CLARKE DOWDLE & ASSOCIATES
DEVELOPMENT CONSULTANTS
SURVEYORS • PLANNERS • ECOLOGISTS • BUSHFIRE CONSULTANTS

BUSH FIRE ASSESSMENT REPORT

For the Proposed Residential Development at

39 CUMBERLAND AVENUE, COLLAROY, NSW

(LOT 26 Sec. 5 IN DP 12985)

November 2020

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DOCUMENT TRACKING

Project Location	39 Cumberland Avenue Collaroy
Date	23/11/2020
Prepared by	Ashley Dowdle
Reviewed by	Kristan Dowdle
Approved by	Kristan Dowdle
Status	FINAL
Version	2

1.0 INTRODUCTION

We have attended the above-described property for the purpose of undertaking a Bush Fire Assessment Report (BFAR) in accordance with the guidelines outlined in Planning for Bushfire Protection, 2019 (PBP), to determine the level of bushfire threat to the site. Northern Beaches Council has provided mapping of Bushfire Prone Areas that identifies areas of bushfire threat. This mapping identifies properties that are in the buffer zone of 100m metres from Category 1 mapped vegetation or 30m from Category 2 & 3 mapped vegetation. All developments occurring on land mapped as bushfire prone are subject to the conditions detailed in the planning document PBP.

The subject site has been mapped as bushfire prone land (See Figure 1); therefore, the purpose of this BFAR is to provide information to Northern Beaches Council to ascertain compliance or otherwise with AS3959-2018 'Construction of Buildings in Bush Fire Prone Areas' and PBP.

This report will provide an independent assessment of the bushfire risk to the proposal, based upon the surrounding site conditions with reference to Section 4.14 of the Environmental Planning and Assessment Act 1979, PBP and AS3959-2018.

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Figure 1: Bushfire Mapping (site boundary in yellow)
Source: Department of Planning, 2020

1.1 Proposed Development

The proposed development will involve the construction of alterations and additions to the existing dwelling. Figure 2 provides a site plan of the proposal. The full set of plans are shown in Appendix 1.

Appendix A provides the full set of building plans outlining the size and dimension of the proposed development.

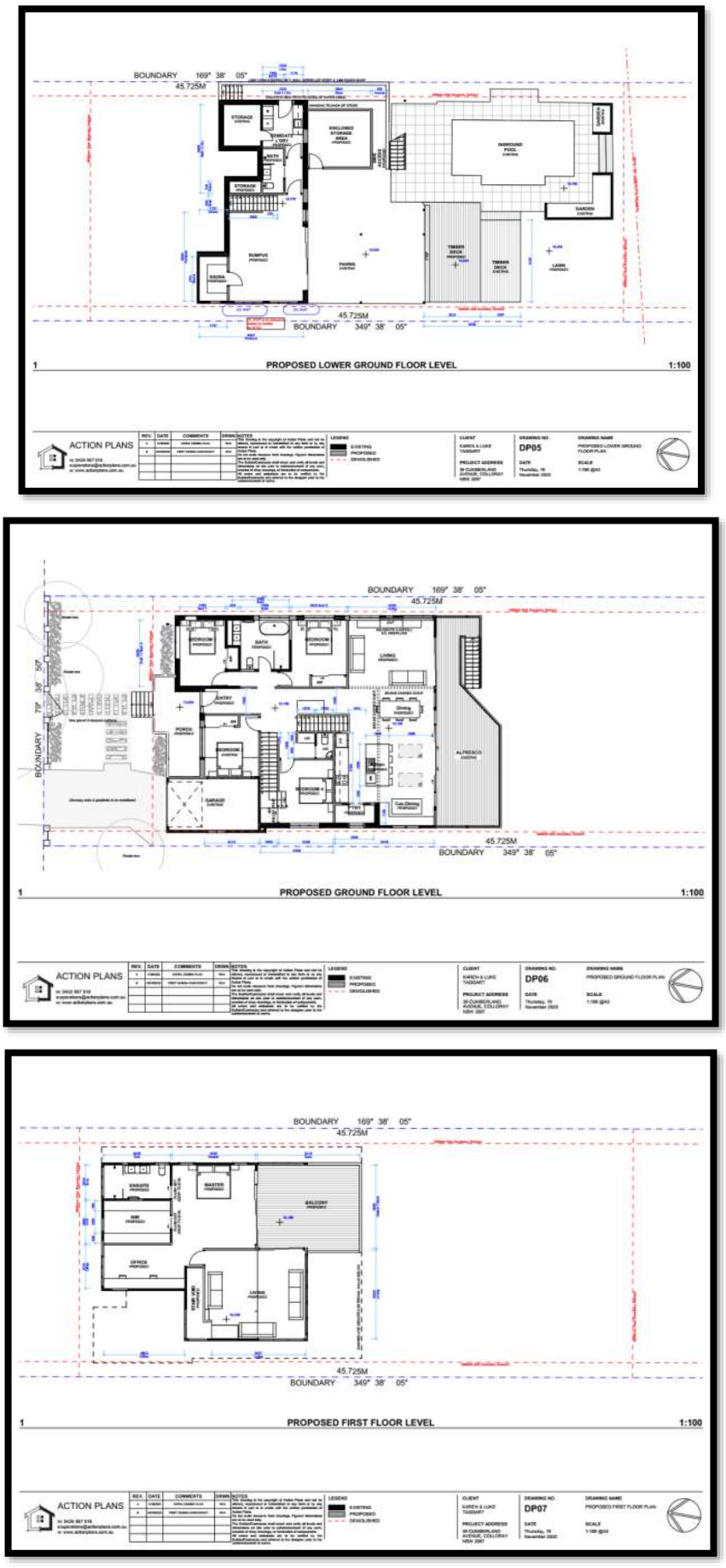

Figure 2: Proposed Development Site Plan

2.0 SITE IDENTIFICATION

The site is located at 39 Cumberland Avenue Collaroy (Lot 26 Section 5 DP 129858) and is located within the Local Government Area (LGA) of Northern Beaches Council (Fire Danger Index-100). The existing dwelling is provided access via Cumberland Avenue to the north of the property.

