FIRE ENGINEERING REPORT

Station Beach Boat House
Reconstruction Works

Blue Pacific Constructions

16 February 2021
Revision G
20036-FER-001

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DOCUMENT CONTROL

Project	Station Beach Boat House – Reconstruction Works
Project Reference	20036-FER-001
Client	Blue Pacific Constructions Pty Ltd
Client ABN	22 086 943 240

Revision	Date	Overview	Prepared	Reviewed
A	21-APR-2020	Issued for comment	Kirby Ke	Eliot Reeves
B	23-APR-2020	Comments from Blue Pacific Constructions incorporated	Kirby Ke	Eliot Reeves
C	24-APR-2020	Comments from Blue Pacific Constructions incorporated	Kirby Ke	Eliot Reeves
D	24-APR-2020	Land Registry Services document and email chain appended	Kirby Ke	Eliot Reeves
E	7-MAY-2020	Updated fire source features	Kirby Ke	Eliot Reeves
F	31-AUG-2020	Updated to note dangerous goods	Eliot Reeves	Kirby Ke
G	16-FEB-2021	Updated architectural drawings	Kirby Ke	Eliot Reeves

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BEng (Hons), MSc (Eng), CPEng, NER
Certifier – Fire Safety | BDC 2301

EXECUTIVE SUMMARY

Summary

This Fire Engineering Report (FER) details the engineering assessment that has been undertaken to demonstrate the suitability of the fire safety measures that will be provided to the support the Performance Solutions for the Station Beach Boat House building at 1191 Barrenjoey Road, Palm Beach NSW 2108.

The report demonstrates that compliance with the Relevant Performance Requirements of the BCA can be achieved if the Fire Safety Design requirements detailed below are appropriately design, installed and commissioned.

Project Description

The project involves the reconstruction of the Station Beach Boat House building, which is a two-storey building currently containing a café and office on the ground floor, and residential dwellings on the first floor. The project reconstruction works on the existing building incorporate the following:

1. Ground floor:
    a. Café
    b. Servery area in lieu of previous office space and sanitary facilities. Previous sanitary facilities relocated to new ancillary building.
    c. Boat hire office and storage.
2. First floor:
    a. Offices and sanitary facilities
    b. Storeroom
3. New ancillary building:
    a. Sanitary facilities, coolroom and storage.

As part of the design process, the BCA Consultant has noted several non-compliances to the Building Code of Australia's (BCA) Deemed to Satisfy (DtS) provisions regarding fire safety. The non-compliances to the BCA DtS provisions will be supported via Performance Solutions to provide occupant life safety now and into the future.

Fire Safety Design

A summary of the fire safety design requirements that shall be implemented is provided below:

- Portions of the external wall of building within 3 m of a fire source feature will not be provided with a Fire Resistance Level (FRL), supported via performance solution.
- Unprotected openings in external walls supported via performance solution.
- Fire hydrant coverage is not provided to the building, deviating from BCA DtS provisions. This is supported via a performance solution.
    - For outdoor areas, the flooring and furniture will be of hard finishing, and there will be limited combustibles stored on the deck.
- Portable fire extinguishers provided in accordance with AS 2444-2001.
- Emergency lighting and exits signage will be provided to the building in accordance with AS 2293.1.
- An emergency planning system in accordance with AS 3745 will be implemented to ensure that all occupants have evacuated the building in the case of a fire. The appointed fire wardens of the building will be responsible for a building sweep to ensure that all occupants have evacuated in the case of fire.

Summary of Performance Solutions

The table below provides a summary of the Building Code of Australia (BCA) Deemed to Satisfy (DtS) non-compliances and the Performance Solutions that are implemented.

Scope of BCA DtS Deviations

No.	BCA DtS Clause	Description of Non-Compliance
1.	C1.1 – Type of construction	Portions of the external wall of the building are located within 3m of a fire source feature (site boundary) and should be provided with an FRL.
2.	C3.2 – Protection of openings	There are openings in walls requiring an FRL that should be protected in accordance with BCA Clause C3.4 – Methods of protection (i.e. drenchers or fire shutters).
3.	C3.4 – Acceptable methods of protection	
4.	E1.3 – Fire hydrants	The building technically has a floor area of over 500 m^2 but will not be provided with fire hydrant coverage, deviating from BCA Clause E1.3. Due to the site and location of town's main water supply design a compliant system will be challenging and may require a seawater supply.

CONTENTS

1. INTRODUCTION

1.1 Report Purpose

This report assesses The Boathouse building at 1191 Barrenjoey Road, Palm Beach NSW 2108 for compliance with the relevant Performance Requirements of Volume One of the Building Code of Australia 2019 (BCA).

This report also details the engineering assessment that has been undertaken to demonstrate the suitability of the fire safety measures that will be provided to the support the Performance Solutions. This assessment is carried out in accordance with the process detailed in the International Fire Engineering Guidelines, 2005.

The purpose of this report is to outline the following:

- The scope of works and relevant project stakeholders
- The principal characteristics of the project and building occupants
- The fire safety design and management requirements to support the Performance Solutions
- The engineering analysis demonstrating compliance with the Performance Requirements
- Any applicable assumptions, dependencies or limitations

1.2 Project Scope

Minerva Management Group Pty Ltd has been appointed by Blue Pacific Constructions Pty Ltd to develop the Fire Engineering Performance Solutions necessary to support the following deviations from the BCA Deemed-to-Satisfy (DtS) Provisions:

Table 1 – Scope of BCA DtS Deviations

No.	BCA DtS Clause	Description of Non-Compliance
1.	C1.1 – Type of construction	Portions of the external wall of the building are located within 3m of a fire source feature (site boundary) and should be provided with an FRL.
2.	C3.2 – Protection of openings	There are openings in walls requiring an FRL that should be protected in accordance with BCA Clause C3.4 – Methods of protection (i.e. drenchers or fire shutters).
3.	C3.4 – Acceptable methods of protection	
4.	E1.3 – Fire hydrants	The building technically has a floor area of over 500 m^2 but will not be provided with fire hydrant coverage, deviating from BCA Clause E1.3. Due to the site and location of town's main water supply design a compliant system will be challenging and may require a seawater supply.

1.3 Relevant Project Stakeholders

The relevant project stakeholders are as follows:

Table 2 – Relevant Project Stakeholders

Role	Name	Company	Contact Details
Client	Peter Heber	Blue Pacific Constructions	0410 594 809
Principal Certifying Authority	Heath McNab	Modern Building Certifiers	0416 156 126
BCA Consultant	Graham Scheffers	GRS Building Reports	0417 247 447
C10 Fire Safety Engineer	Eliot Reeves	Minerva Management Group	0410 491 677

1.4 Fire Engineering Process

1.4.1 International Fire Engineering Guidelines (IFEG)

The IFEG outline the process by which Fire Engineering analysis is undertaken when assessing deviations from the DtS Provision of the BCA.

This step by step process enables fire safety professionals to undertake a consistent approach such that the inputs to the Performance Solution are transparent and the outcomes can be understood by the community.

The methodology outlined in the IFEG has been adopted in this report.

1.4.2 Fire Engineering Brief (FEB)

The objectives of the Fire Engineering Brief are to:

- Agree the design objectives of the project brief
- Test a Trial Concept Design to meet the objectives of the project brief
- Agree with stakeholders the assessment approach and acceptance criteria necessary to demonstrate compliance with the Performance Requirements.

Minerva Group has discussed the proposed Fire Engineering approach with the Certifier (Modern Building Certifiers) prior to production of the Fire Engineering Report.

1.4.3 Fire Engineering Report (FER)

On acceptance of the Fire Engineering Brief, the objectives of the Fire Engineering Report are to:

- Undertake the engineering analysis to asses compliance with the Performance Requirements
- Detail the outcomes of the engineering analysis in terms of the fire safety design and management requirements
- Clearly document the Performance Solutions that satisfy the relevant BCA Performance Requirements.

1.5 Existing Fire Engineering Reports

There are no existing Fire Engineering Reports associated with the building.

1.6 Dangerous Goods

We have reviewed the Dangerous Goods Assessment Report from TFA Project Group [10]. The recommendations outlined in the report are listed below:

Boat Fuel Storage:

- *Include operating procedure (refer section 5* [10] *above and section 9* [10] *- AS1940:2017 for guidelines)*
- *Store to be clear of combustible vegetation/refuse for a distance of at least 3m*
- *Fuel shed to be lockable and non-combustible construction*
- *Only hazardous certified electrical equipment to be installed in hazardous areas as described in section 3.1* [10] *above.*
- *The sewerage control shall be installed a minimum of 1.5m above the ground or moved to a distance of 5m*

LPG Storage:

- *Cylinders should be stored on a concrete pad upright and prevented from falling*
- *It is recommended the LPG detector is installed at the loading bay end of the cylinders near the ground. The light should be in an easily visible location for staff and delivery personnel*
- *Unloading of trucks at the loading bay should not be permitted if an LPG leak is detected or during in-situ filling of the LPG cylinders*

Plans of management to be signed off before the building can receive its OCCUPATIONAL CERTIFICATE from the certifier.

Provided that the recommendations of this report are implemented there will be no implication on the assessment and findings of this Fire Engineering Report.

2. REFERENCE INFORMATION

2.1 Regulatory Framework

The following New South Wales Legislation is applicable to the project:

- NSW Environmental Planning & Assessment Act 1979 and subsequent amendments
- NSW Environmental Planning & Assessment Regulation 2000 and subsequent amendments

2.2 References

The following reference material is applicable to this report:

[1] Volume One of the Building Code of Australia 2019 (BCA), Australia Building Codes Board, 2019

[2] Guide to the BCA 2019 (GBCA), Australia Building Codes Board, 2019

[3] Chartered Institute of Building Services Engineers (CIBSE) Guide E – Fire Engineering

[4] International Fire Engineering Guidelines, Australia Building Codes Board, 2005

2.3 Design Information

The engineering analysis document in this FER is based upon the following information:

[5] Email exchanges between Minerva Management Group, Blue Pacific Constructions and CMS Surveyors.

