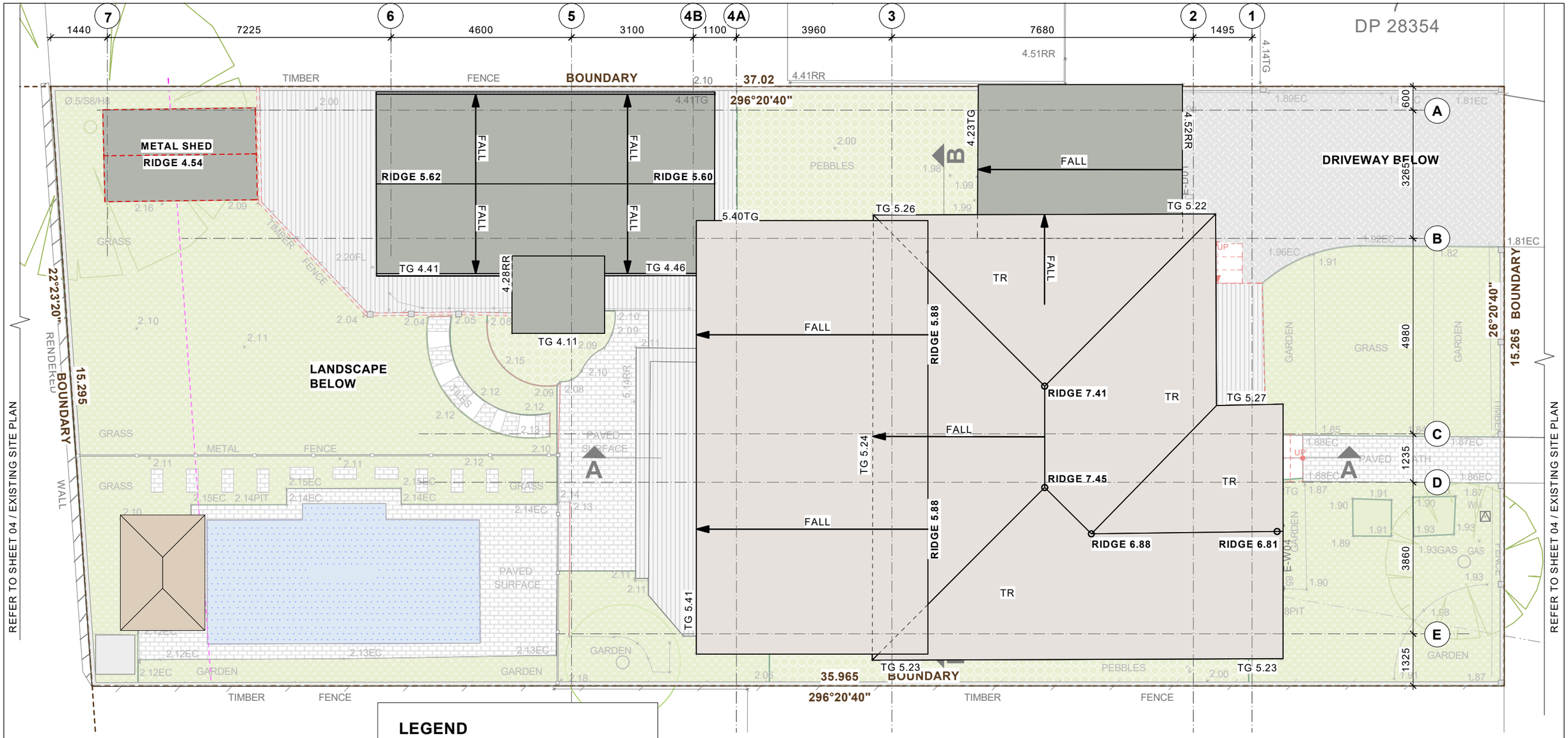
Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
Member Australian Institute of Architects
The Association of Consulting Engineers Australia

Client: **BRENDAN STOUT**

11 DARIUS AVENUE NORTH NARRABEEN 2101

EXISTING GROUND FLOOR PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 05 of	Issue: P4
Passed By: EMMC	Date of Issue:		



REFER TO SHEET 04 / EXISTING SITE PLAN

REFER TO SHEET 04 / EXISTING SITE PLAN

LEGEND

DP	DOWN PIPE
E-	EXISTING
EG	EXISTING EDGE GUTTER
MS	EXISTING METAL ROOF SHEETING
TR	EXISTING TERRACOTTA TILES
TG	EXISTING TOP GUTTER
	BUILDING OUTLINE
	PROPOSED WORKS OUTLINED
	EXISTING WORKS TO BE REMOVED

NOTES:

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2. BYDA BEFORE YOU DIG FOR ANY UNDERGROUND SERVICES WWW.BYDA.COM.AU

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4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

N

0m 1m 3m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

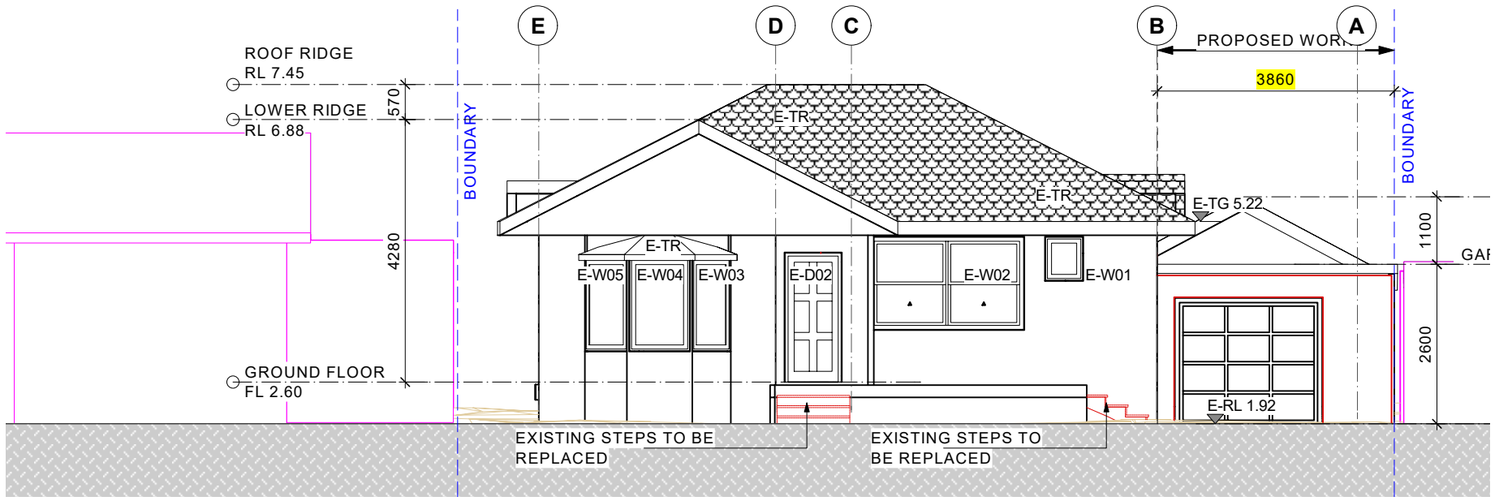
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

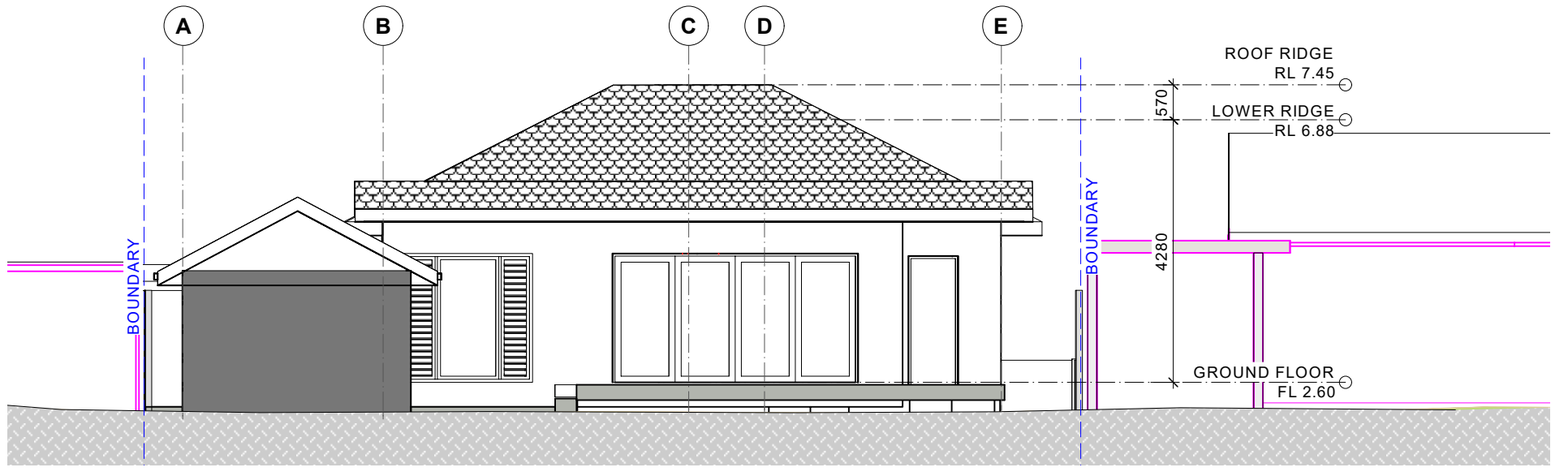
11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTING ROOF PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 06 of	Issue: P4
Passed By: EMMC	Date of Issue:		



EXISTING EAST ELEVATION (FRONT ELEVATION)

SCALE - 1:100 (A3)



EXISTING WEST ELEVATION

SCALE - 1:100 (A3)

NOTES:

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4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND

D	DOOR
DP	DOWN PIPE
E-	EXISTING
W	WINDOW
TR	TERRACOTTA TILE ROOF
RB	RENDER BRICK
MS	METAL ROOF
	NOTATIONS FOR ADJOINING BUILDINGS
	EXISTING WORKS TO BE REMOVED
	PROPOSED EXTENSION OUTLINED