The site is a residential parcel of land that contains an existing dwelling that is surrounded by managed lawns and landscaped gardens. The property is connected to the town-reticulated supply of water and the mains electrical grid.

Figure 3: Aerial Photograph of the site (site boundary bordered in blue)
Source: Nearmap, 2020

3.0 BUSH FIRE HAZARD ASSESSMENT

3.1 Surrounding Vegetation

The surrounding land and vegetation found within 140m of the site are detailed below (See Figures 4 & 5).

North, East & West
The surrounding lands on these aspects are occupied by developed residential allotments containing predominately managed curtilage throughout. Therefore, these aspects are deemed not to contain a bushfire hazard.

South
To the south beyond managed properties and Pittwater Road, is low lying vegetated lands located within Dee Why Lagoon Reserve. This vegetation that borders Dee Why Lagoon has been mapped as containing a mixture of *Coastal Sand Swamp Mahogany Forest, Coastal Swamp Paperbark-Swamp Oak, Coastal Sand Swamp Scrub* and *Estuarine Reedland* (OEH, 2013). The site inspection found that the vegetation meets with the Keith (2004) description of a '*Scrub'*. Under the assessment guidelines outlined in Appendix 1 in PBP for determining the bushfire hazard, the vegetation meets with the classification known as a **'Tall Heath'.**

3.2 Effective Slope

PBP states in A1.5 that effective slope is;

'The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux.

The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).'

In regards to the site, the effective slopes for each hazard facing were inspected and calculated through a combination of topographic mapping from the Department of Planning (1m contours) and ground-truthing. The effective slope measured 100m from the proposed development for the hazard facing aspects are;

South: 0-5° Down Slope

Figure 5 provides the topographic mapping for the site and surrounding area.

VEGETATION ASSESSMENT SITE PLAN

Figure 4: Vegetation Mapping

4.0 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

The bushfire risk to property depends on the vegetation type, slope and proximity of vegetation to the proposed development, and can be classified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL FZ as outlined in AS3959-2018 and PBP. The categories of bushfire attack were determined for the vegetation conditions currently existing on the site and adjacent areas. Following the identification of the bushfire attack category for each aspect, the site will be assessed according to vegetation that presents the highest level of bushfire attack risk. AS3959-2018 provides two methods to determine complying Bushfire Attack Levels, these are; the **Simplified Procedure-Method 1** (deemed-to-satisfy) and **Detailed Method for Determining the Bushfire Attack Level-Method 2** (alternate solution).

The level of bushfire attack then determines the construction standards necessary for the proposed development. These protective construction measures are outlined in Australian Standard AS3959-2018. The BAL required for each of the aspects/facades for the proposed development are summarised in Table 1.

Table 1: Bushfire Attack Assessment

	ASPECT	
	Northern, Eastern & Western	**Southern**
Vegetation[1] within 100m of development	Managed Lands	Tall Heath
Effective Slope of Land	Not Required	0-5° Down Slope
APZ Required/Setback Provided[2]	>100m	~90m
Bushfire Attack Level (BAL)[3]	BAL 12.5[4]	BAL 12.5

Notes for Table 1:

- (1) Refer to Keith (2004), AS 3959-2018 and *PBP*
- (2) Distance to vegetation
- (3) BAL's are in accordance with Table A1.12.5 in PBP
- (4) *PBP* states where an elevation is shielded from direct radiant heat arising from bush fire attack, then the construction requirements for that elevation can be reduced to the next lower BAL except when BAL 12.5 where all aspects shall comply with BAL 12.5. The shielding of an elevation shall apply to all the elements of the wall but shall not apply to subfloors or roofs.
- Table 1 **does not display applicable BAL Ratings** for each aspect (**See recommendations of this report)**

Proposed Additions and Alterations

With reference to Table 1 and Table A1.12.5 in PBP, the proposed additions will be subject to BAL 12.5 per AS3959-2018.

The National Construction Code (NCC) provides AS3959-2018 as a deemed-to-satisfy building solution for developments within bushfire prone areas. Therefore, bushfire protection measures required for the proposed development are provided within the recommendations of this report with these provisions with recognition of the surrounding site conditions.

BUSH FIRE ASSESSMENT SITE PLAN

LEGEND

Site Boundary
100m Buffer
TALL HEATH
Hydrant
Contours (1m)
Cadastre

Coordinate System: GDA 1994 MGA Zone 56

Imagery Source: Nearmap, 2020
Cadastre Source: NSW Spatial Services
Contour Source: NSW Spatial Services

Note: Proposal location is not georeferenced and is approximate only

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Figure 5: Bushfire Site Plan

5.0 RECOMMENDATIONS

This Bush Fire Assessment Report concluded that the proposed development may comply with the performance criteria for PBP if the proposed acceptable solutions and recommendations are implemented. These items are outlined below.