[6] GRS Building Reports BCA Assessment Report for Station Beach Boat House Wharf Palm Beach | Ref P056/Rev 5a | Dated 5 May 2020

[7] Property Report on Beach Road Palm Beach 2108 by NSW Government (APPENDIX A)

[8] Pittwater Local Environmental Plan 2014 | Land Zoning Map – Sheet LZN_014 (APPENDIX B)

[9] NSW Land Registry Services Title Search of Lot 7005 in Deposited Plan 1117451 (APPENDIX C)

[10] Assessment Report – DG Advice – TFA Project Management Revision 5 dated 08 February 2021

[11] Drawings outlined in the table below

Table 3 –Building Drawings

Drawing Number	Drawing Title	Author	Revision	Issue Date (DD/MM/YYYY)
DA04	SITE & GROUND PLAN	Canvas Architecture & Design	—	30/01/2021
DA06	PROPOSED FIRST FLOOR PLAN	Canvas Architecture & Design	—	30/01/2021

Drawing Number	Drawing Title	Author	Revision	Issue Date (DD/MM/YYYY)
DA07	NORTH / EAST ELEVATIONS	Canvas Architecture & Design	—	30/01/2021
DA08	SOUTH / WEST ELEVATIONS	Canvas Architecture & Design	—	30/01/2021
17534C	SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOER PHILLIP PARK PALM BEACH NSW 2108 SHEET 1 OF 3	C.M.S. Surveyors Pty Limited	2	30/04/2020
17534C	SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOER PHILLIP PARK PALM BEACH NSW 2108 SHEET 2 OF 3	C.M.S. Surveyors Pty Limited	2	30/04/2020
17534C	SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOER PHILLIP PARK PALM BEACH NSW 2108 SHEET 3 OF 3	C.M.S. Surveyors Pty Limited	2	30/04/2020

3. BUILDING CHARACTERISTICS

3.1 Building Location

The building is located at 1191 Barrenjoey Road, Palm Beach NSW 2108 as illustrated below:

Figure 1 – Building Location

Figure 2 – Project Image

3.2 Layout

The general arrangement of the building is illustrated below:

3.2.1 Ground Floor

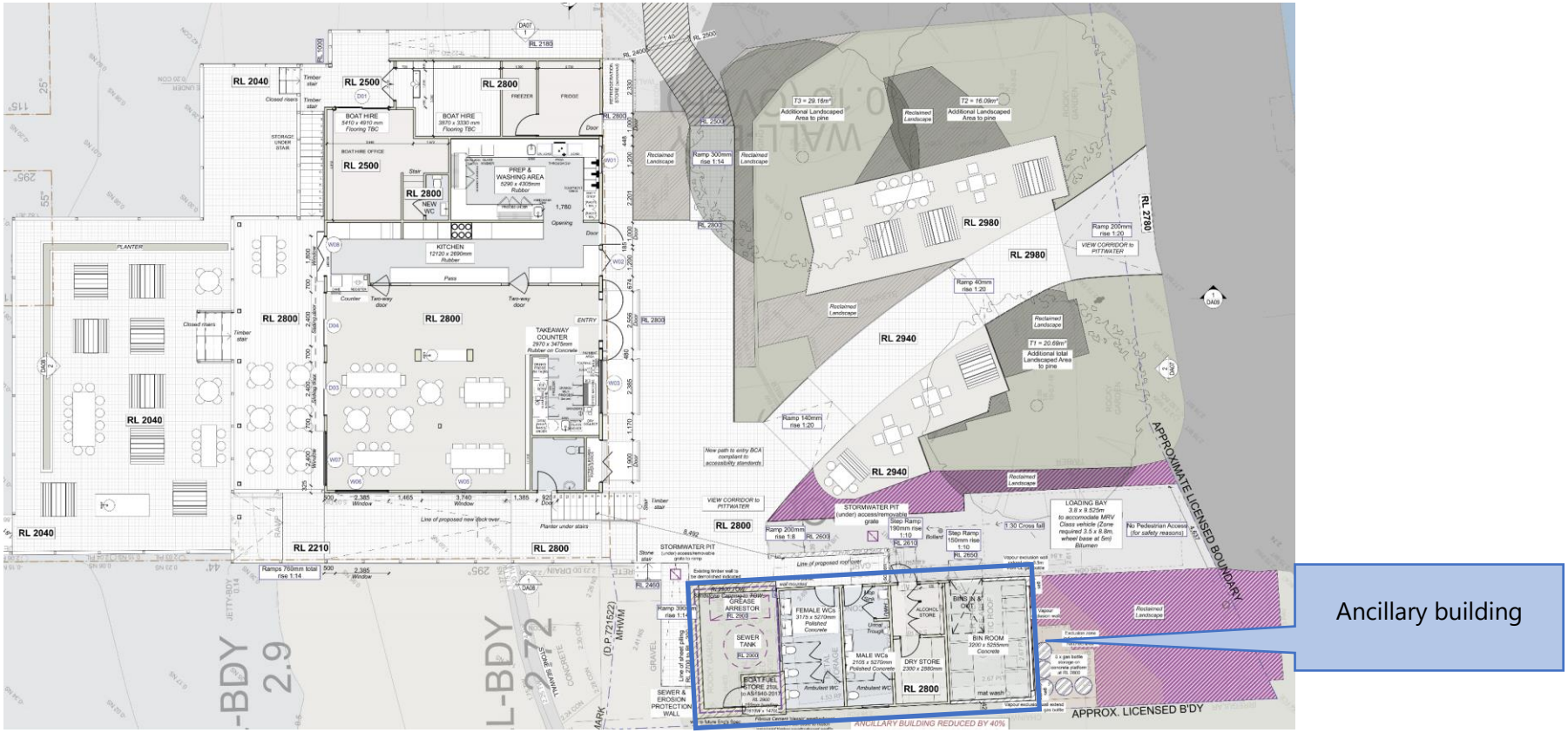


Figure 3 – Ground Floor Plan

3.2.2 Ground Floor Ancillary Building

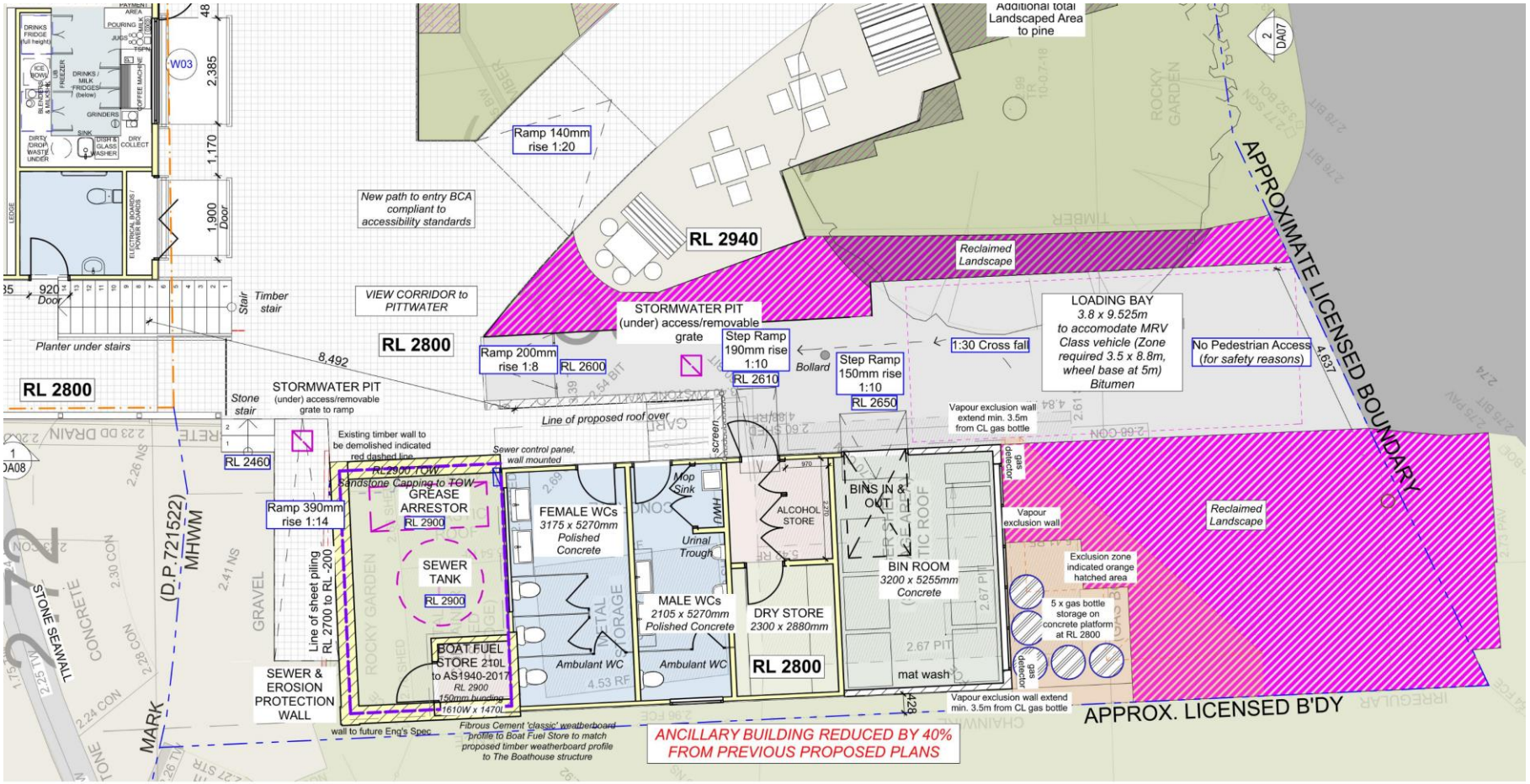


Figure 4 – Ground Floor Ancillary Building Plan

3.2.3 First Floor

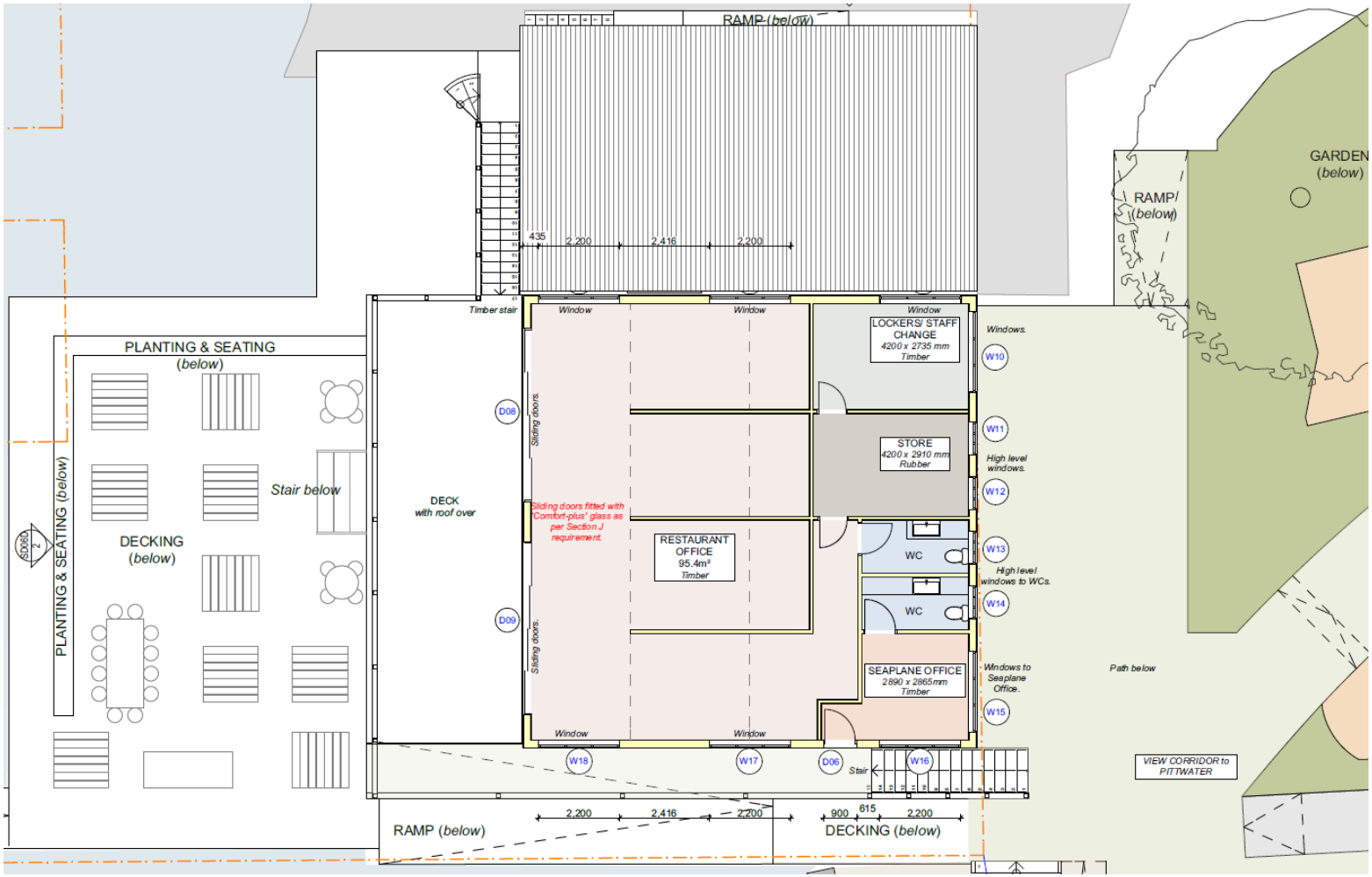


Figure 5 – First Floor Plan

3.2.4 North Elevation

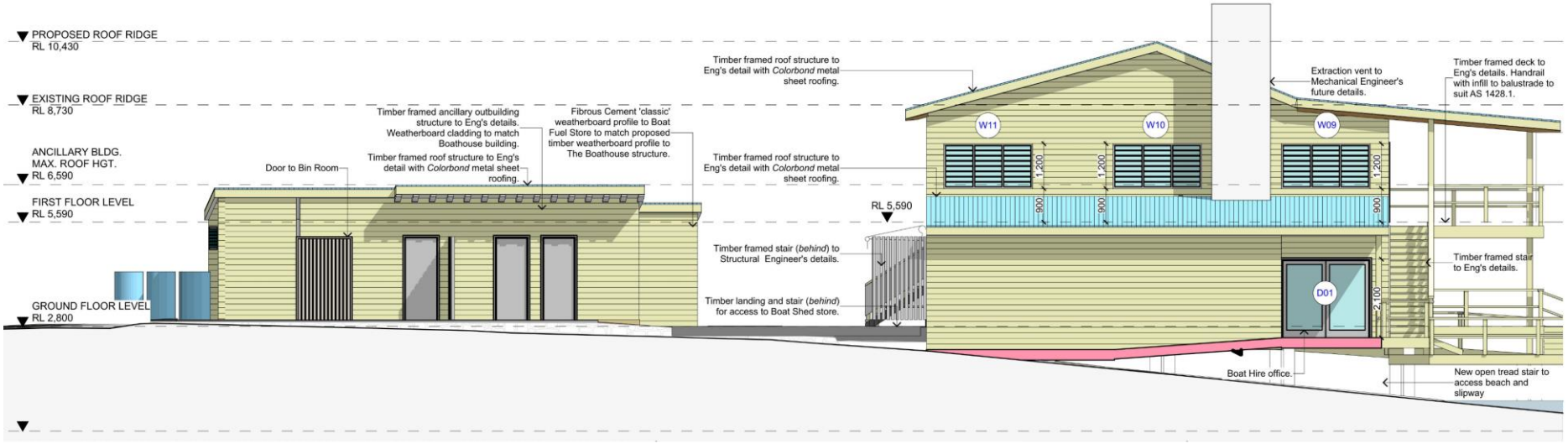


Figure 6 – North Elevation

3.2.5 East Elevation

Figure 7 – East Elevation

3.3 BCA DtS Reference Criteria

The BCA DtS reference criteria is summarised in the table below:

Table 4 – BCA DtS reference criteria

BCA Clause	Item	Description or Requirements
A6.0	Classification	5, 6, 9b – Main building 10a – Ancillary building
C1.1	Construction Type	Type C
C1.2	Rise in Storeys	Two (2) – Main building One (1) – Ancillary building
Schedule 3	Effective Height	<25m

3.4 Fire Hazards and Preventative and Protective Measures

The table below examines the fire hazard and mitigation measures that are in place.

Table 5 – Fire hazards and protective and preventative measures

Area	Fire Hazards	Mitigation Measures
Main building	Ignition Sources – Electrical equipment – Heat and cooling equipment – Kitchen equipment – Mechanical equipment – Office equipment e.g. printers Fuel Load – Paper, chairs, tables – Books, folders, paper – Storage cabinets – Electrical appliances – Cleaning chemicals	Preventative Measures – Staff and security – Housekeeping – Maintenance of equipment Protective Measures – Fire resisting construction – Portable fire extinguishers – Exit signage and emergency lighting
Ancillary building	Ignition Sources – Electrical equipment – Heat and cooling equipment – Mechanical equipment Fuel Load – Laundry – Storage cabinets – Electrical appliances – Cleaning chemicals	

4. OCCUPANT AND FIRE BRIGADE CHARACTERISTICS

4.1 Building Occupants

4.1.1 Distribution

It is expected that occupants will be distributed as per BCA Table D1.13 – Area per person according to use. The table below provides the floor space factors per person:

Table 6 – Building occupancy rates

Occupancy	Area per person (m^2)
Cafe	1
Office	10

4.1.2 Expected State, Attributes and Familiarity

The table below provides the expected condition of staff and occupants:

Table 7 – Occupant attributes

Occupant Type	State	Physical and Mental Attributes	Building Familiarity and Emergency Training
Staff member or employee	Conscious and sober	Able-bodied and mentally alert.	Familiar with surroundings and appropriately fire safety trained to assist in occupant evacuation and first-aid firefighting.
Visitor	Conscious and sober. May be under the influence of alcohol at night.	Able-bodied and mentally alert.	Visitors will follow instructions of trained staff member or employee.
Contractor (carrying out maintenance, etc)	Conscious and sober	Able-bodied and mentally alert	Contractor will complete detailed fire safety training as part of the building management system. Trained in emergency evacuation procedures.

4.1.3 Personal Emergency Evacuation Plans (PEEPs)

It is expected that building occupants requiring special evacuation assistance will be provided with a dedicated evacuation plan that will be executed in the event of an emergency. It is the responsibility of the tenants to co-ordinate this information.

5. FIRE SAFETY DESIGN

5.1 General

This section presents the Fire Safety Design that must be implemented to demonstrate that the building meets the Performance Requirements of the BCA. The Fire Safety Design is a checklist that can be used as a reference to identify the necessary fire safety systems and other requirements that will be included in the building design.

5.2 Application of the DtS Provisions

Any building feature that is not referred to or affected by this report will comply with the 'Deemed-to-Satisfy' provisions of the BCA, relevant Australian Standards, National, State and local legislation as applicable other than existing items not required to be upgraded.

Any changes to the building design or layout during the design or construction process will be assessed against the report. All future modifications, changes or layouts to the building will be reassessed against the Fire Engineering Report.

5.3 Fire Resistance

5.3.1 Fire Resistance Level

The elements of structure required to achieve an FRL will be installed in accordance with the BCA 2019 Type C Construction. This is with the exception of portions of the external walls of the main building and ancillary building that are located within 3 m of a fire source feature. This is supported via a performance solution as documented in Section 6. The assessment in this report considers both the Crown boundaries and lease boundaries to be a fire source feature.

As indicated in Figure 8, portions of the external walls of the main building do not achieve an FRL and are located within 3 m of a fire source feature (Crown boundary / site boundary) [6][11]. As indicated in Figure 9, portions of the external walls of the ancillary building do not achieve an FRL and are located within 3 m of a fire source feature (lease boundary / site boundary).

A reassessment of the ancillary building's external wall FRLs will be required should a building be developed across the site boundary.