0m 1m 3m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

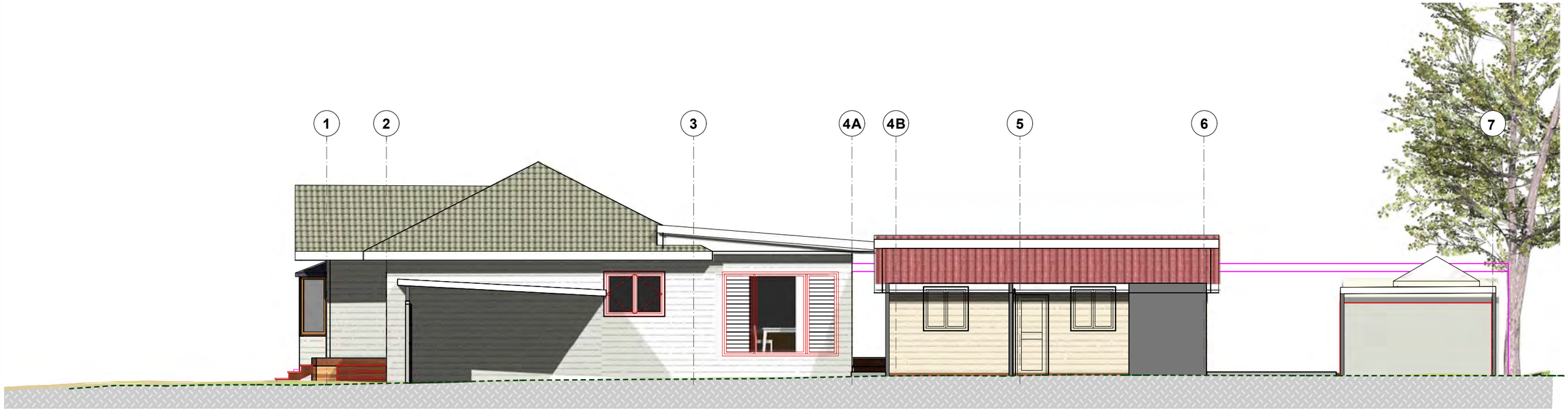
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

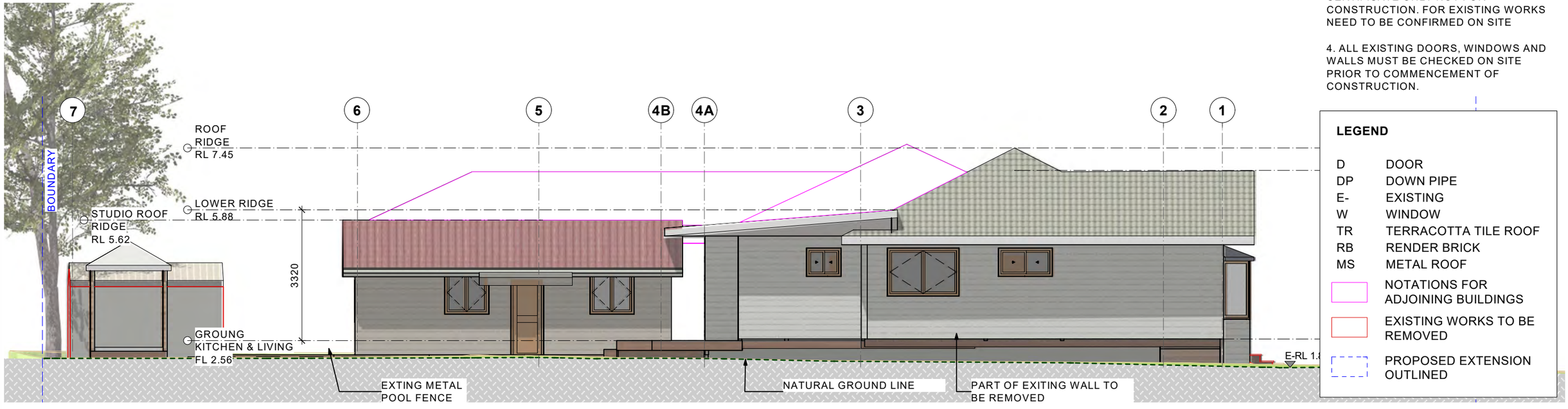
11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTING ELEVATIONS - SHEET 1

Design By: EMMC	Job No. 5161-24		
Drawn By: EMMC	Scale NTS		
Reviewed By: EMMC	Date 20/09/2024	Sheet No. 07 of	Issue P4
Passed By: EMMC	Date of Issue		



EXISTING NORTH ELEVATION

SCALE - 1:100 (A3)



EXISTING SOUTH ELEVATION

SCALE - 1:100 (A3)

NOTES:

1. FOR COMPLYING DEVELOPMENT CERTIFICATE ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND

D	DOOR
DP	DOWN PIPE
E-	EXISTING
W	WINDOW
TR	TERRACOTTA TILE ROOF
RB	RENDER BRICK
MS	METAL ROOF
	NOTATIONS FOR ADJOINING BUILDINGS
	EXISTING WORKS TO BE REMOVED
	PROPOSED EXTENSION OUTLINED

0m 1m 3m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

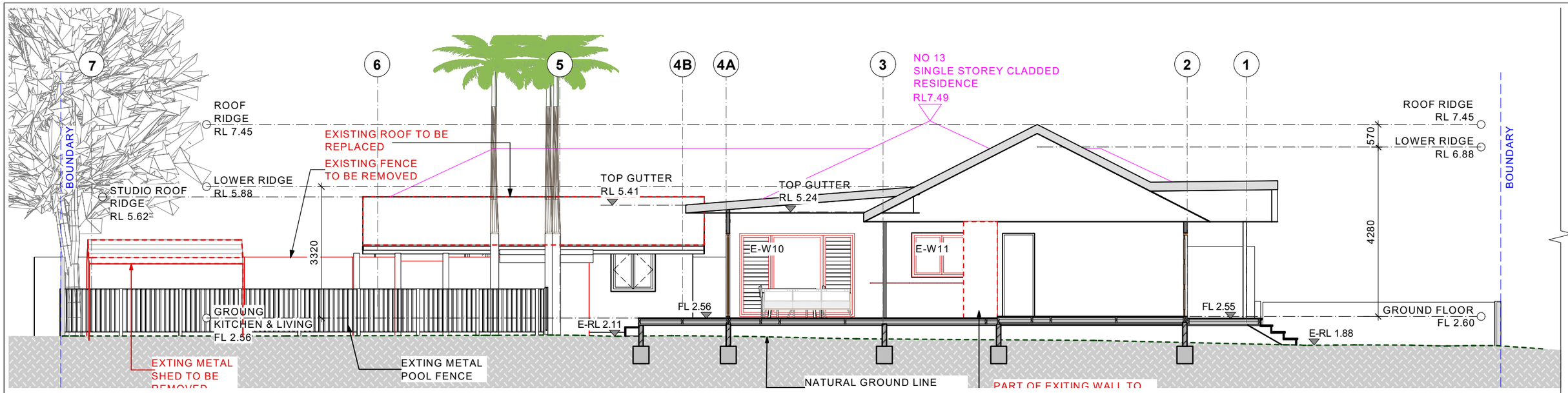
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client:
BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTING ELEVATIONS - SHEET 2

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 08 of	Issue: P4
Passed By: EMMC	Date of Issue:		



EXISTING SECTION A-A

SCALE - 1:100 (A3)

LEGEND

D	DOOR
DP	DOWNPIPE
E-	EXISTING
W	WINDOW
TR	TERRACOTTA TILES
	NOTATIONS FOR ADJOINING BUILDINGS
	EXISTING WORKS TO BE REMOVED
	EXISTING CAVITY BRICK WALL
	EXISTNG WALL TO BE REMOVED
	EXISTNG MASONRY WALL
	PROPOSED EXTENSION OUTLINED

NOTES:

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4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

0m 1m 3m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

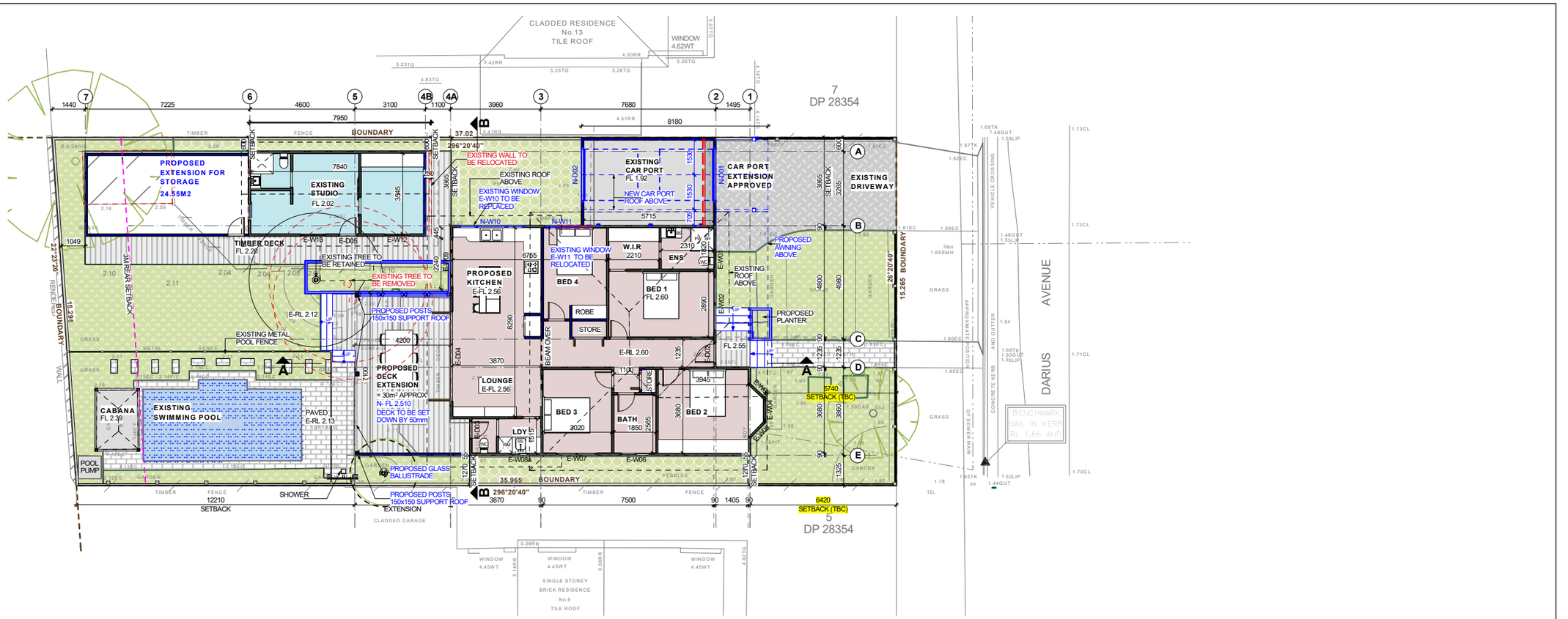
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
The Association of Consulting Engineers Australia