5.1 Asset Protection Zones

- **The entire site shall be maintained as an APZ for the lifetime of the development.**
- The APZ shall be maintained to meet with the requirements of an Inner Protection Area (IPA) as outlined within Appendix 4 in PBP.

5.1.1 Environmental Considerations

No tree removal will be required for the creation of the APZ.

5.2 Construction Standards

Proposed Development

- The **proposed development** shall be constructed to comply with AS3959-2018 **Sections 3 & 5 (BAL 12.5)** and **Section 7.5 in PBP**.

- **Service Pipes**
  All exposed piping should be of metal. Pipes of other materials should be buried to a depth of at least 300mm below the finished ground level.

  Fencing (if applicable)
- All new fencing shall be constructed in accordance with section 7.6 in PBP.

5.3 Property Access and Evacuation Safety

- Safe access is provided to the subject property via Cumberland Avenue. This road will serve both as an access point for firefighters and an egress point for residents during a bushfire event.

- It is recommended that the building occupants prepare a bushfire survival plan which addresses the option to leave early before bushfire impacting the site. Details on how to prepare this plan are provided by the NSW RFS website (http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf)

5.4 Water and Utility Services Supply

5.4.1 Water

The site is connected to the reticulated supply of water. In recognition of these, the following recommendations are made;

- Taps and fittings should be constructed of metal; and
- The number of taps and/or length of hose should be adequate in number and/or length to supply water to the dwelling;

5.4.2 Gas (if applicable)

- Any gas cylinders or gas connections should be installed and maintained under Australian Standard AS1596 - *The Storage and Handling of LP Gas* and the requirements of relevant authorities.

- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion.

5.4.3 Electricity

- The site is connected via overhead lines

6.0 PERFORMANCE CRITERIA COMPLIANCE

The following table indicates compliance or otherwise with Section 7.4a of PBP

PBP PERFORMANCE CRITERIA	ACCEPTABLE SOLUTION COMPLIANCE
in relation to Asset Protection Zones: • APZs are provided commensurate with the construction of the building; and • A defendable space is provided. • APZs are managed and maintained to prevent the spread of a fire to the building. • the APZ is provided in perpetuity. • APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	The proposal is provided with an APZ as outlined in Appendix 1 in PBP. Therefore, the proposal provides **compliance.**
in relation to construction standards: • the proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact. • proposed fences and gates are designed to minimise the spread of bush fire. • proposed Class 10a buildings are designed to minimise the spread of bush fire.	The proposal will be constructed to Sections 3 & 5 (BAL 12.5) of AS3959-2018 and Section 7.5 in PBP 2019. Therefore, the proposal provides **compliance**
in relation to access requirements: • firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation. • the capacity of access roads is adequate for firefighting vehicles. • there is appropriate access to water supply. • firefighting vehicles can access the dwelling and exit the property safely.	The proposal is provided direct access via Cumberland Avenue. The proposal meets with the requirements of Section 7.4a of PBP and therefore the proposal is deemed to provide **compliance**
in relation to water and utility services: • an adequate water supply is provided for firefighting purposes. • water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations. • flows and pressure are appropriate. • the integrity of the water supply is maintained. • a static water supply is provided for firefighting purposes in areas where reticulated water is not available. • location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings. • location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Services are provided that meet with the requirements of section 7.4a of PBP. Therefore, the proposal provides **compliance**
in relation to landscaping: • landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	The site will be maintained to meet with the requirements of an APZ. Therefore, the proposal provides **compliance**

7.0 CONCLUSION

Clarke Dowdle & Associates have been engaged to conduct a Bush Fire Assessment Report upon the property located at 39 Cumberland Avenue, Collaroy, NSW. This original assessment was performed in November 2020 and was conducted in accordance with the procedures and methods recommended in the NSW Rural Fire Service published document 'Planning for Bushfire Protection, 2019' (PBP).

This report has outlined and provided recommendations demonstrating how the proposed development may comply with the performance criteria set out in PBP.

The determining authorities and Rural Fire Service may suggest additional measures to be implemented with any planning and construction upon the subject site.

We would be pleased to provide further information on any aspects of this report.

For and on behalf of

Clarke Dowdle and Associates

Ashley Dowdle
Bushfire Consultant
Planning for Bushfire Prone Areas - UTS Short Course

Kristan Dowdle
B. Env. Sc
Grad. Dip Design in Bushfire Prone Areas
BPAD-Certified Practitioner (BPAD15318)
Environmental & Bushfire Consultant

Disclaimer

PBP States;
Due to a range of limitations, the measures contained in this document do not guarantee that loss of life, injury and/or property damage will not occur during a bush fire event

AS 3959-2018 states;
It should be borne in mind that the measures contained in this standard cannot guarantee that the building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather conditions.

This report provides the required information to assist Local Council and the Rural Fire Service in determining compliance in accordance with PBP and AS 3959-2018 and as stated above, this report does not guarantee that the proposal will withstand bushfire attack on every occasion.