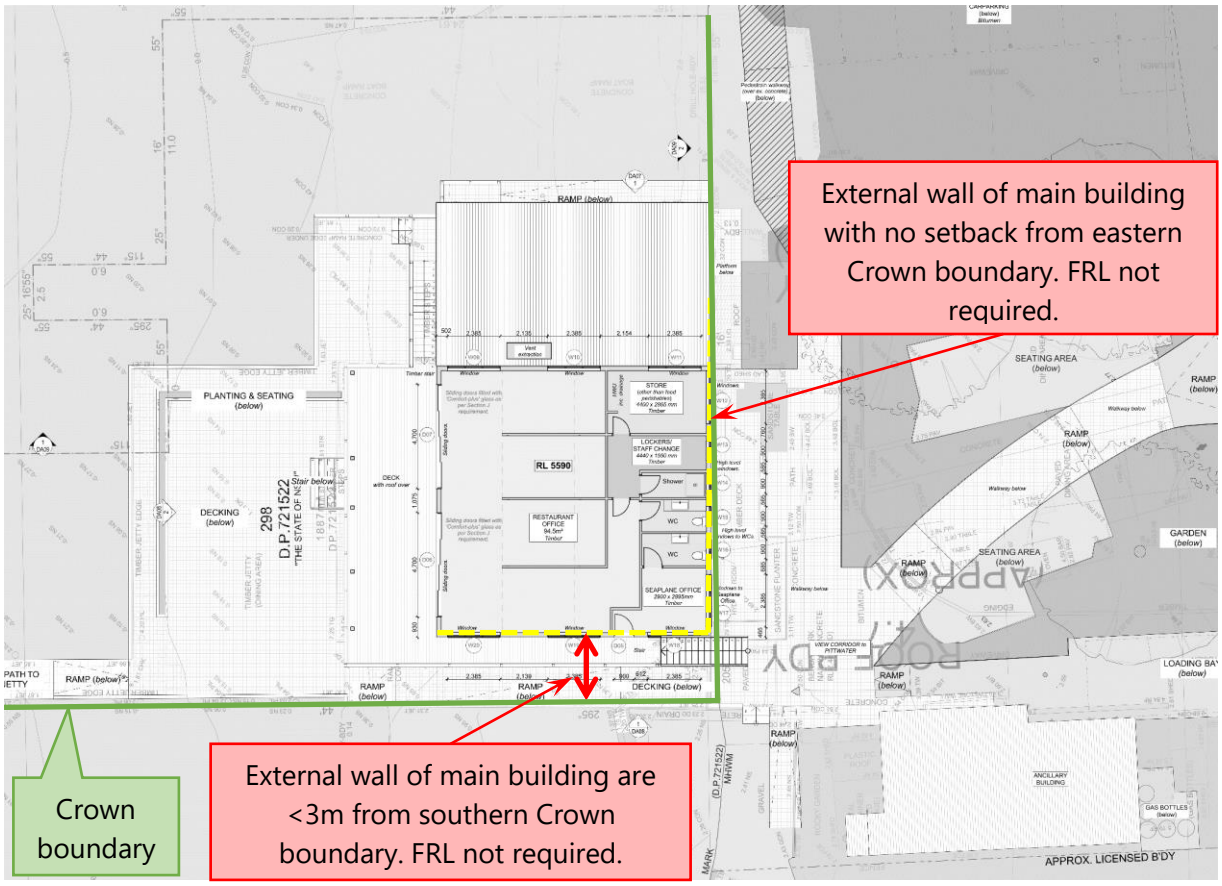


Figure 8 – External Walls within 3m of Crown Boundary / Site Boundary

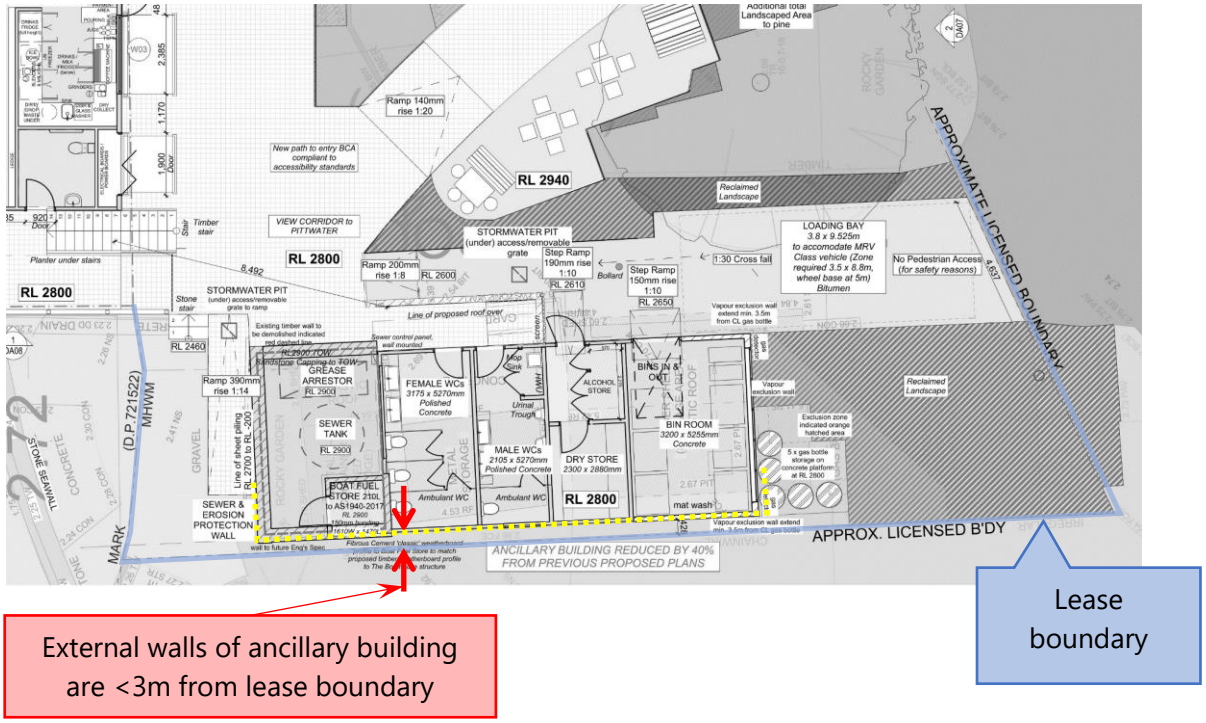


Figure 9 – External Walls within 3m of Lease Boundary / Site Boundary

5.3.2 Fire Compartmentation and Separation

The main building forms a single fire compartment. The ancillary building will form a separate singular fire compartment.

There are unprotected openings along the external walls of the main building and ancillary building that are located within 3 m of a fire source feature. This is supported via a performance solution as documented in Section 6. The assessment in this report considers both the Crown boundaries and lease boundaries to be a fire source feature.

As indicated in to Figure 12, there are unprotected openings along the external walls of the main building that are located within 3 m of a fire source feature (Crown boundary / site boundary) [6][11]. As indicated in Figure 13, there are unprotected openings along the external walls of the ancillary building that are located within 3 m of a fire source feature (lease boundary / site boundary).

A reassessment of the ancillary building's external wall FRLs will be required should a building be developed across the site boundary.

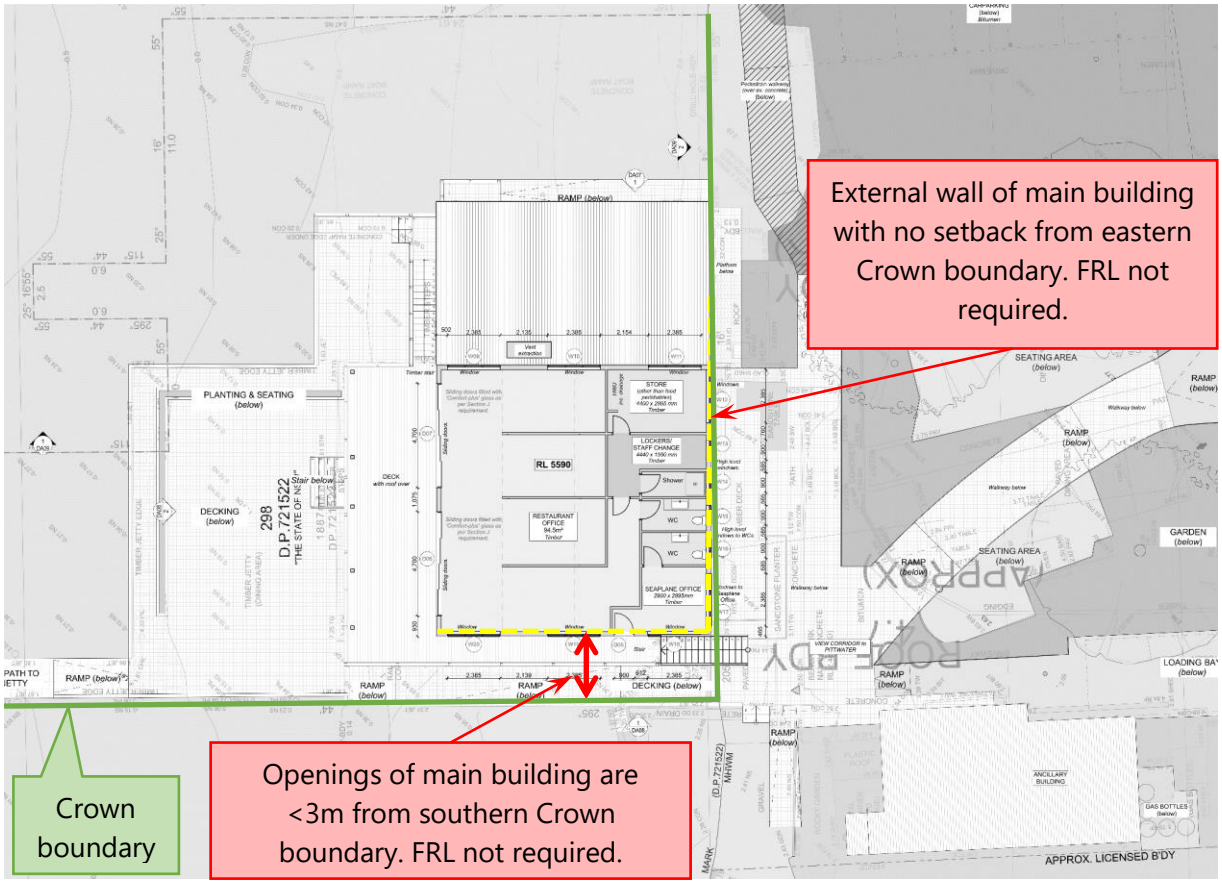


Figure 10 – Openings within 3m of Crown Boundary / Site Boundary

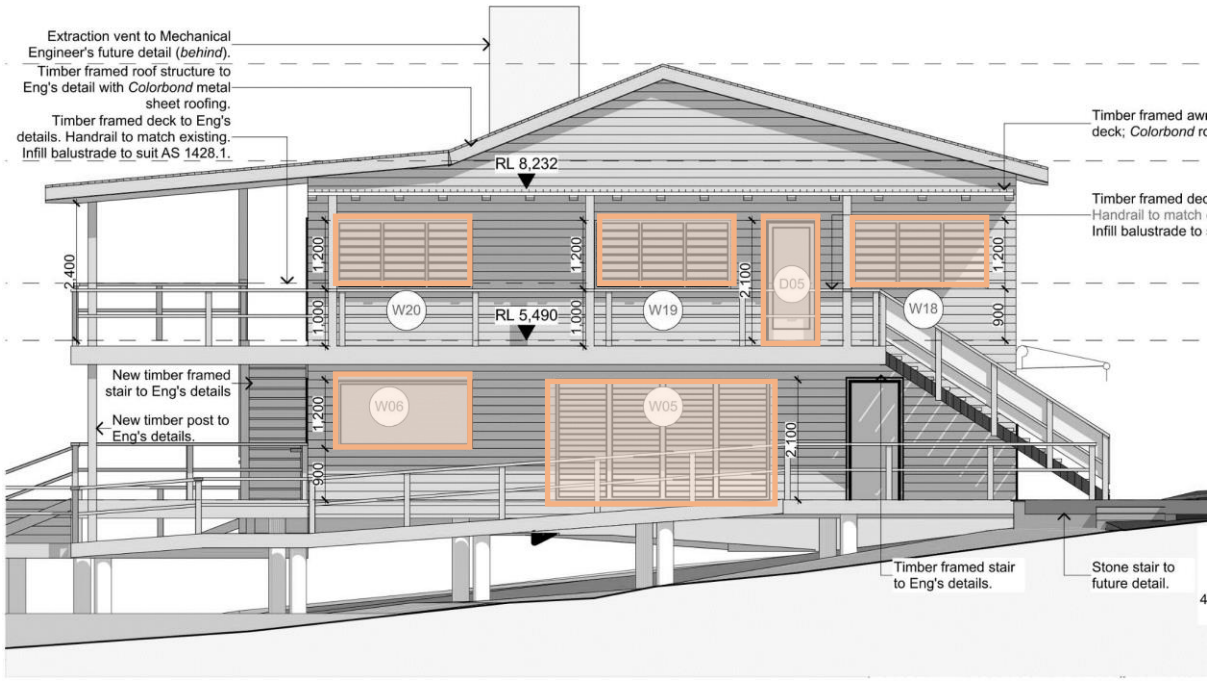


Figure 11 – Openings on Main Building Southern Wall within 3m of Crown Boundary / Site Boundary