Client:
BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101
EXISTNG SECTIONS A-A & B-B

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 10 of	Issue: P4
Passed By: EMMC	Date of Issue:		



PROPOSED GROUND FLOOR PLAN - OPTION 2A

GFA = 122.9 m²

GFA = 28.95 m²

SCALE - 1:200 (A3)

TOTAL SITE AREA = 557.0m² (BY TITLE)

PROPOSED GFA CALCULATION

PROPOSED GROUND FLOOR GFA: 122.9 m²

PROPOSED GRANNY FLAT GFA: 28.95 m²

TOTAL GFA: 151.85m²

TOTAL FSR: 0.27:1

N

0m 1m 3m 5m

DRAFT

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

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NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
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Thornleigh NSW 2120
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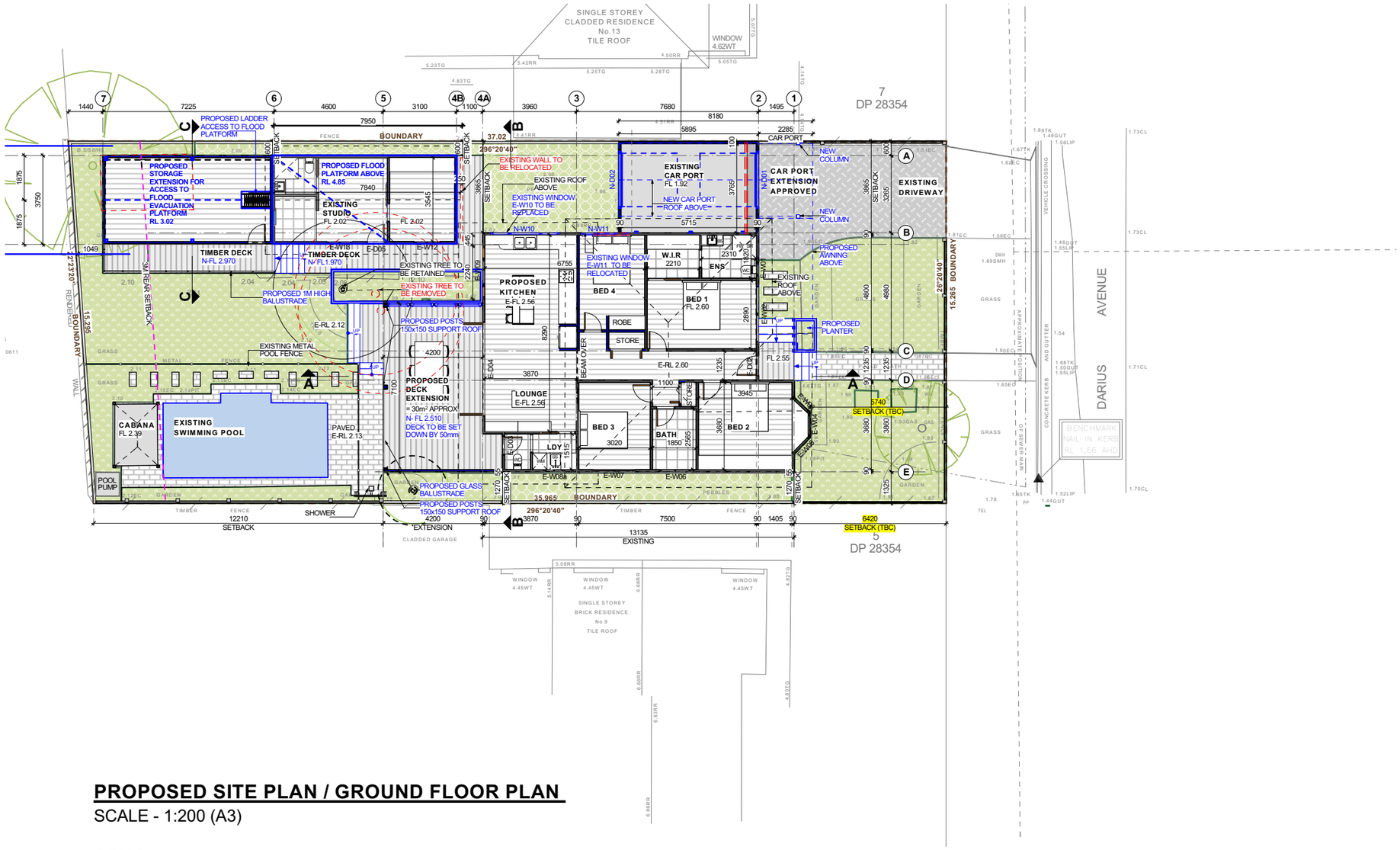
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au

Client: BRENDAN STOUT

11 DARIUS AVENUE NORTH NARRABEEN 2101
PROPOSED GFA CALCULATION

Design By	EMMC
Drawn By	EMMC
Reviewed By	EMMC
Passed By	EMMC
Job No.	5161-24
Scale	NTS
Date	20/09/2024 (27.07.18)
Date of Issue	
Sheet No.	12 of
Issue	P4



PROPOSED SITE PLAN / GROUND FLOOR PLAN

SCALE - 1:200 (A3)

NOTES:

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N

0m 1m 3m 5m

DRAFT - For Development Application

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

lyle marshall & partners pty ltd
Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
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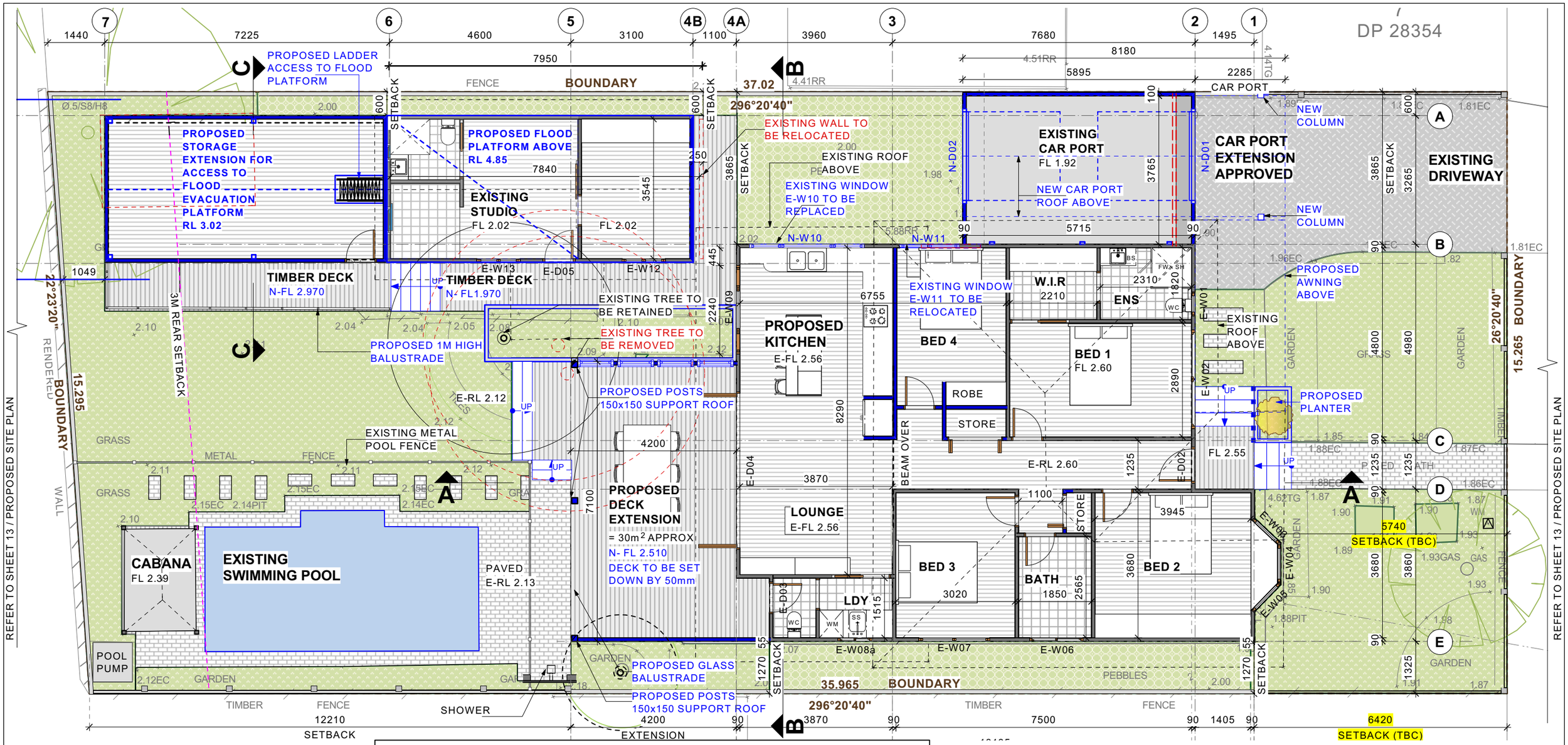
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
Member Australian Institute of Architects
The Association of Consulting Engineers Australia

Client: **BRENDAN STOUT**

Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED SITE PLAN / GROUND FLOOR PLAN

Design By	EMMC
Drawn By	EMMC
Reviewed By	EMMC
Passed By	EMMC
Job No.	5161-24
Scale	NTS
Date	20/09/2024
Date of Issue	27.07.18
Sheet No.	13 of
Issue	P4



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4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND:

⌖3.1 CH	CEILING HEIGHT ABOVE FINISHED FLOOR LEVEL
FL	FINISH FLOOR LEVEL
	EXISTING`X WALLS
	EXISTING WORKS TO BE REMOVED
	PROPOSED WORKS OUTLINED
	PROPOSED NEW WALLS

(NOTE: FOR EXISITING WALL TYPES AND DIMEINSIONS TO BE CONFIRMED ON SITE DURING CONSTRUCTION)

BS	BASIN
CH	CEILING HEIGHT
DW	DISHWASHER
D	DOOR
E-	EXISTING
N-	PROPOSED NEW WORKS
FR	FRIDGE
FW	FLOOR WASTE
FP	FIRE PLACE
SH	SHOWER
SS	STAINLESS STEEL SINK
W	WINDOW
WC	WATER CLOSET
WM	WASHING MACHINE