REFERENCES

- Keith, D. (2004), *Ocean Shores to Desert Dunes.* Department of Environment and Conservation, Sydney
- National Construction Code (2019), Building Codes Australia, *Class 1 and Class 10 Building Housing Provisions Volume 2*
- NSW Rural Fire Service and Department of Planning (2019), *Planning for Bushfire Protection, A guide for Councils, Planners, Fire Authorities and Developers*. NSW Rural Fire Service.
- OEH (2013) *The Native Vegetation of the Sydney Metropolitan Area*. Volume 1 & 2: Version 2.0. Office of Environment and Heritage, Department of Premier and Cabinet, Sydney.
- Schauble, J. (2004). *The Australian Bushfire Safety Guide*. Harper Collins Publishers, Sydney, Australia.
- Standards Australia, (2018), *AS3959 Construction of Buildings in Bushfire-prone Areas*. Standards Australia International

APPENDIX A SITE PLANS

ACTION PLANS

39 CUMBERLAND AVENUE, COLLORAY NSW 2097

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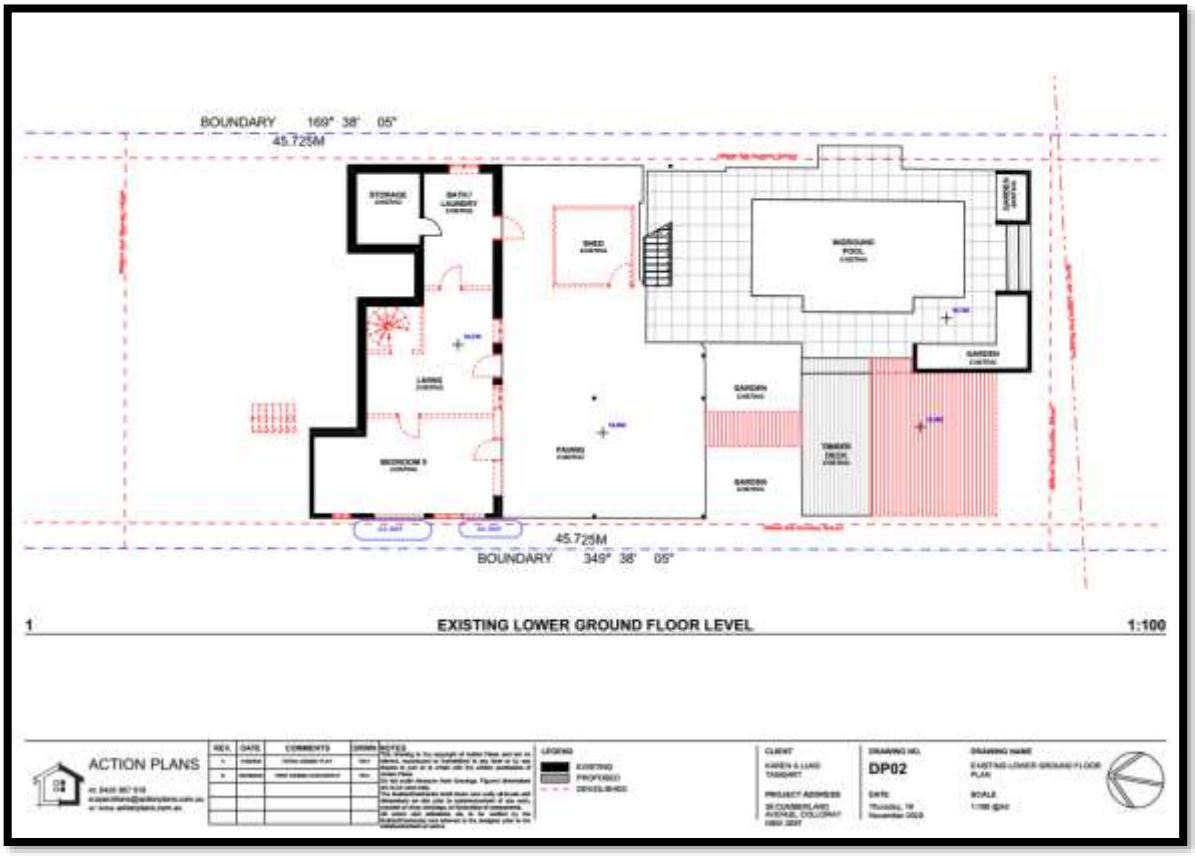
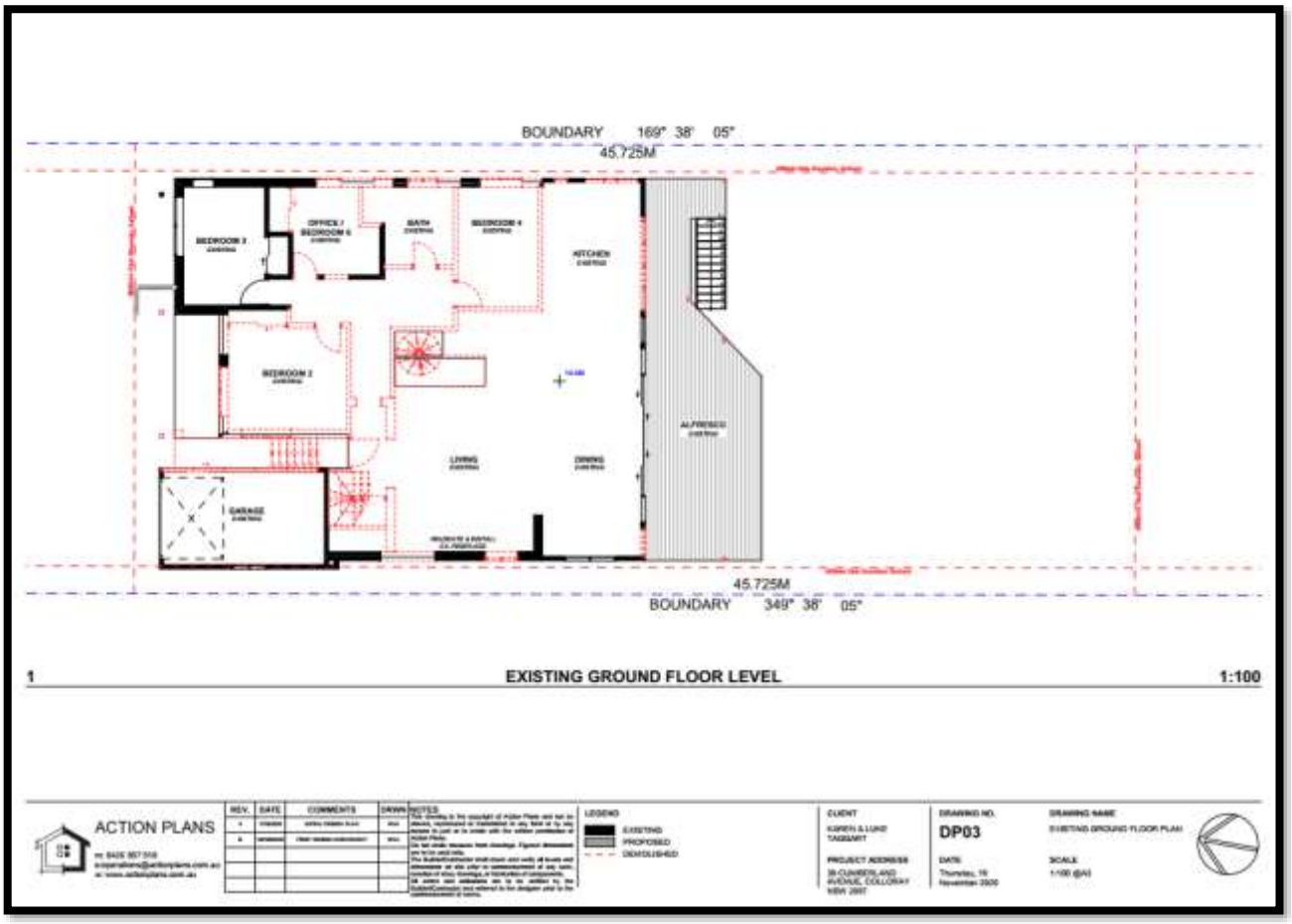
DESIGN PLANS