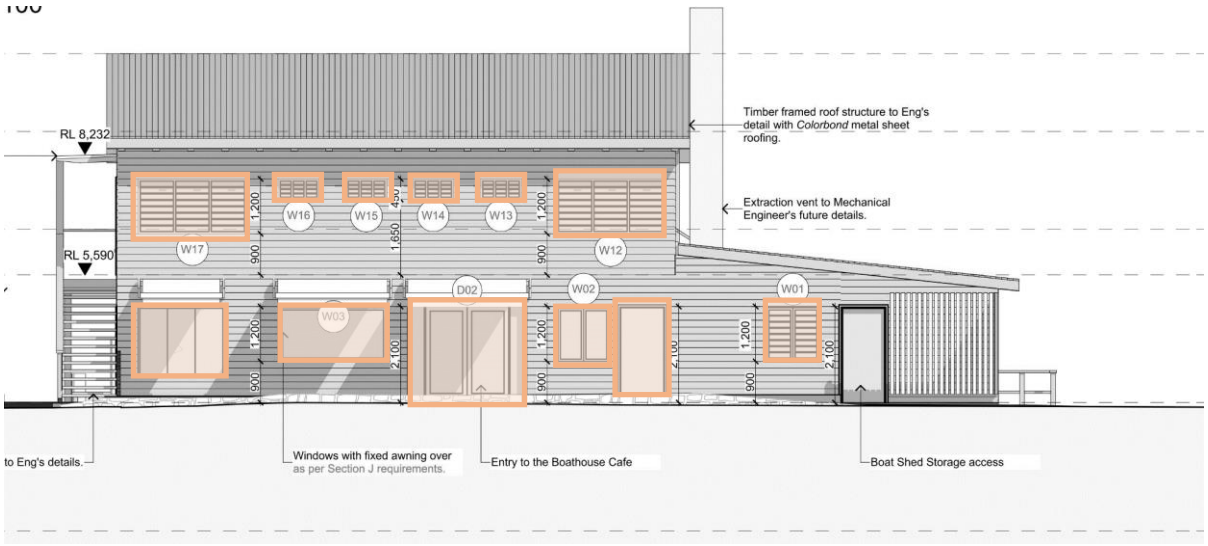


Figure 12 – Openings on Main Building Eastern Wall within 3m of Crown Boundary / Site Boundary

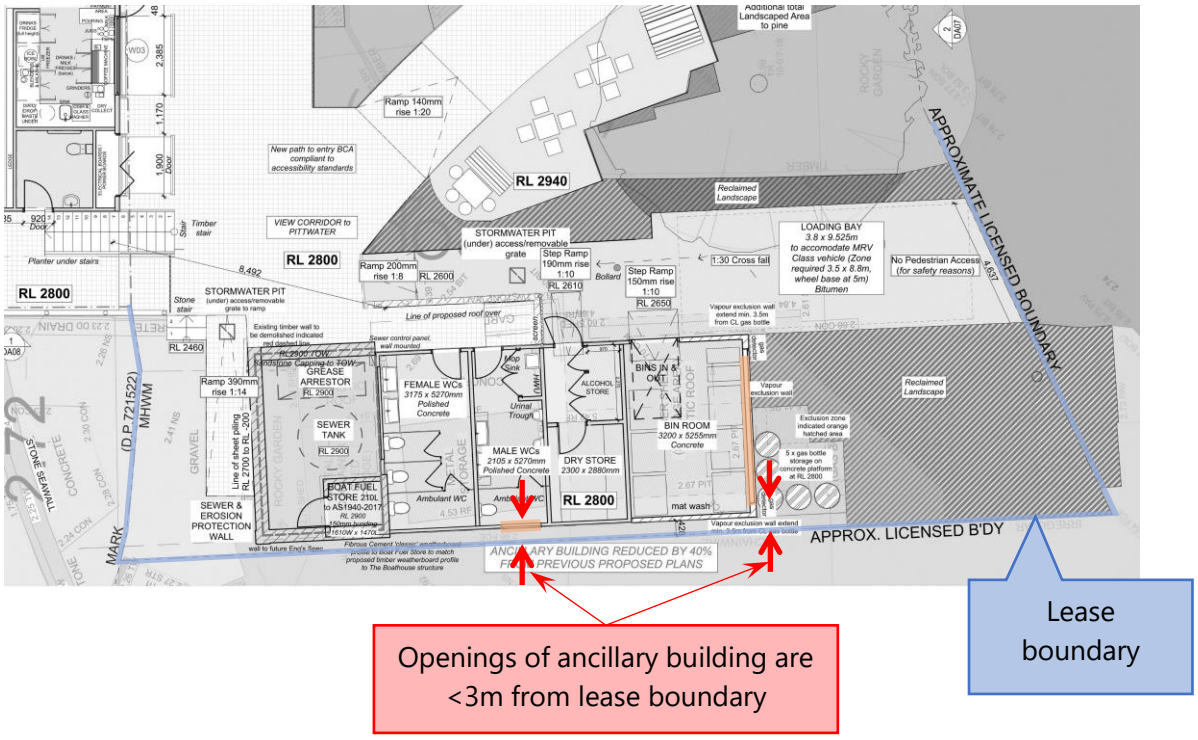


Figure 13 – Openings within 3m of Lease Boundary / Site Boundary

5.4 Egress

Egress provisions for the building will comply with the BCA DtS provisions.

5.5 Services and Equipment

5.5.1 Fire Hydrants

Fire hydrant coverage will not be provided to the building, deviating from the DtS provisions of BCA Clause E1.3. This is supported as part of a performance solution.

5.5.2 Portable Fire Extinguishers

Portable fire extinguishers will be provided to the building in accordance with AS 2444-2001.

5.6 Emergency Lighting and Exit Signage

Emergency lighting and exits signage will be provided to the building in accordance with AS 2293.1.

5.7 Building Management

To support the requirements of the Performance Solution, building management will be responsible for producing a fire safety management plan for all areas. This plan must include requirements for mitigating the risk of fire load build up along egress routes and regular inspections should be undertaken.

For the outdoor areas, any flooring and furniture will be of hard finishing, and there will be limited combustibles stored on the deck.

An emergency planning system in accordance with AS 3745 will be implemented to ensure that all occupants have evacuated the building in the case of a fire. The appointed fire wardens of the building will be responsible for a building sweep to ensure that all occupants have evacuated in the case of fire.

5.8 Approval and Certification

5.8.1 Construction, Commissioning and Handover

For construction compliance, the fire safety measures outlined in Section 4 should be appropriately designed, installed and commissioned prior to occupation. Minerva Management Group have been commissioned to undertake a visual inspection of the active and passive fire safety measures and witness testing of active systems. Certification will be required from all designers, installers and suppliers confirming compliance with the requirements of this report.

5.8.2 Ongoing Fire Safety Compliance

The building owner is responsible for maintaining all fire safety measures to the standard required by the Environmental Planning & Assessment Regulations Clause 177.

Appropriate documentation shall be provided to Council in the form of an Annual Fire Safety Statement.

6. PERFORMANCE SOLUTIONS 1-3 — FIRE RESISTANCE LEVEL

6.1 Overview

No.	BCA DtS Clause	Summary of BCA DtS Non-Compliance
1	C1.1 – Type of construction	Portions of the external wall of the building are located within 3m of a fire source feature (site boundary) and should be provided with an FRL.
2	C3.2 – Protection of openings	There are openings in walls requiring an FRL that should be protected in accordance with BCA Clause C3.4 – Methods of protection (i.e. drenchers or fire shutters).
3.	C3.4 – Acceptable methods of protection	
Performance Requirement		
CP2 – Spread of fire		
BCA Method of Assessment		
A2.2 (1)(a) – Compliance with all relevant Performance Requirements A2.2 (2)(b)(ii) – Other verification methods		
Assessment Type		
Qualitative; Comparative		
Acceptance Criteria		
– The performance solution is acceptable if it demonstrated that there is minimal risk of fire spread across the site boundary.		
Intent of the BCA DtS Provisions		
– C1.1 – Type of construction: To establish the minimum fire-resisting construction required for Class 2-9 buildings. – C3.2 – Protection of openings: To require any opening in external walls to be protected, only where the wall is required to have an FRL, to prevent the spread of fire from the boundary of an adjoining allotment, or one building to another building on the same allotment. – C3.4 – Acceptable methods of protection: To set out acceptable methods of protection required for different types of openings in a building.		

6.2 Assessment

6.2.1 Overview

As indicated in Figure 14 to Figure 18, there are portions of the external walls of the main building and ancillary building that are within 3 m of a fire source feature (site boundary) that is not provided with a Fire Resistance Level (FRL). These walls also incorporate unprotected openings. The reduced FRL of the external wall and unprotected openings potentially introduce an additional risk of fire spread.

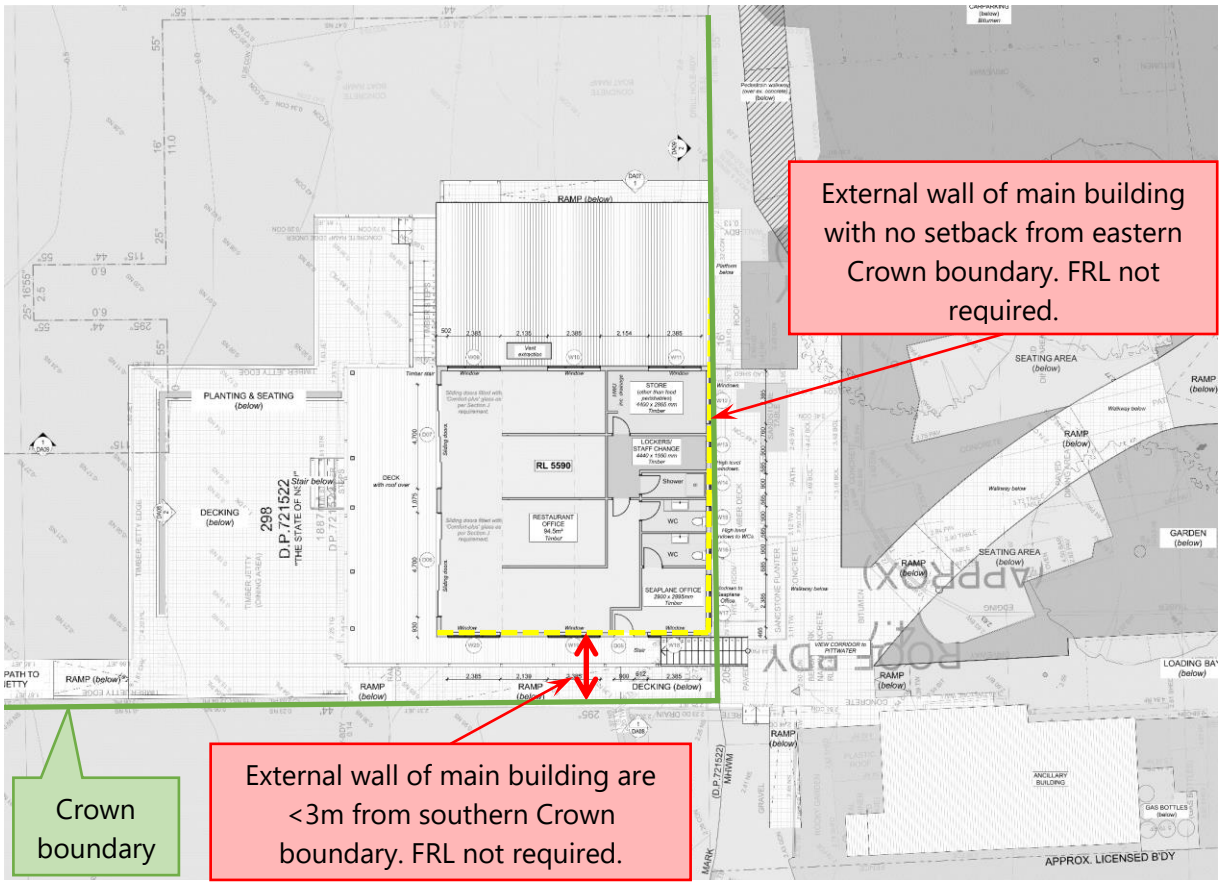


Figure 14 – External Walls and Unprotected Openings within 3m of Crown Boundary / Site Boundary