0m 1m 3m

DRAFT - For Development Application

No.	Date	Issue Notes
P6	15/10/2024	AMENDMENT TO FLOOD PLATFORM

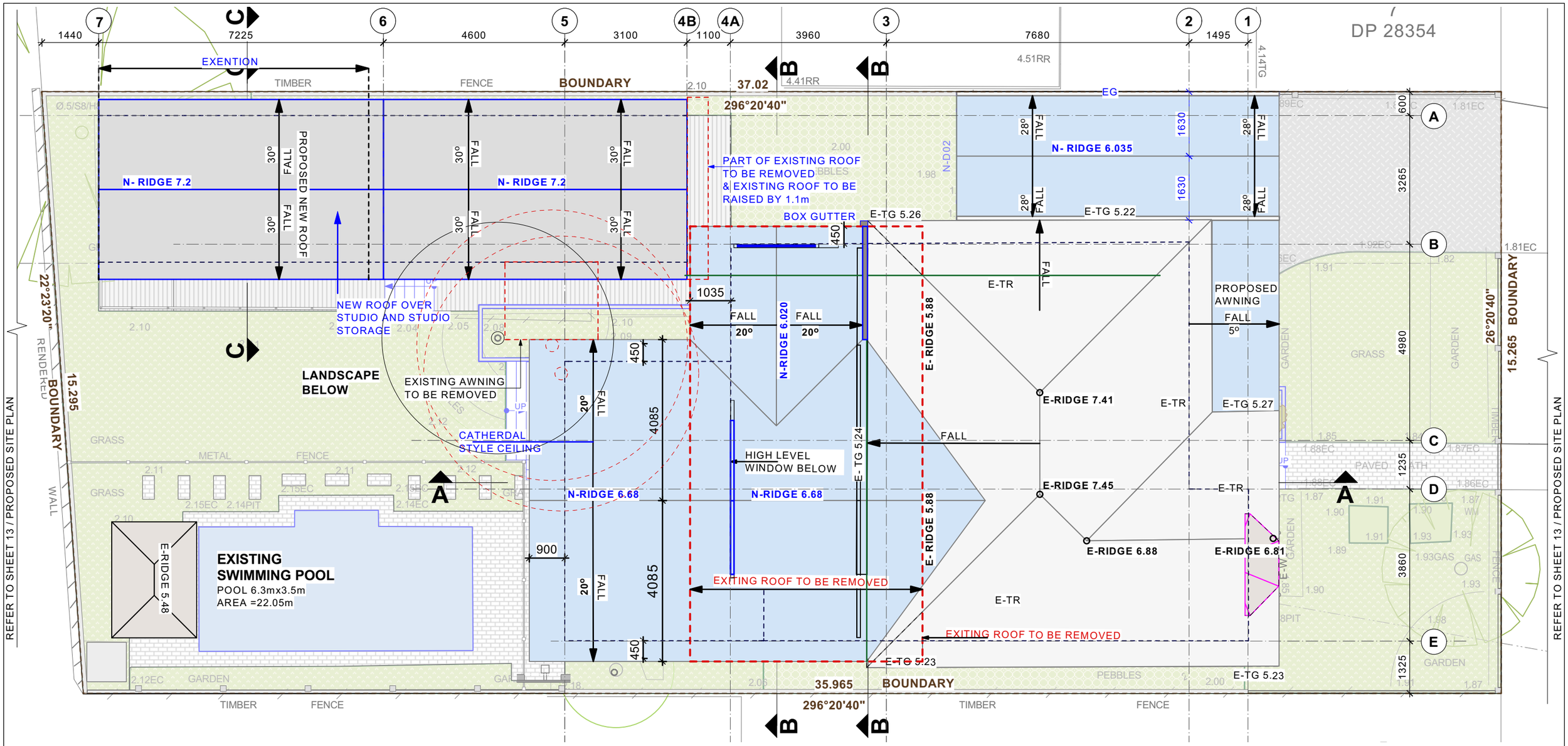
Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
phone: (02) 9436 0086
email: lyle@lylemarshall.com.au
web: www.lylemarshallandassociates.com.au
Member Australian Institute of Architects
The Association of Consulting Engineers Australia

Client: **BRENDAN STOUT**

Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED GROUND FLOOR PLAN

Design By	EMMC
Drawn By	EMMC
Reviewed By	EMMC
Passed By	EMMC
Job No.	5161-24
Scale	NTS
Date	15/10/2024
Date of Issue	
Sheet No.	14 of
Issue	P6



NOTES:

1. FOR COMPLYING DEVELOPMENT CERTIFICATE ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

2. BYDA BEFORE YOU DIG FOR ANY UNDERGROUND SERVICES WWW.BYDA.COM.AU

3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CONSULTANTS DRAWINGS & SPECIFICATIONS.

4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND

DP	DOWN PIPE
E-	EXISTING
EG	EXISTING EDGE GUTTER
MS	METAL ROOF SHEETING
N-	PROPOSED NEW WORKS
TR	EXISTING TERRACOTTA TILES
TG	EXISTING TOP GUTTER
	BUILDING OUTLINE

- PROPOSED WORKS OUTLINED
- EXISTING WORKS TO BE REMOVED
- PROPOSED NEW METAL ROOF SHEETING
- EXISTING TERRACOTTA TILES ROOF

N

0m 1m 3m

DRAFT - For Development Application

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
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email: lyle@lylemarshall.com.au
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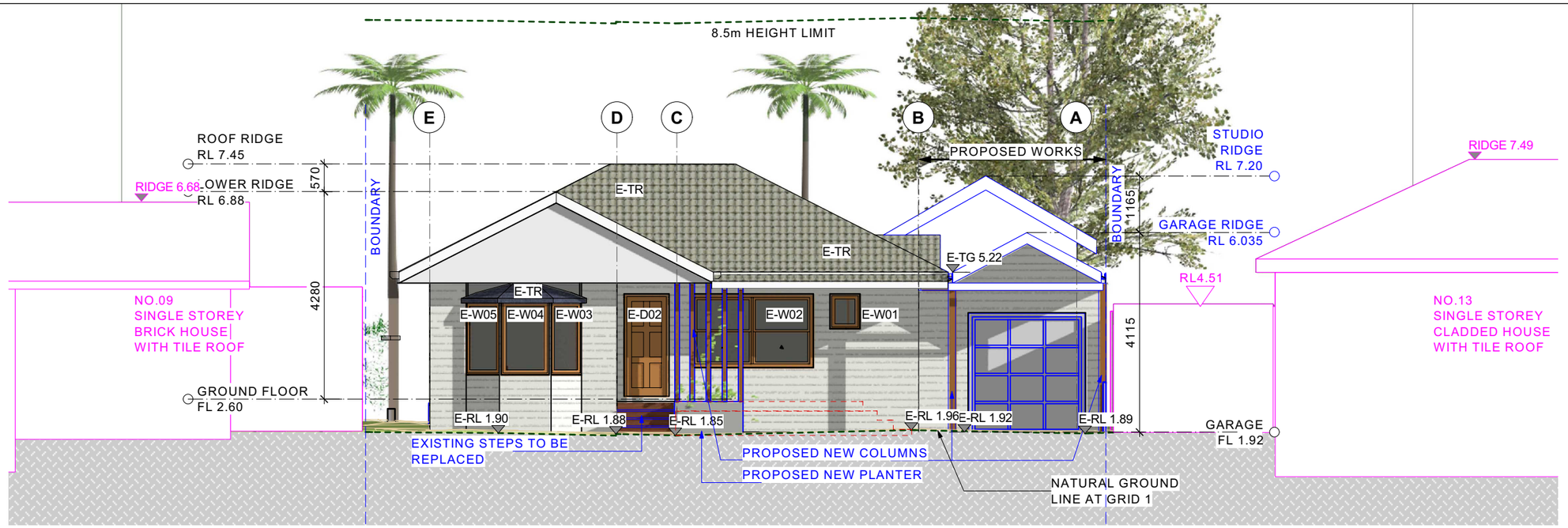
Client:
BRENDAN STOUT

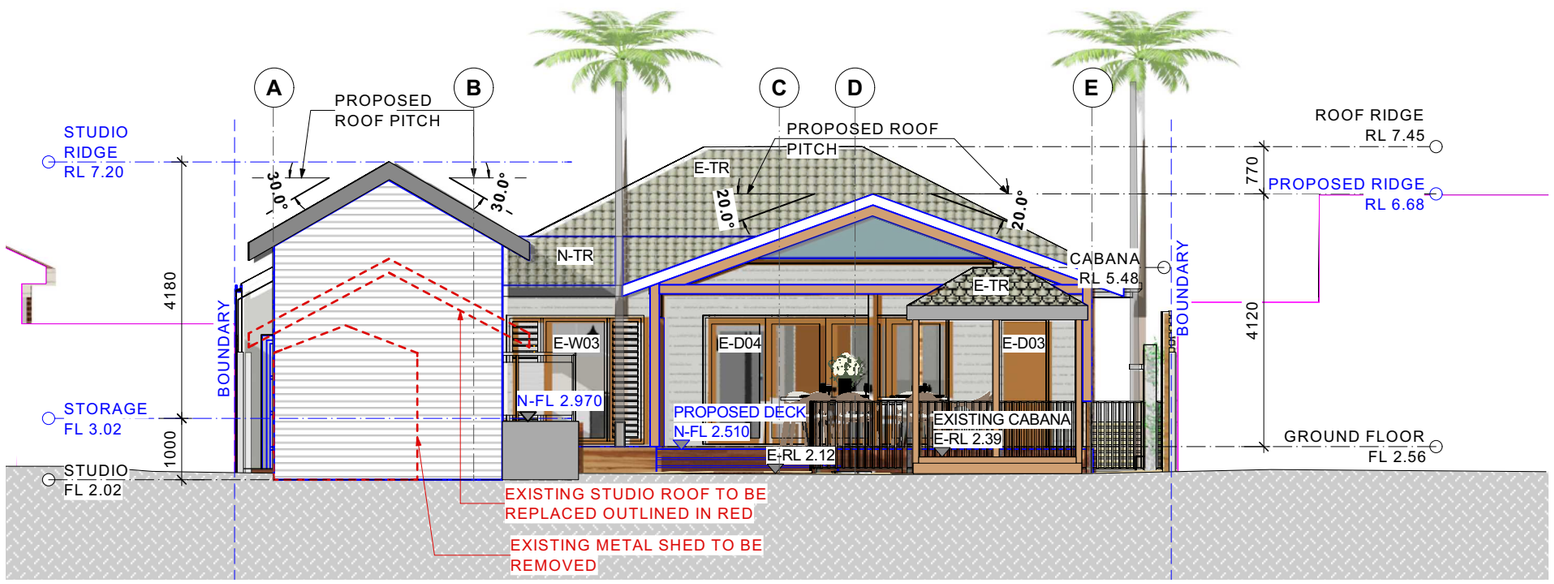
Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED ROOF PLAN