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BEDROOM 4
KITCHEN
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LIVING
DINING
ALFRESCO
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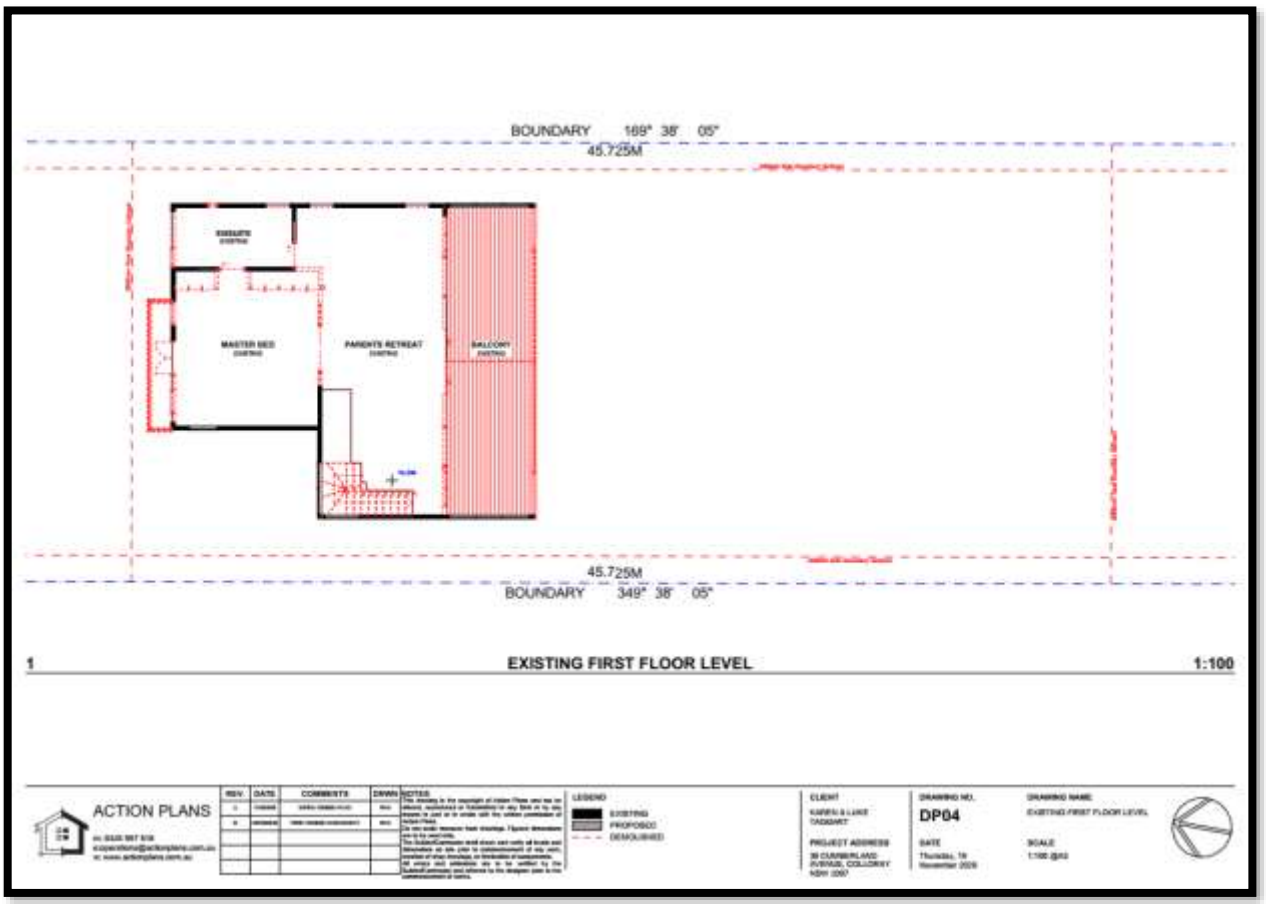
DP03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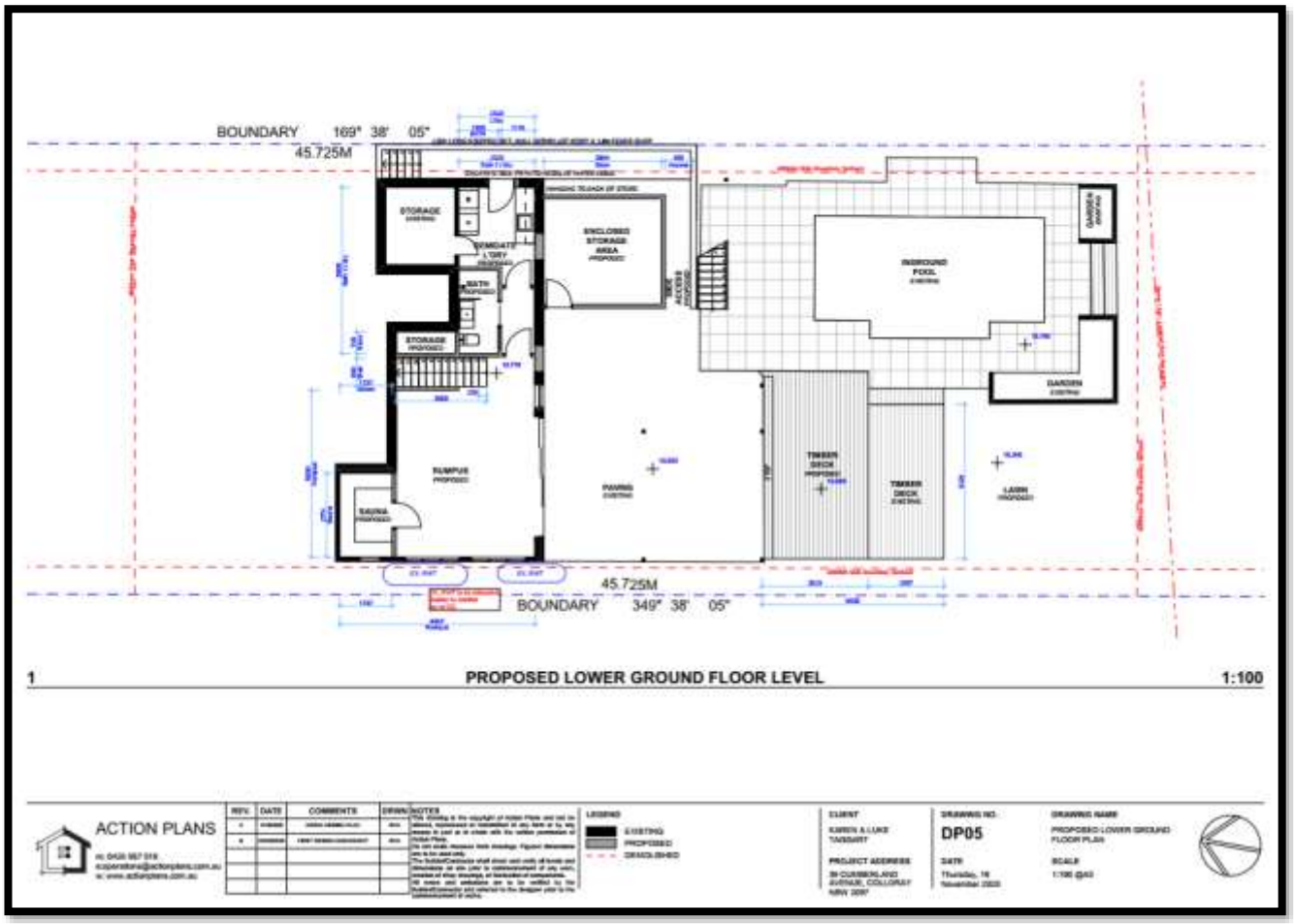
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INGROUND