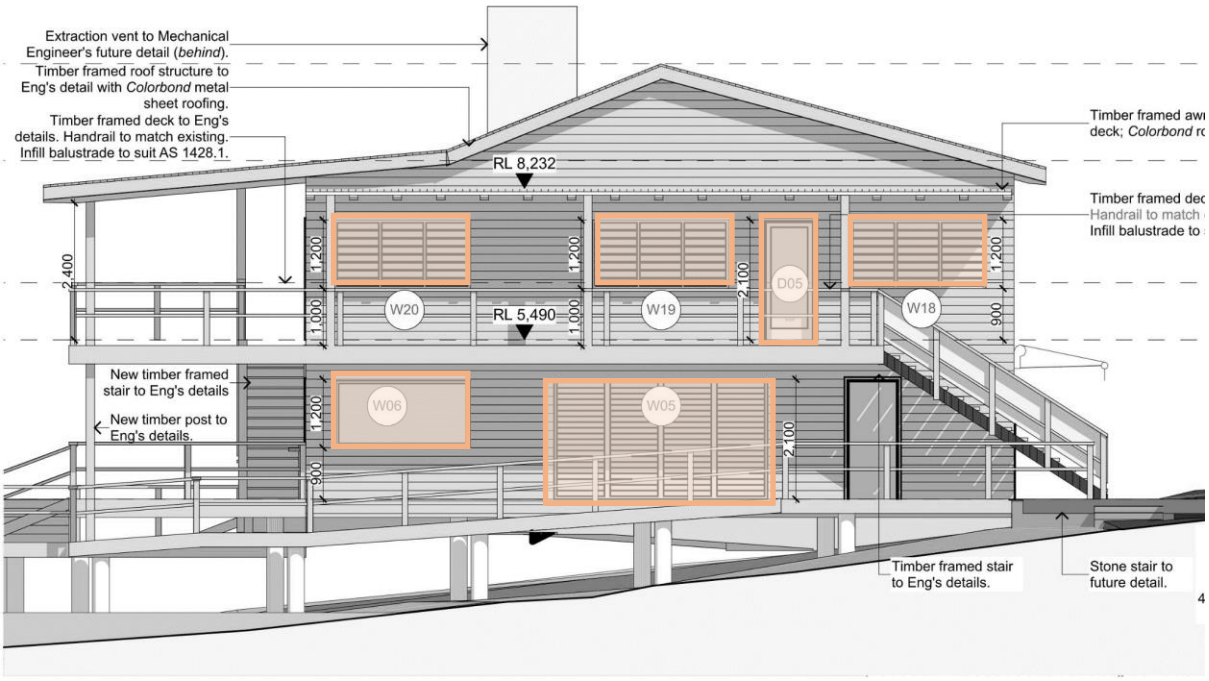
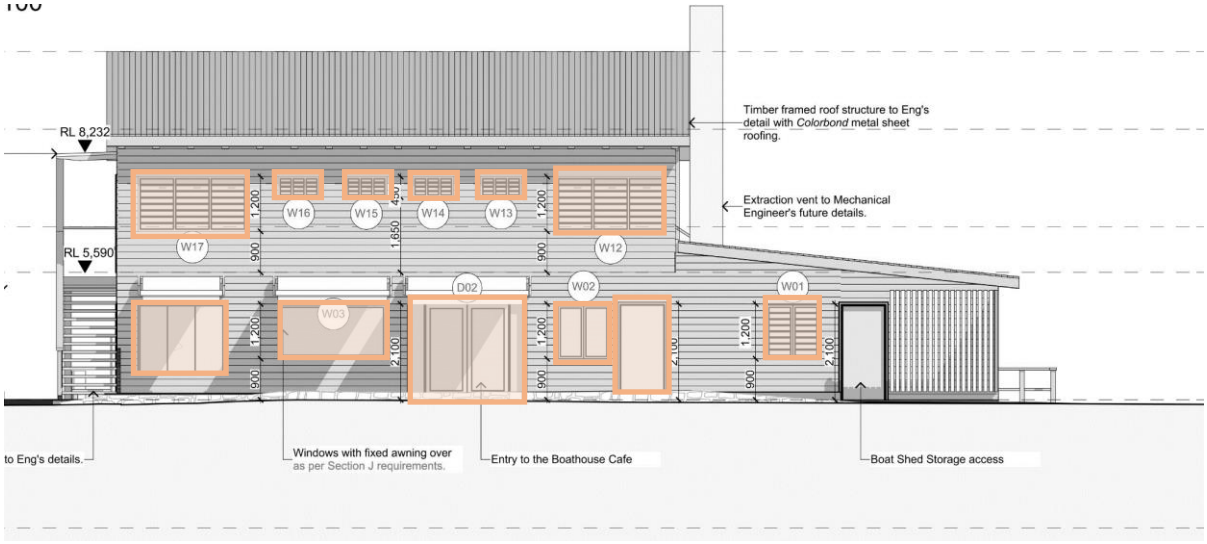


Figure 15 – Openings on Main Building Southern Wall within 3m of Crown Boundary / Site Boundary



Unprotected openings

Figure 16 – Openings on Main Building Eastern Wall within 3m of Crown Boundary / Site Boundary

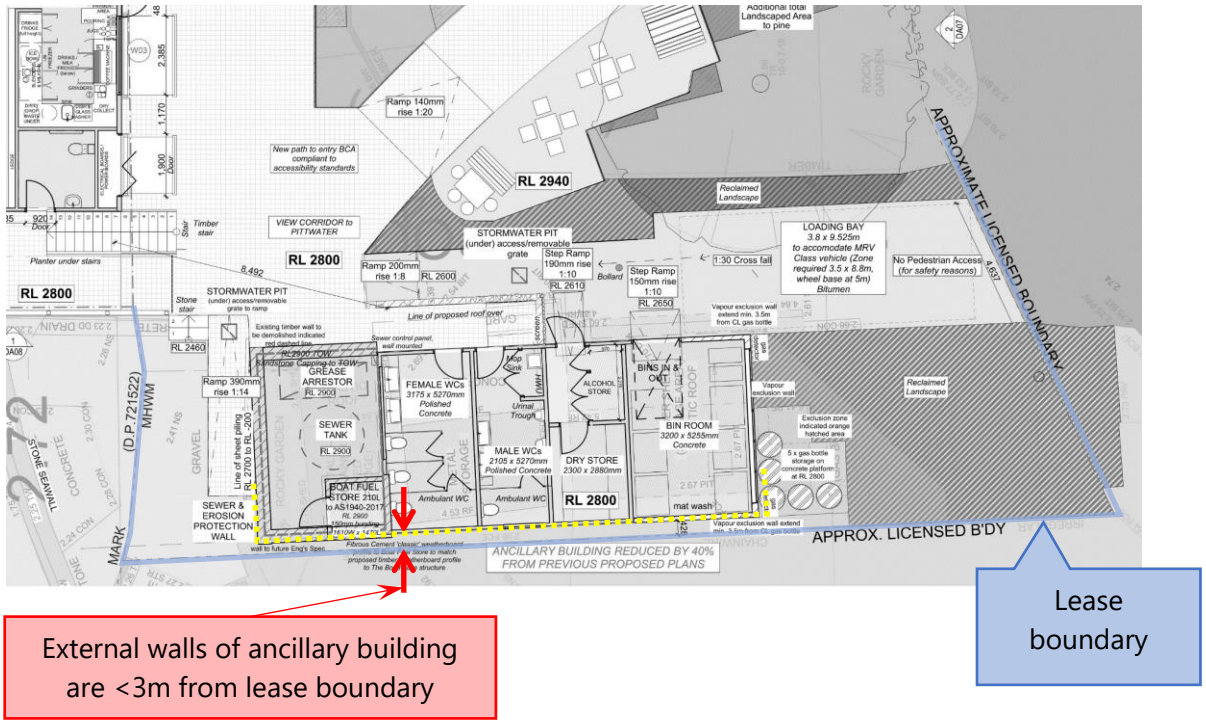


Figure 17 – External Walls within 3m of Lease Boundary / Site Boundary

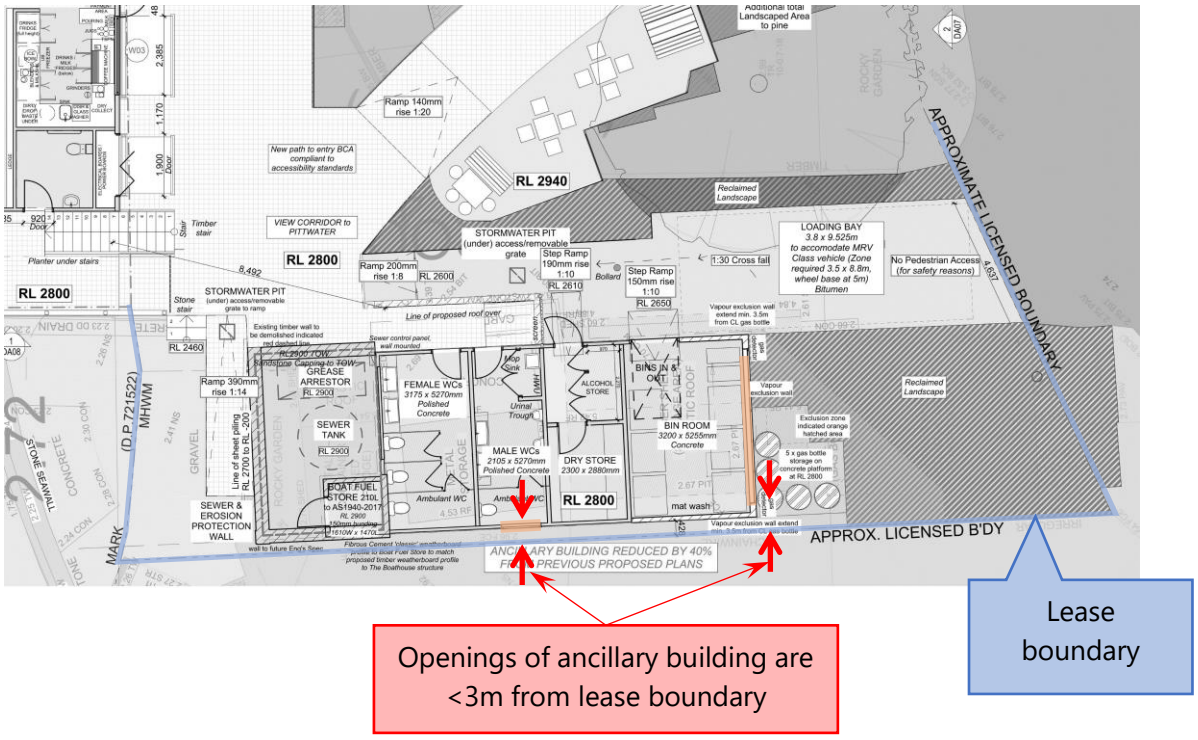


Figure 18 – Openings within 3m of a Fire Source Feature

6.2.2 Main Building

It is noted that the external walls of the main building are within 3m of the site boundary as indicated in Figure 14, Figure 19 and Figure 20. It is expected that the external walls of the main building will not be provided with an FRL. The external walls will also incorporate unprotected openings.