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 15 of	Issue: P4
Passed By: EMMC	Date of Issue:		



PROPOSED EAST ELEVATION (FRONT ELEVATION)

SCALE - 1:100 (A3)



PROPOSED WEST ELEVATION

SCALE - 1:100 (A3)

NOTES:

1. FOR COMPLYING DEVELOPMENT CERTIFICATE ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND

D	DOOR
DP	DOWN PIPE
E-	EXISTING
N-	PROPOSED NEW WORKS
W	WINDOW
TR	TERRACOTTA TILE ROOF
RB	RENDER BRICK
MS	METAL ROOF

NOTATIONS FOR ADJOINING BUILDINGS

EXISTING WORKS TO BE REMOVED

PROPOSED EXTENSION OUTLINED

0m 1m 3m

DRAFT - For Development Application

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
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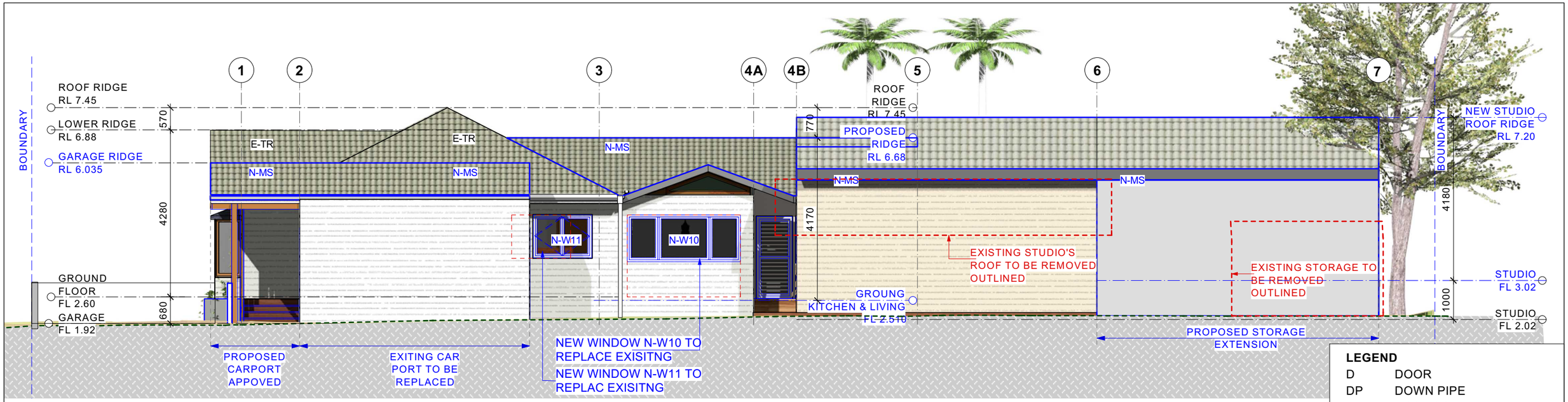
Client:
BRENDAN STOUT

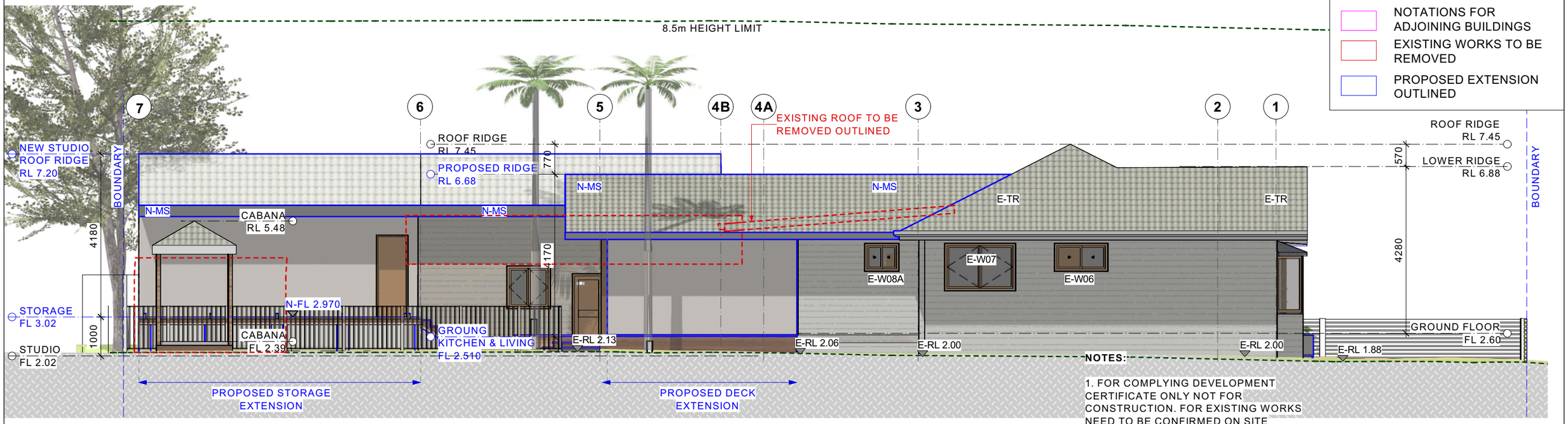
Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED ELEVATIONS - SHEET 1

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 16 of	Issue: P4
Passed By: EMMC	Date of Issue:		



PROPOSED NORTH ELEVATION / LARGE SCALE

SCALE - 1:100 (A3)



PROPOSED SOUTH ELEVATION / LARGE SCALE

SCALE - 1:100 (A3)

LEGEND

D	DOOR
DP	DOWN PIPE
E-	EXISTING
N-	PROPOSED NEW WORKS
W	WINDOW
TR	TERRACOTTA TILE ROOF
RB	RENDER BRICK
MS	METAL ROOF

NOTATIONS FOR ADJOINING BUILDINGS

EXISTING WORKS TO BE REMOVED

PROPOSED EXTENSION OUTLINED

NOTES:

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4. ALL EXISTING DOORS, WINDOWS AND WALLS MUST BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

0m 1m 3m

DRAFT - For Development Application

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
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Suite 15 Level 1
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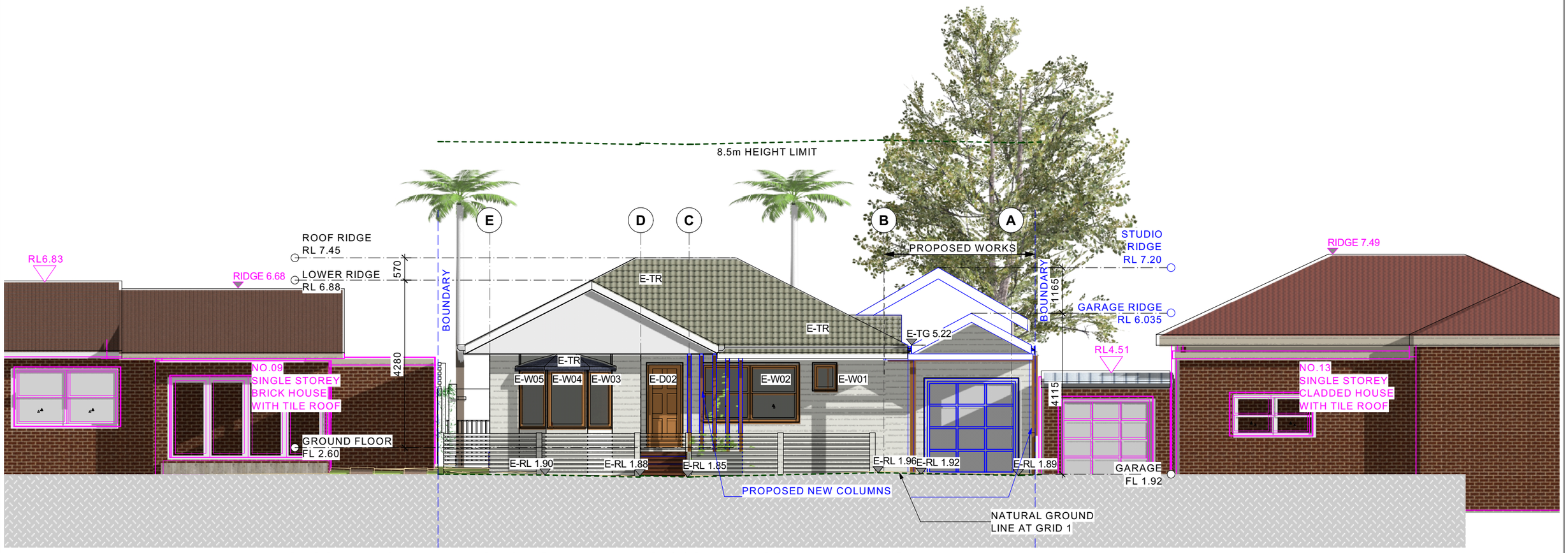
Client: BRENDAN STOUT

Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354

PROPOSED ELEVATIONS - SHEET 2

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 20/09/2024	Sheet No.: 17 of	Issue: P4
Passed By: EMMC	Date of Issue:		



PROPOSED EAST ELEVATION (FRONT ELEVATION) / STREET SCAPE ELEVATION

SCALE - 1:100 (A3)

LEGEND

D	DOOR
DP	DOWN PIPE
E-	EXISTING
N-	PROPOSED NEW WORKS
W	WINDOW
TR	TERRACOTTA TILE ROOF
RB	RENDER BRICK
MS	METAL ROOF
	NOTATIONS FOR ADJOINING BUILDINGS
	EXISTING WORKS TO BE REMOVED
	PROPOSED EXTENSION OUTLINED

NOTES:

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0m 1m 3m

DRAFT - For Development Application

No.	Date	Issue Notes
P4	20/09/2024	DRAFT FOR DA CO-ORINDATION

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
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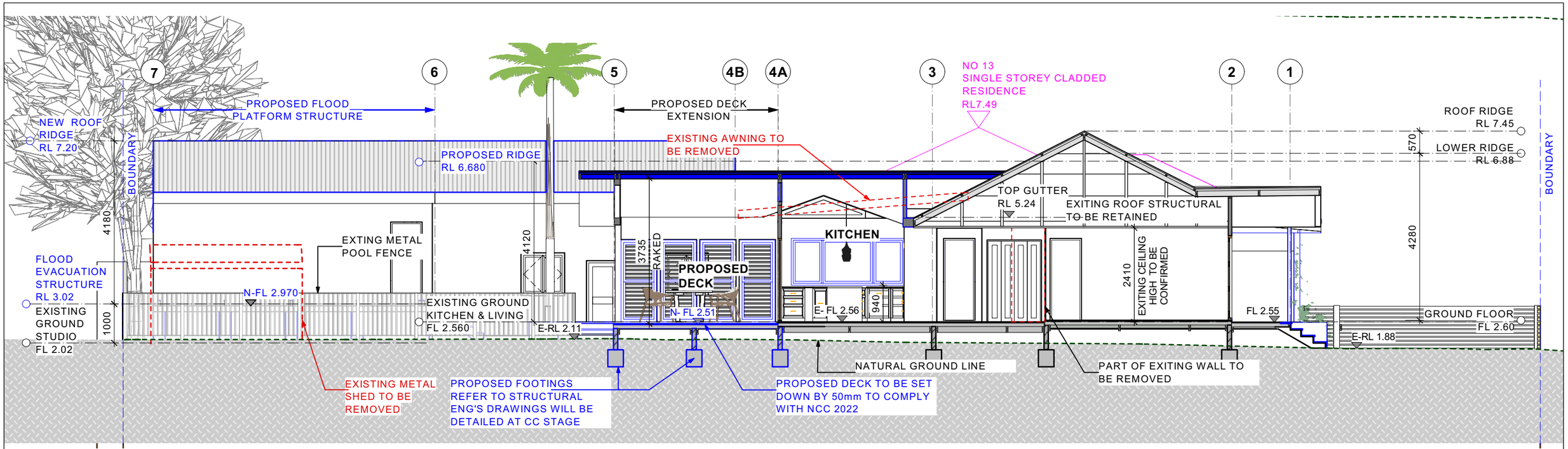
Client: **BRENDAN STOUT**

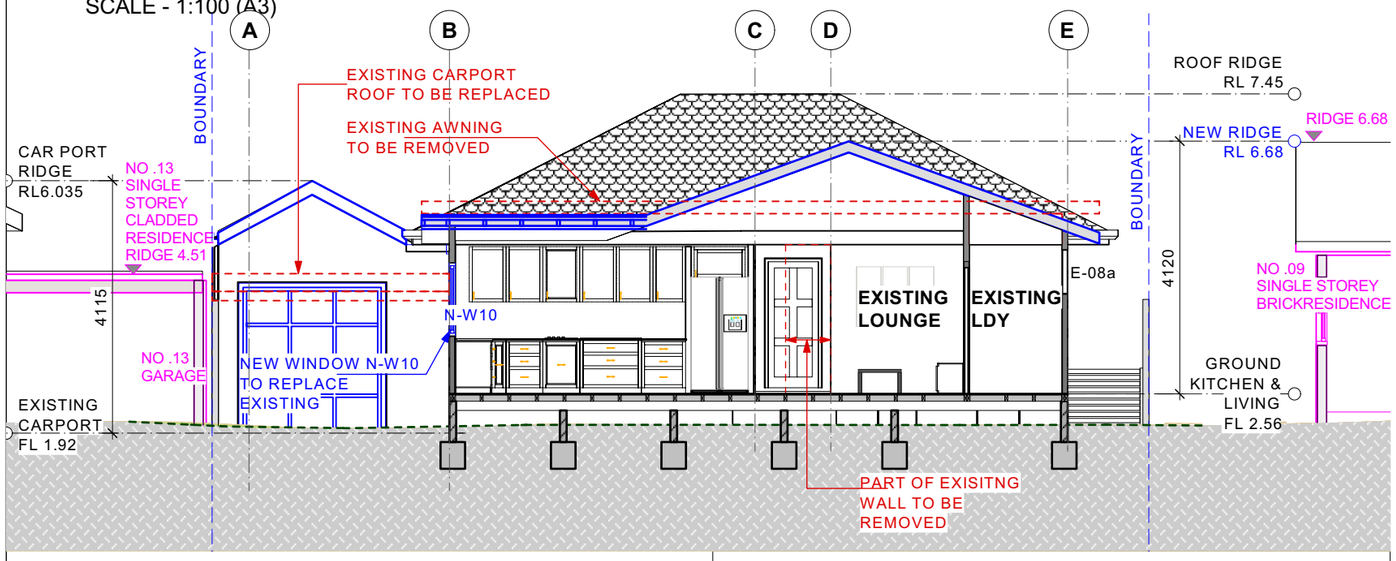
Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED STREETSCAPE ELEVATION

Design By	EMMC
Drawn By	EMMC
Reviewed By	EMMC
Passed By	EMMC
Job No.	5161-24
Scale	NTS
Date	20/09/2024
Date of Issue	
Sheet No.	18 of
Issue	P4



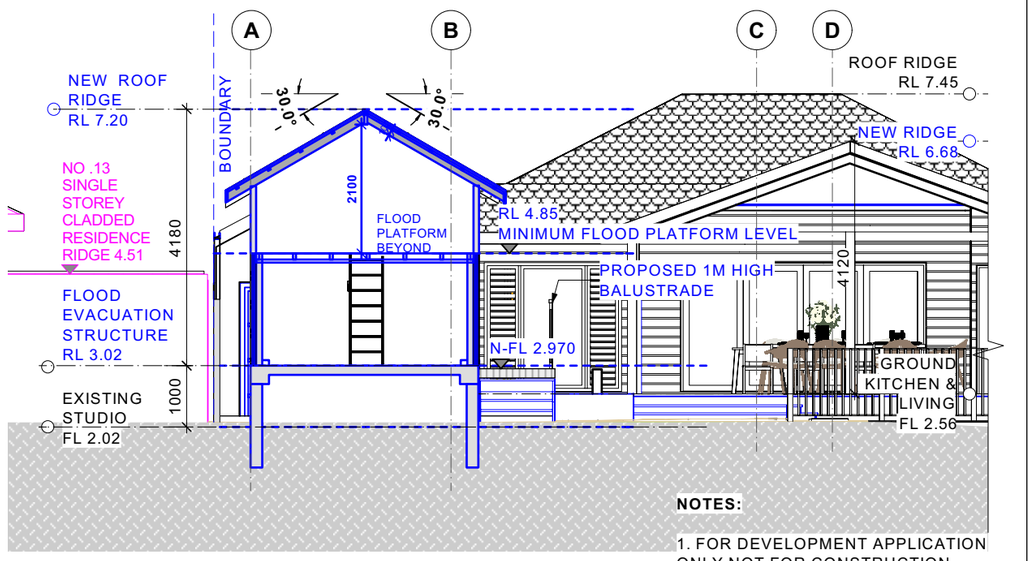
PROPOSED SECTION A-A

SCALE - 1:100 (A3)



PROPOSED SECTION B-B

SCALE - 1:100 (A3)



PROPOSED SECTION C-C THROUGH STORAGE AREA

SCALE - 1:100 (A3)

LEGEND

D	DOOR
DP	DOWNPIPE
E-	EXISTING
N-	PROPOSED NEW WORKS
W	WINDOW
TR	TERRACOTTA TILES

- NOTATIONS FOR ADJOINING BUILDINGS
- EXISTING WORKS TO BE REMOVED
- EXISTNG WALL
- PROPOSED WORKS
- PROPOSED WALL

NOTES:

1. FOR DEVELOPMENT APPLICATION ONLY NOT FOR CONSTRUCTION. FOR EXISTING WORKS NEED TO BE CONFIRMED ON SITE

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0m 1m 3m 5m

DRAFT - For Development Application

No.	Date	Issue Notes
P5	9/10/2024	FLOOD PLATFORM ADDED

Consultant / Notes:
Survey Prepared by URBAN SURVEYING
Phone: 0452 066 506
Email: gs@urbansurveying.com.au

Lyle Marshall & Partners Pty Ltd
consulting engineers, transport and environmental planners & architects
NOMINATED ARCHITECT : ERICA MARSHALL-EVANS : NO. 6513
Suite 15 Level 1
265-271 Pennant Hills Road
Thornleigh NSW 2120
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Client: **BRENDAN STOUT**

Proposed Alteration and Addtional
11 DARIUS AVENUE NORTH NARRABEEN 2101/ Lot 6/-/DP28354
PROPOSED SECTIONS

Design By: EMMC	Job No.: 5161-24		
Drawn By: EMMC	Scale: NTS		
Reviewed By: EMMC	Date: 9/10/2024	Sheet No.: 19 of	Issue: P5
Passed By: EMMC	Date of Issue:		

Appendix C

FLOOD INFORMATION REPORT (COMPREHENSIVE)

Property: 11 Darius Avenue NORTH NARRABEEN NSW 2101
Lot DP: Lot 6 DP 28354
Issue Date: 14/11/2023
Flood Study Reference: Narrabeen Lagoon Flood Study 2013, BMT WBM

Flood Information[1]:

Map A - Flood Risk Precincts
Risk Precinct: High
Maximum Flood Planning Level (FPL) [2, 3, 4]: 3.52 m AHD

Map B - 1% AEP Flood & Key points
1% AEP Maximum Water Level [2, 3]: 3.02 m AHD
1% AEP Maximum Depth from natural ground level[3]: 1.34 m
1% AEP Maximum Velocity: 0.37 m/s

Map C - 1% AEP Hydraulic Categorisation
1% AEP Hydraulic Categorisation: Flood Storage

Map D - Probable Maximum Flood
PMF Maximum Water Level (PMF) [4]: 4.85 m AHD
PMF Maximum Depth from natural ground level: 3.16 m
PMF Maximum Velocity: 0.62 m/s

Map E - Flooding with Climate Change
1% AEP Maximum Water Level with Climate change [3]: 3.89 m AHD
1% AEP Maximum Depth with Climate Change[3]: 2.21 m