POOL EXISTING
GARDEN EXISTING
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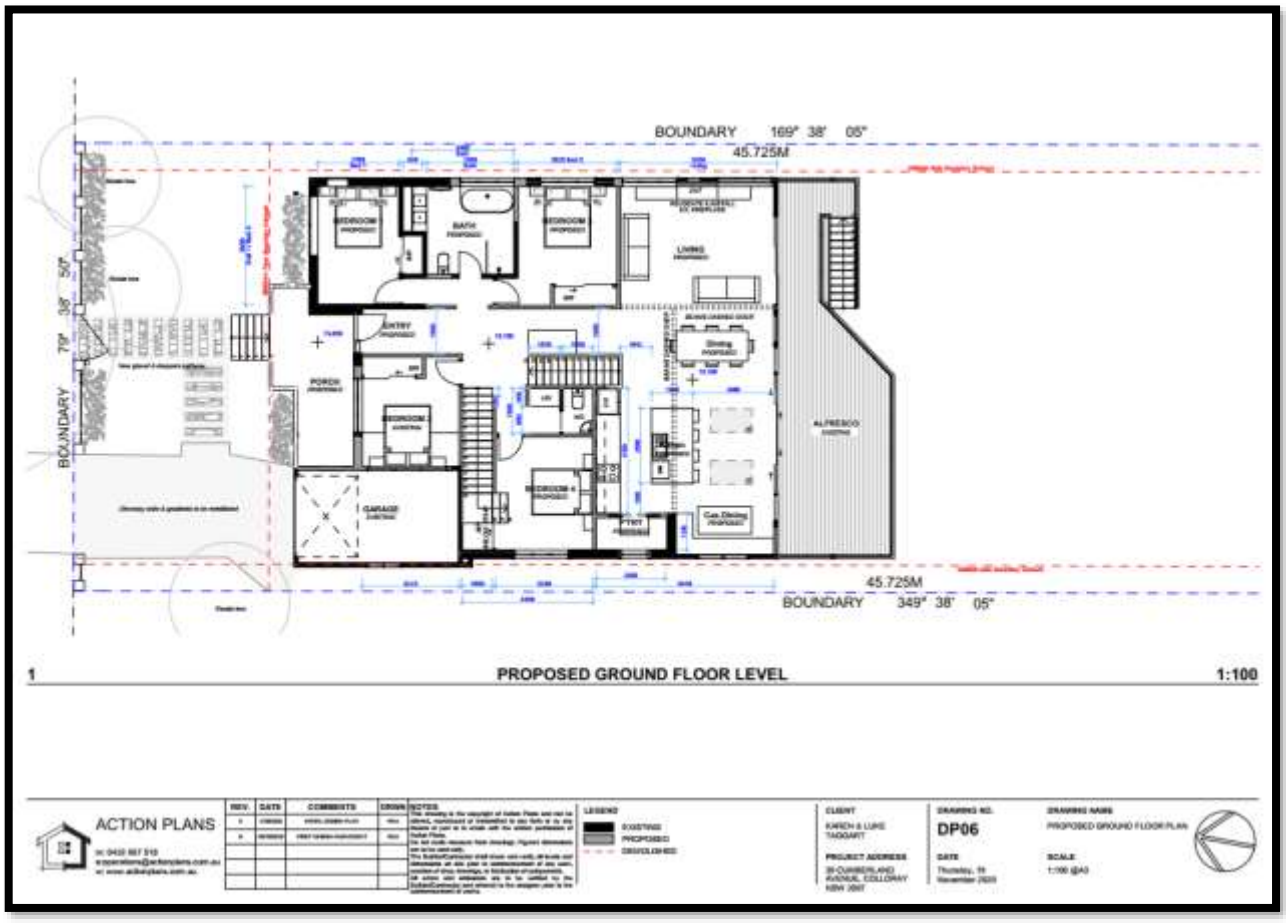
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