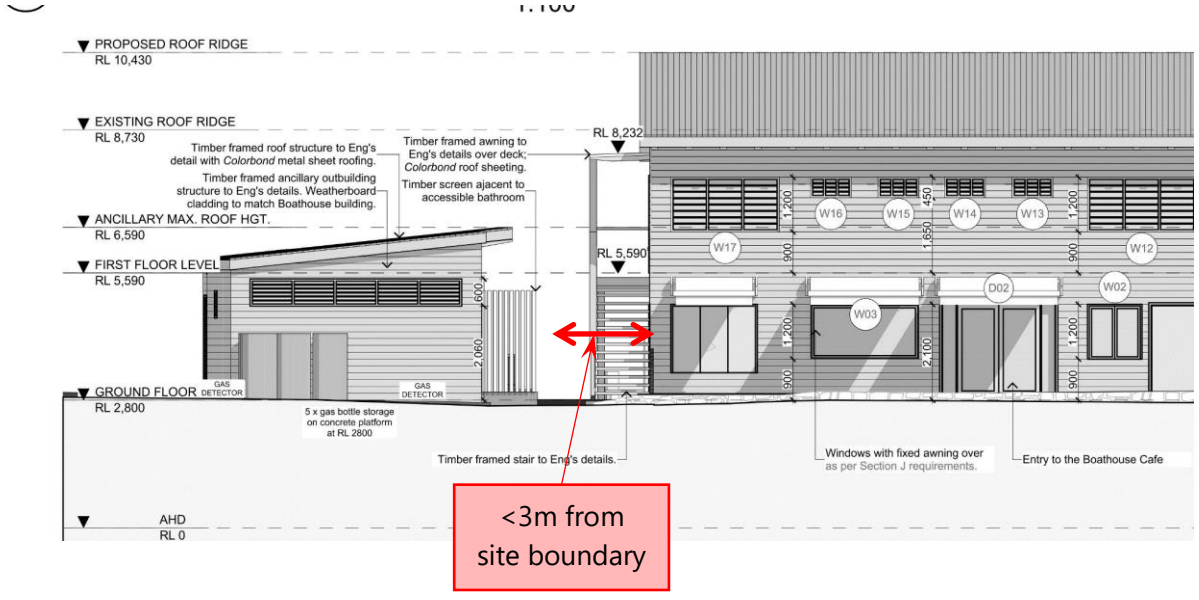


Figure 19 – East Elevation (Corner of Main Building Within 3m of Site Boundary)

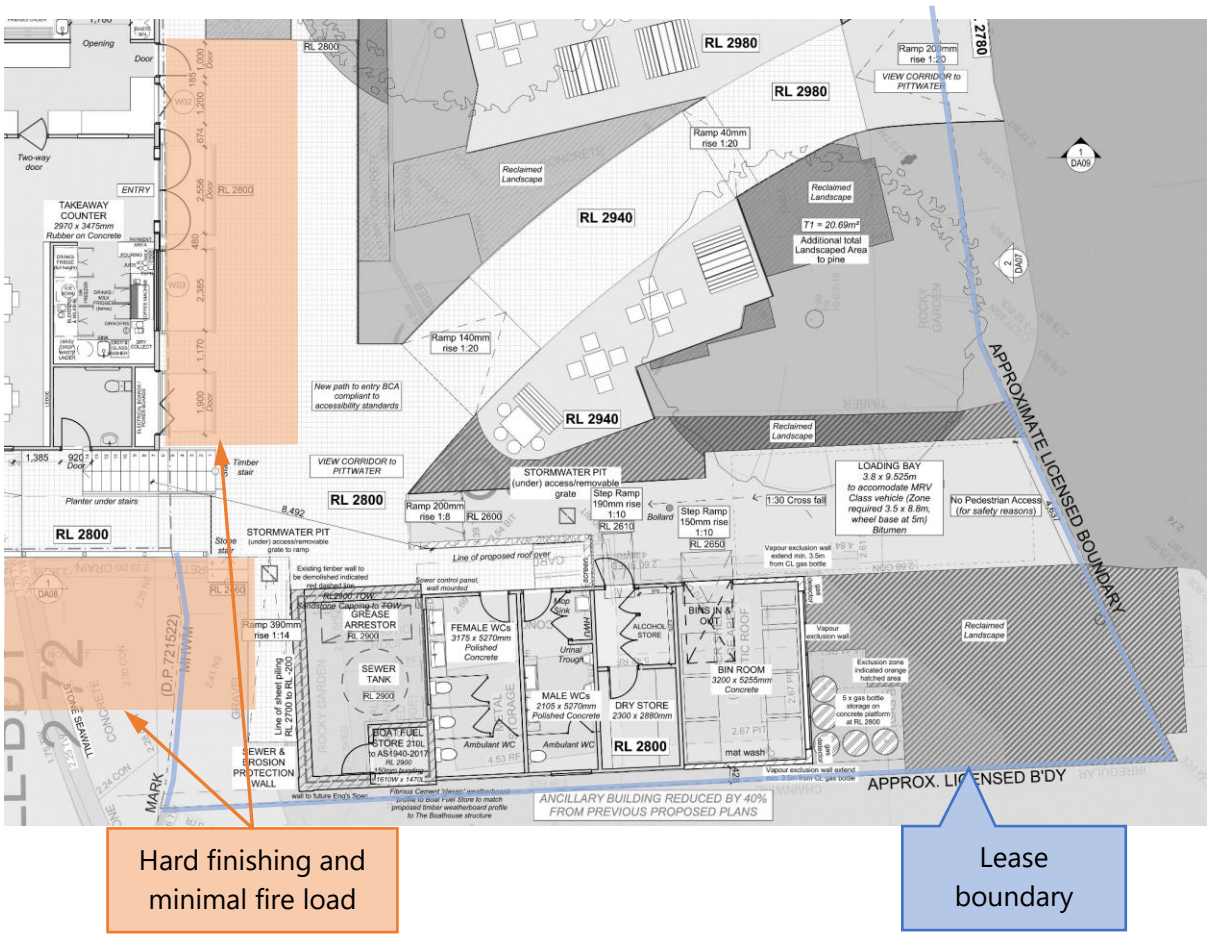


Figure 20 – External Walls within 3m of a Fire Source Feature

In the vicinity of the adjacent site boundary to the south of the main building, the area will be of hard finishing as indicated in Figure 20. As this is a transient outdoor space, minimal fire load and no ignition sources are expected in the area, and as such, it is considered unlikely for fire spread to occur via the external walls and unprotected openings of the main building over the site boundary.

The area to the east of the main building will similarly be of hard finishing, with minimal fire load in the area as indicated in Figure 20. Additionally, the main building exists in environmentally conserved land (E2 classification [8]). Under current policies from both Crown and the Pittwater Local Environmental Plan, it is not permitted for a new lease to be made in this area, i.e. there will not be a building developed adjacent to the main building of the Boat House.

6.2.3 Ancillary Building

As indicated in Figure 17 and Figure 18, the ancillary building has portions of the external wall without an FRL and unprotected openings within 3 m of a fire source feature (site boundary).

The ancillary building will be on land zoned for public recreation (RE1 classification [8]), and also in a heritage zoned area [7]. As it is a heritage area, it is also unlikely for a building to be developed across the site boundary. The property boundaries are indicated in Figure 21, with

further information of Lot 7005 (in which the ancillary building is located) provided in Appendices B, C, D and E.

There are no existing buildings adjacent to the ancillary building. As there is no adjacent building across the site boundary, there is therefore no risk of fire spread between buildings across the site boundary. A reassessment of the ancillary building's external wall FRLs and unprotected openings will be required should a building be developed across the site boundary.

Figure 21 – Property Boundaries (SixMaps)

6.2.4 Occupant Evacuation and Fire Brigade Intervention

With the minimal risk of fire spread between buildings across the site boundary via the external walls and openings, there will therefore be minimal impact on the tenability conditions in the main and ancillary building, and minimal impact on fire brigade intervention and occupant evacuation.

6.3 Conclusion

Based on the above assessment, it has been demonstrated that there is minimal risk of fire spread across the site boundary. The design therefore achieves compliance with BCA Performance Requirement CP2 which has been demonstrated as follows:

Table 8 – BCA Performance Requirement CP2

CP2 – Spread of fire		Commentary
a. A building must have elements which will, to the degree necessary, avoid the spread of fire—		
I.	to exits; and	The analysis demonstrates that there is minimal risk of fire spread across the site boundary.
II.	to sole-occupancy units and public corridors; and	
III.	between buildings; and	
IV.	in a building.	
b. Avoidance of the spread of fire referred to in (a) must be appropriate to—		
I.	the function or use of the building; and	The analysis demonstrates that there is minimal risk of fire spread across the site boundary.
II.	the fire load; and	
III.	the potential fire intensity; and	
IV.	the fire hazard; and	
V.	the number of storeys in the building; and	
VI.	its proximity to other property; and	
VII.	any active fire safety systems installed in the building; and	
VIII.	the size of any fire compartment; and	
IX.	fire brigade intervention; and	With the minimal risk of fire spread between buildings across the site boundary via the external walls and openings, there will therefore be minimal impact on the tenability conditions in the main and ancillary building, and minimal impact on fire brigade intervention and occupant evacuation.
X.	other elements they support; and	
XI.	the evacuation time.	

7. PERFORMANCE SOLUTION 4 — FIRE HYDRANTS

7.1 Overview

No.	BCA DtS Clause	Summary of BCA DtS Non-Compliance
4.	E1.3 – Fire hydrants	The building (including the outdoor decking) has a floor area of over 500 m^2 but will not be provided with fire hydrant coverage, deviating from BCA Clause E1.3. Due to the site and location of town's main water supply design a compliant system will be challenging and may require a seawater supply.
Performance Requirement		
EP1.3 – Fire hydrants		
BCA Method of Assessment		
A2.2 (1)(a) – Compliance with all relevant Performance Requirements A2.2 (2)(b)(ii) – Other verification methods		
Assessment Type		
Qualitative; Comparative		
Acceptance Criteria		
– The performance solution is acceptable if it is demonstrated that appropriate provisions for firefighting operations are provided.		
Intent of the BCA DtS Provisions		
– E1.3 – Fire hydrants: To require the installation of suitable fire hydrant systems to facilitate the fire brigade's firefighting operations.		

7.2 Assessment

7.2.1 Overview

Including the outdoor areas, the building has a floor area of ~745m^2 (>500m^2) but will not be provided with fire hydrant coverage, deviating from BCA Clause E1.3. The lack of hydrant coverage potentially impacts firefighting operations.