Map F - Flood Life Hazard Category in PMF

Map G - Indicative Ground Surface Spot Heights

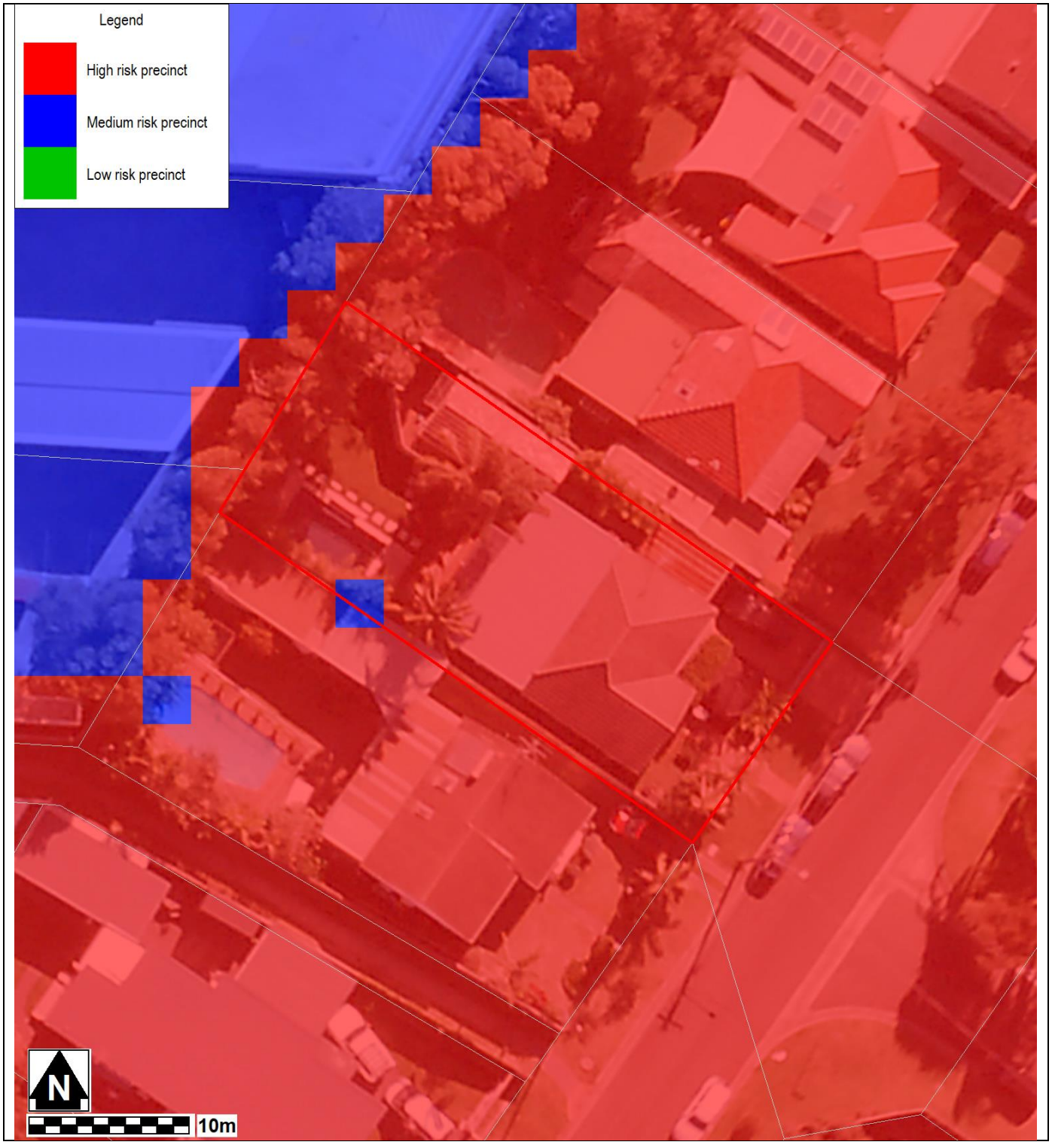
(1) The provided flood information does not account for any local overland flow issues nor private stormwater drainage systems.
(2) Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning 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

Notes

General

- 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 online Flood Study Reports webpage.
- 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.
- 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.
- Areas affected by an EPL in the former Pittwater LGA are mapped on Council's online Estuarine Hazard Map. Note that areas in the former Manly LGA affected by an EPL have been identified and will be soon added to this map.
- Council's drainage infrastructure is mapped on Council's Stormwater Map. Note that locations are indicative only and may not be exactly as shown.

MAP A: FLOOD RISK PRECINCTS



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.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

MAP B: FLOODING - 1% AEP EXTENT & KEY POINTS

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: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source Near Map 2014) are indicative only.

Flood Levels

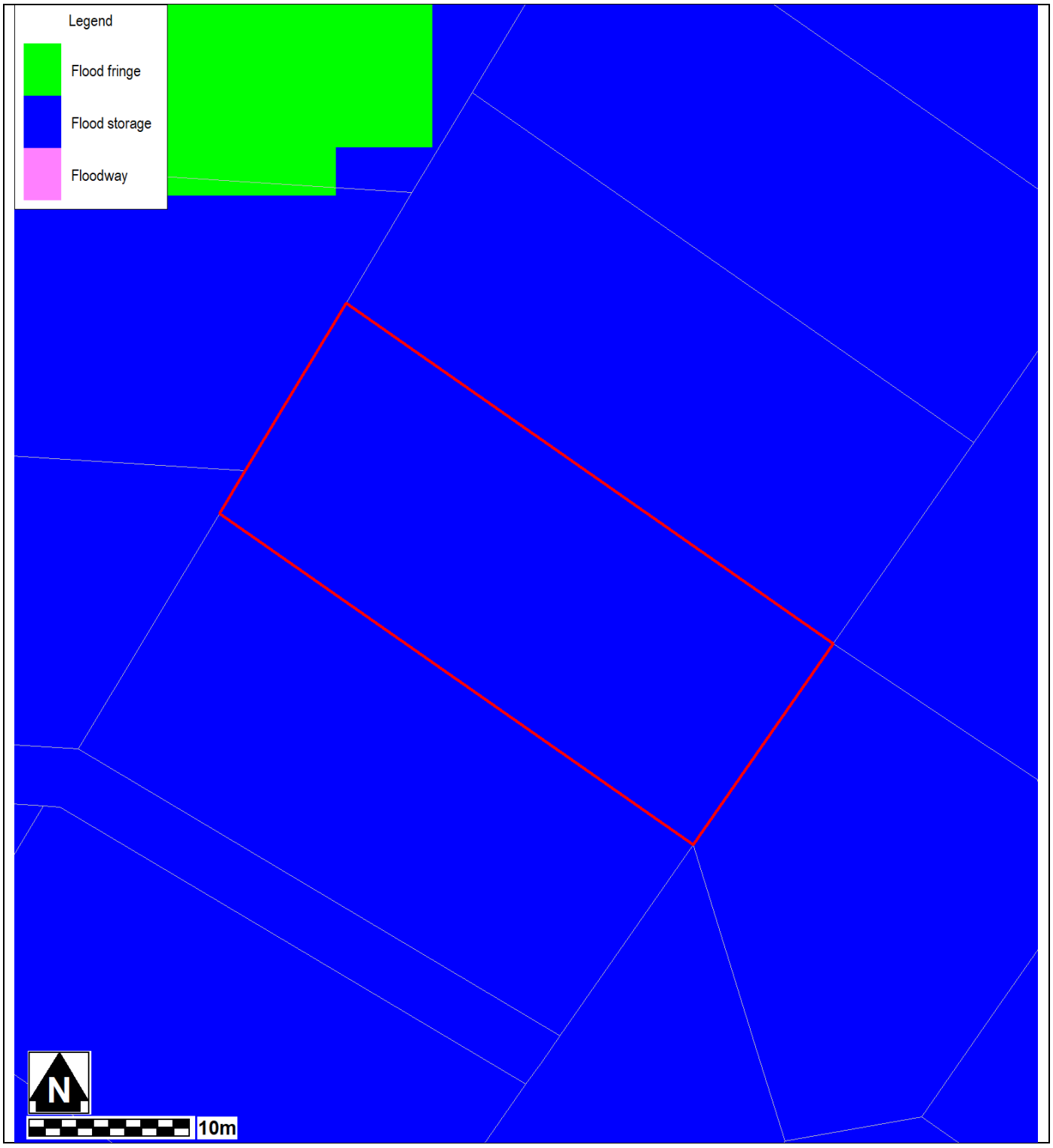
ID	5% AEP Max WL (m AHD)	5% AEP Max Depth (m)	1% AEP Max WL (m AHD)	1% AEP Max Depth (m)	1% AEP Max Velocity (m/s)	Flood Planning Level (m)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	2.65	0.89	3.02	1.27	0.37	3.52	4.85	3.09	0.41
2	2.65	0.80	3.02	1.17	0.07	3.52	4.85	3.00	0.22
3	2.65	0.77	3.02	1.15	0.05	3.52	4.85	2.97	0.16
4	2.65	0.47	3.02	0.85	0.04	3.52	4.85	2.68	0.07
5	2.65	0.56	3.02	0.94	0.04	3.52	4.85	2.77	0.08
6	2.65	0.74	3.02	1.11	0.12	3.52	4.85	2.94	0.12
7	2.65	0.60	3.02	0.97	0.04	3.52	4.85	2.80	0.12
8	2.65	0.65	3.02	1.02	0.03	3.52	4.85	2.85	0.11

Climate Change Flood Levels (30% Rainfall intensity and 0.9m Sea Level Rise)

ID	CC 1% AEP Max WL (m AHD)	CC1 % AEP Max Depth (m)
1	3.89	2.13
2	3.89	2.04
3	3.89	2.02
4	3.89	1.72
5	3.89	1.81
6	3.89	1.98
7	3.89	1.84
8	3.89	1.89

WL – Water Level
PMF – Probable Maximum Flood
N/A - No Peak Water Level/Depth/Velocity Available.

MAP C: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



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: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

MAP D: PMF EXTENT MAP

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: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

MAP E: FLOODING – 1% AEP EXTENT PLUS CLIMATE CHANGE

Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event including 30% rainfall intensity and 0.9m Sea Level Rise climate change scenario
- Flood events exceeding the 1% AEP can occur on this site.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

MAP F: FLOOD LIFE HAZARD CATEGORY IN PMF

Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source Near Map 2014) are indicative only.