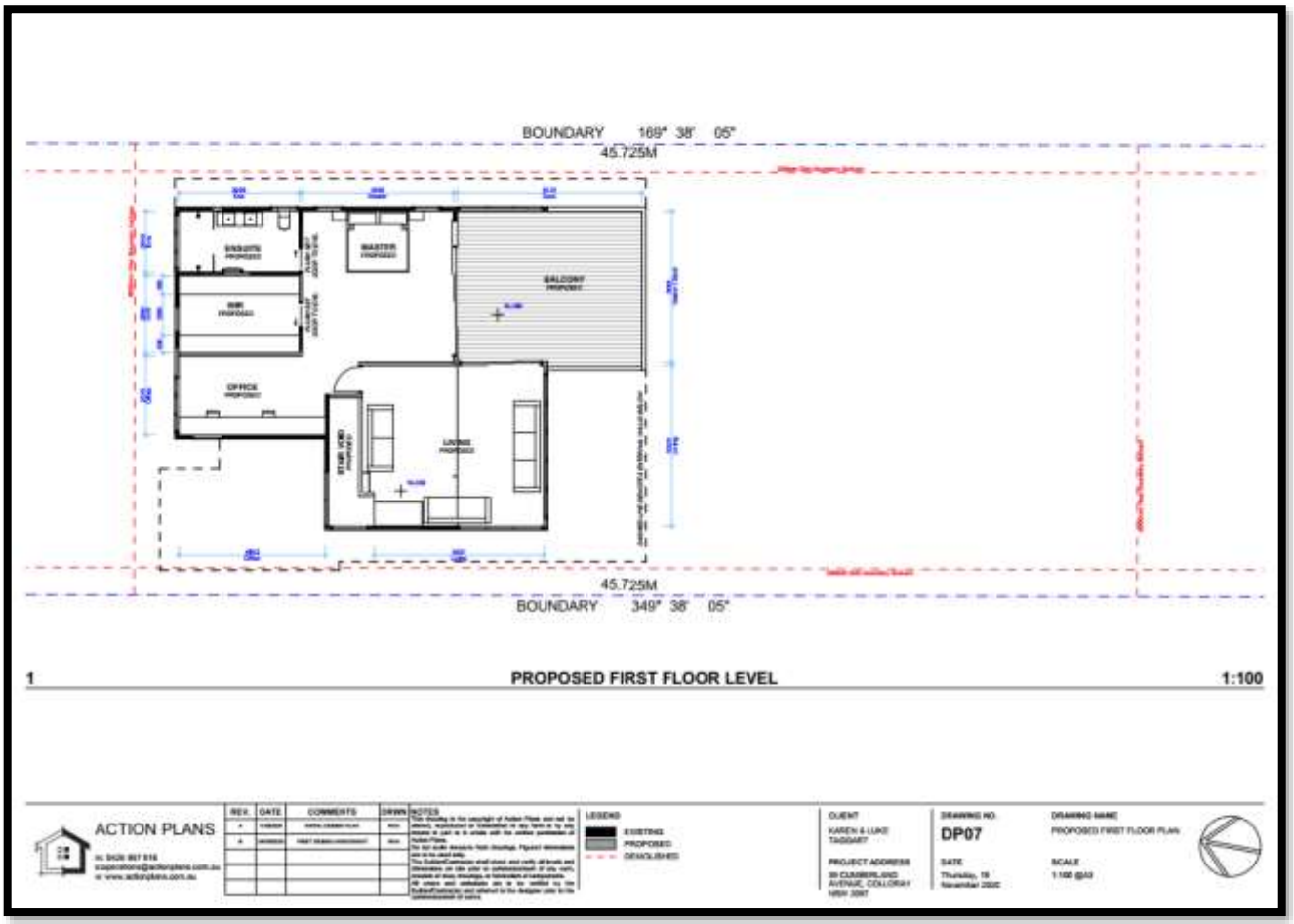
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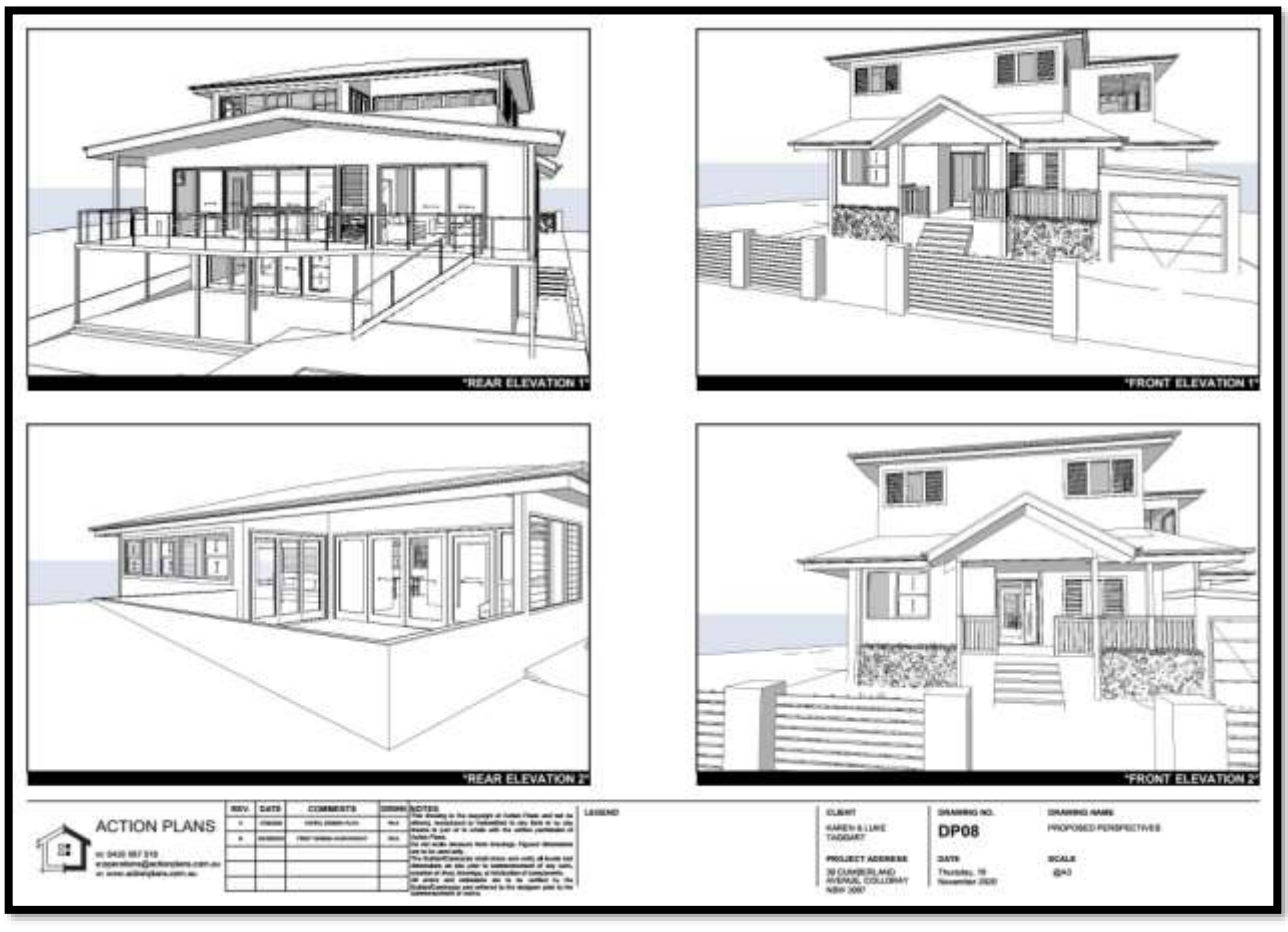
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