MAP G: INDICATIVE GROUND SURFACE SPOT HEIGHTS

Notes:

- The surface spot heights shown on this map were derived from Airborne Laser Survey and are indicative only.
- Accuracy is generally within ± 0.2m vertically and ± 0.15m horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

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) – 5.21 Flood Planning	Manly DCP (2013) – 5.4.3 Flood Prone Land
Warringah LEP (2011) – 5.21 Flood Planning Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land
Pittwater LEP (2014) – 5.21 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 existing ground floor level is above the FPL
- Internal works only, where habitable floor areas below the FPL are not being increased

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			

- 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 .

Appendix D

EMERGENCY FLOOD RESPONSE PROCEDURE

Flood waters can rise very rapidly on this site

Once a warning is received for a possible flood or floodwaters, start to inundate the roadway frontage and/or from the rear of the of the site:

1. All residents should be at the designated assembly point by the time the flood waters are observed to have inundated the roadway frontage and/or the rear of the site.

2. The Owner must turn off all power, water and other relevant services.

3. Nominated occupants to sweep the premises to ensure that all occupants have sought refuge at the emergency assembly point.

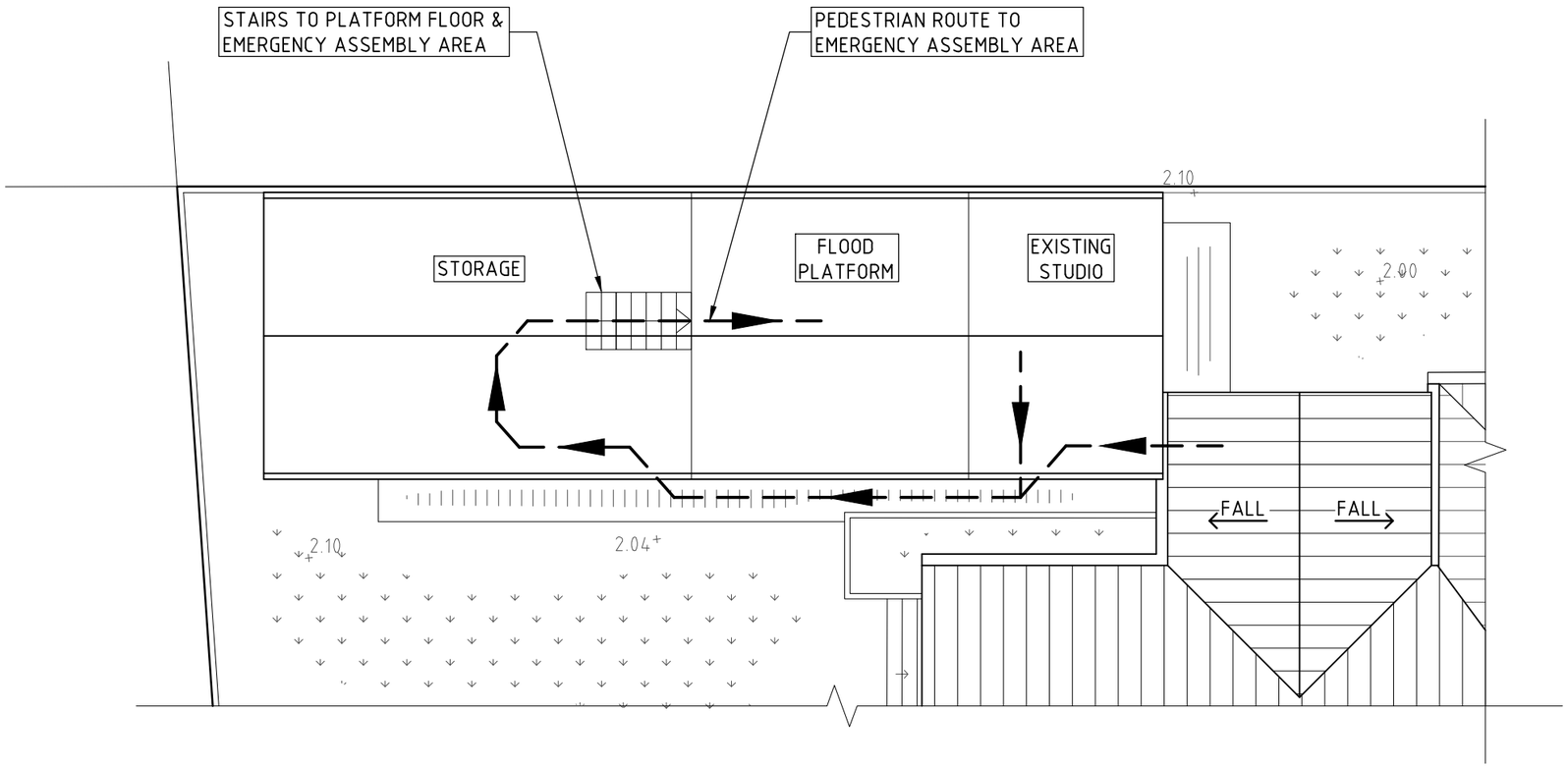
4. Emergency services are to be notified by The Owner of the situation at the site.

THIS SITE CAN FLOOD

NEVER DRIVE, WALK OR RIDE THROUGH FLOODWATERS

When emergency services give the all-clear to leave:

The site will only be opened for Occupants to leave once floodwaters have subsided and the emergency services have given the all-clear.



PARTIAL SITE PLAN

SCALE 1:100

SHOWING EMERGENCY RESPONSE TRAVEL ROUTE

ISSUE DATE	REVISION

TITLE

FLOOD EVACUATION PLAN
11 DARIUS AVENUE, NORTH NARRABEEN

DRAWN	DATE	CHECKED	SCALE @ A3
GK	24 OCTOBER 2024	BE Civil (Hons) MIE Aust.	1:100
ENGINEER G K			

TAYLOR CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING NO FLOOD–1

"Seascape" Suite 7 22-26 Fisher Rd Dee Why NSW 2099 | T 02 9982 7092 | F 02 9982 5898 | enquire@taylorconsulting.net.au | www.taylorconsulting.net.au

Appendix E

Flood Checklists

BEFORE A FLOOD

Trigger for action: Always

Action	Status
● All Occupants to be made aware of site flooding potential	
● Develop detailed emergency procedures, responsibilities and resources	
● Provide all Occupants with an emergency response plan and advise of their responsibilities and delegations	
● Maintain an emergency contacts list	
● Update emergency response procedures annually	

WHEN A FLOOD IS LIKELY

Trigger for action: When the forecasts predict severe weather or significant amounts of rainfall are observed:

Action	Status
● Monitor the severe weather forecasts and predictions	
● The Owner to monitor conditions at the street frontage as well as rear of the site	
● The Owner to notify Occupants to proceed to the emergency response area	
● The Owner to shut off nominated services	

DURING A FLOOD

Trigger for action: When water are observed inundating the street frontage or parkland area to the rear of the site:

Action	Status
● Emergency response to be undertaken in an orderly fashion	
● The phases of the emergency response shall be:	
□ The Owner to request all occupants to proceed to the emergency assembly point.	
□ All occupants should be at the assembly point by the time the flood waters overtopping the flood barrier.	
□ The Owner to sweep premises for remaining persons	
□ The Owner to retreat to the emergency assembly area.	
● Emergency services to be notified by The Owner of the situation at site.	

Appendix F

Emergency Contacts

Organisation	Role	Contact
Emergency Services	Fire/ambulance/ police	000
Northern Beaches Council	Disaster Coordination Centre	1300 434 434
State Emergency Service	SES Local Controller	132 500
Northern Beaches Hospital		02 9105 5000

Appendix G

Flood Compatible Materials and Building Components for New Works

BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL	BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL
Flooring and Sub-floor Structure	▪ concrete slab-on-ground monolith construction ▪ Suspended reinforced concrete slab	Doors	▪ solid panel with waterproof adhesives ▪ flush door with marine ply filled with closed cell foam ▪ painted metal construction ▪ aluminium or galvanised steel frame
Floor Covering	▪ clay tiles ▪ concrete, precast or in-situ ▪ concrete tiles ▪ epoxy, form-in-place ▪ mastic flooring, formed-in-place ▪ rubber sheets or tiles with chemical-set adhesives ▪ silicone floors formed in-place ▪ vinyl sheets or tiles with	Wall and Ceiling Linings	▪ fibro-cement board ▪ brick, face or glazed ▪ clay tile glazed in waterproof mortar ▪ concrete ▪ concrete block ▪ steel with waterproof applications ▪ stone, natural solid or veneer, waterproof grout ▪ glass blocks ▪ glass

	chemical-set adhesive ▪ ceramic tiles, fixed with mortar or chemical-set adhesive ▪ asphalt tiles, fixed with water resistant adhesive ▪ linoleum		▪ plastic sheeting or wall with waterproof adhesive
Wall Structure	▪ solid brickwork, blockwork, reinforced, concrete or mass concrete	Insulation Windows	▪ foam (closed cell types) ▪ aluminium frame with stainless steel ▪ rollers or similar corrosion and water resistant material
Roofing Structure (for Situations where the Relevant Flood Level is Above the Ceiling)	▪ reinforced concrete construction ▪ galvanised metal construction	Nails, Bolts, Hinges and Fittings	▪ brass, nylon or stainless steel ▪ removable pin hinges ▪ hot dipped galvanised steel wire, nails or similar.

Electrical and Mechanical Equipment For buildings constructed on land to which this Plan applies, the electrical and mechanical materials, equipment and Installation should conform to the following requirements.	Heating and Air Conditioning Systems Heating and air conditioning systems should be installed in areas and spaces of the building above the relevant flood level to the maximum extent possible. When this is not feasible, every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.
Main power supply Subject to the relevant authority's approval, the incoming main commercial power service equipment, including all metering equipment, shall be located above the relevant flood level. This means that the building shall be easily disconnected from the main power supply.	Fuel Heating systems using gas or oil as fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.
Wiring All wiring, power outlets, switches, etc, should, to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibre.	Installation The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the

Components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conducts located below the relevant designated flood level should be so installed that they will be self draining if subjected to flooding.	fuel supply line. All storage tanks should be vented to the FPL.
Equipment All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	Ducting All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.

Reconnection Should any electrical device and/or part of the wiring be flooded, it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.	Ancillary Structures (steps, pergolas, etc.) Suitable water-tolerant materials should be used, such as reinforced concrete, masonry, sealed hardwood, and corrosive-resistant metals. Copper Chrome Arsenate (CCA) treated timber is not a suitable material.

Note: Flood-compatible materials will be used up to the Flood Planning Level.