7.2.2 Fire Hydrant Provisions

Fire hydrants are intended for use by the fire brigade only due to the associated pressures and flows. As per the Guide to the BCA [2] for BCA Performance Requirement EP1.3, the BCA recognises that not all buildings need fire hydrants, indicated by the use of the expression "to the degree necessary". This is subject to the floor area of the building, which is a measure of the size of any potential fire, and the fire potential hazard for a fire occurring within the building.

7.2.3 Building Floor Area

As indicated in Figure 22 and Figure 23, the internal floor area of the ground floor of the main building is 224m^2, and the internal floor area of the first floor of the main building is 150m^2. This equates to a total internal floor area of ~374m^2, less than the 500m^2 threshold for the provision of hydrants as per BCA Clause E1.3.

As such, if the outdoor deck were excluded from the total floor area of the building (for example, if it were a garden area), the omission of fire hydrant coverage would be compliant with the BCA DtS recommendations. The provision of fire hydrant coverage the building can therefore be considered as a provision in excess of the BCA DtS recommendations.

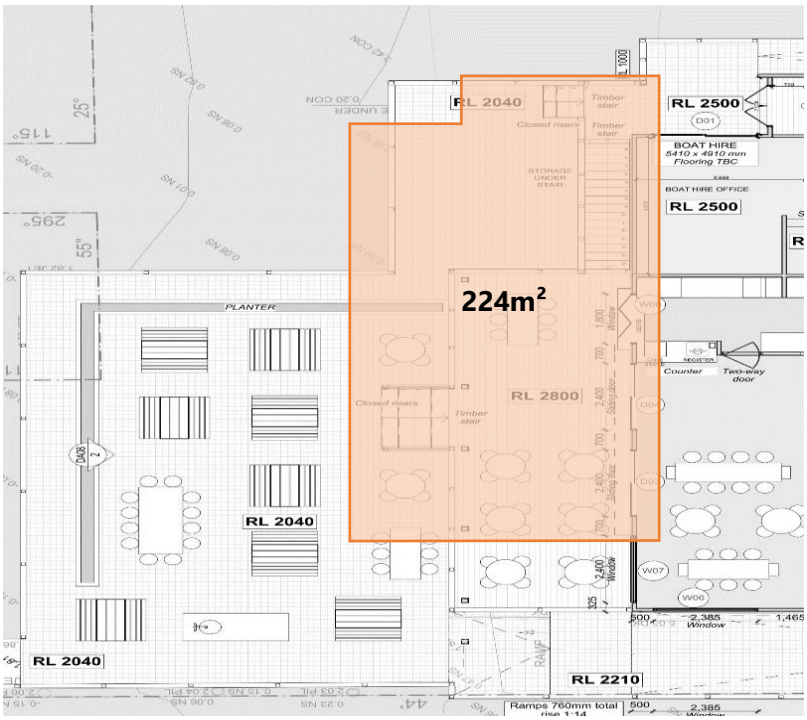


Figure 22 – Ground Floor Internal Area

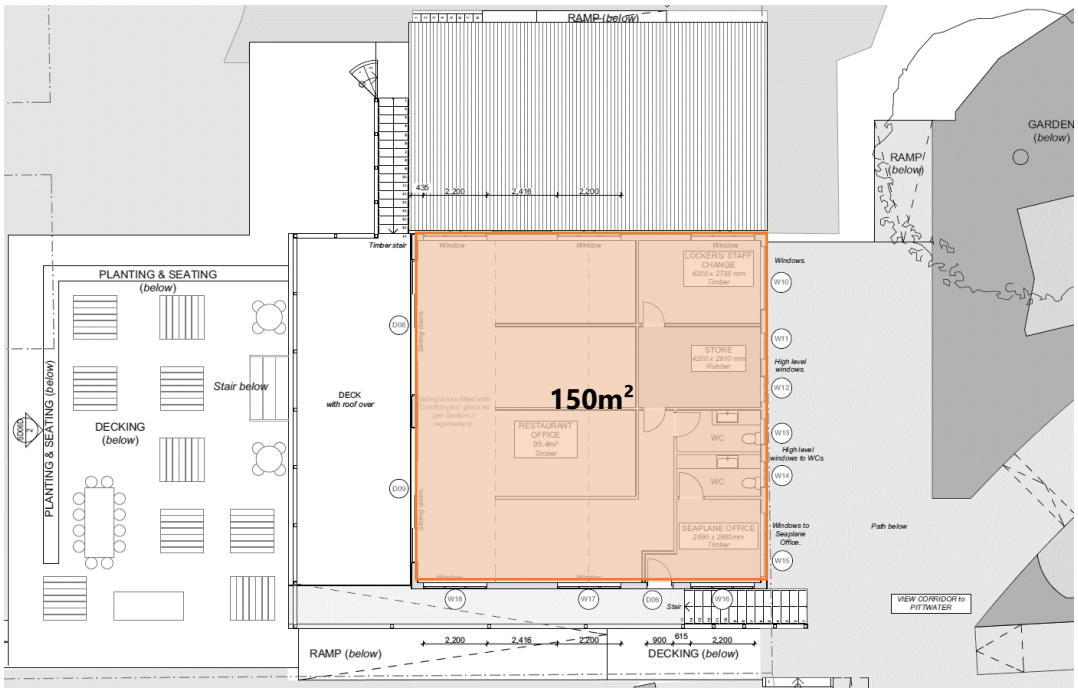


Figure 23 – First Floor Internal Area

7.2.4 Fire Hazard

As detailed in Section 7.2.3, the internal floor area of the building is ~374m^2 (<500m^2), with outdoor areas significantly increasing the total floor area of the building to ~745m^2. The potential fire hazard for this building with a floor area of ~745m^2 incorporating an internal floor of ~374m^2 is considered comparable to a building with an internal floor area of up to 500m^2.

Should potential fires occur outside, the heat and smoke from the fire will vent directly to atmosphere, minimising the potential fire size and risk of fire spread. In comparison, there will be increased build-up of heat and smoke from potential fires occurring indoors, leading to an increased hazard to occupants in the building. This risk is further compounded by an increased risk of flashover fires due to the build-up of heat indoors.

It is considered that the outdoor areas may not be utilised as a dining area, but for other purposes such as a garden, or be completely unutilised. The outdoor dining area is considered to introduce minimal additional risk in comparison to the space being utilised for other spaces. The flooring and furniture will be of hard finishing, and there will be limited combustibles stored on the deck.

7.2.5 Occupant Evacuation and Fire Brigade Intervention

Further to the above, the location of fires may also impact occupant evacuation. Potential fires occurring indoors pose an increased risk to evacuating occupants in comparison to a fire occurring outside.

As the heat and smoke from potential fires occurring outdoors venting directly to atmosphere, the potential hazard, visibility loss and toxicity to occupants in the area is decreased. In

comparison, potential fires occurring indoors have an increased risk of fire spread and tenability loss, which may negatively impact occupant evacuation. In addition, with a simpler building layout outdoors than indoors, occupants will also be able to identify fire hazards quicker for potential fires occurring outdoors, and will be able to identify locations of exits for evacuation.

Provisions for egress throughout the building's interior will be compliant with BCA DtS provisions. In addition, portable fire extinguishers will be provided in accordance with AS 2444-2001, allowing trained staff to undertake first aid firefighting in the case of fire. An emergency planning system in accordance with AS 3745 will be implemented to ensure that all occupants have evacuated the building in the case of a fire. The appointed fire wardens of the building will be responsible for a building sweep to ensure that all occupants have evacuated in the case of fire.

Based upon the above, it can be concluded that there is minimal potential fire hazard introduced by the outdoor areas of this building, i.e. the potential fire hazard for this building with a floor area of ~745m^2 incorporating an internal floor of ~374m^2 is considered comparable to a building with an internal floor area of up to 500m^2.

As the building is comparable in terms of fire hazard to a BCA DtS compliant building with an internal floor area of up to 500m^2 (no hydrant requirements), the impact on occupant evacuation and fire brigade intervention due the discrepancy in floor area between this building and a BCA DtS compliant building without hydrant requirements is therefore considered to be minimal.

7.3 Conclusion

Based on the above assessment, it is demonstrated that appropriate provisions for firefighting operations are provided. The design therefore achieves compliance with BCA Performance Requirement EP1.3 which has been demonstrated as follows:

Table 9 –BCA Performance Requirement EP1.3

EP1.3 – Fire hydrants	Commentary
A fire hydrant system must be provided to the degree necessary to facilitate the needs of the fire brigade appropriate to—	
a. fire-fighting operations; and	The analysis demonstrates that appropriate provisions for firefighting operations are provided
b. the floor area of the building; and	
c. the fire hazard	

8. LIABILITY AND LIMITATIONS

8.1 Liability

This Fire Engineering Report is applicable to the reconstruction works at The Boathouse building at 1191 Barrenjoey Road, Palm Beach NSW 2108 only.

It should be recognised that this report does not provide a guarantee that a fire will not occur with potential to cause casualties or damage.

Minerva Management Group cannot be held liable for any loss or damage resulting from any defect of the building or its services or equipment or for any non-compliance of the building or its services or equipment with any legislative or operational requirement, whether or not such defect or non-compliance is referred to or reported upon in this report, unless such defect or non-compliance should have been apparent to a competent engineer undertaking the assessment of the type undertaken for the purpose of preparation of this report.

The fire safety assessment and recommendations has been based on the building architectural layouts and the information detailed Section 2 – Reference Information. Any change in this information to suit future building works or re-organisation will require further analysis to confirm compliance with the regulations and our reports.

8.2 Limitations

This report does not provide guidance in respect of areas, which are used for bulk storage, processing of flammable liquids, explosive materials, multiple fire ignitions or sabotage of existing fire safety systems.

Minerva Management Group has compiled this report based on the information listed in Section 2 – Reference Information. Note that this report is based upon information provided by the client – some of which may not have been verified.

Potential incendiary risks are limited in the scope of engineering design. Conventional building design can only provide limited protection against malicious attack; for example, large scale incendiary and multiple ignition sources can potentially overwhelm some fire safety systems.

Strategies such as security, housekeeping and other management procedures may be more effective than additional fire protection measures in addressing arson events.

9. APPENDIX A – NSW GOVERNMENT PROPERTY REPORT

Property Report

BEACH ROAD PALM BEACH 2108

Property Details

Address:	BEACH ROAD PALM BEACH 2108		
Lot/Section /Plan No:	7001/-/DP1117606	7002/-/DP1117592	7005/-/DP1117451
	7006/-/DP1117451	7006/-/DP1117454	7007/-/DP1117454
Council:	NORTHERN BEACHES COUNCIL		

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Pittwater Local Environmental Plan 2014 (pub. 30-5-2014)
Land Zoning	E2 - Environmental Conservation: (pub. 30-5-2014)
	RE1 - Public Recreation: (pub. 30-5-2014)
Height Of Building	8.5 m
Floor Space Ratio	NA
Minimum Lot Size	NA
Heritage	Barrenjoey Heritage Conservation Area Significance: Local
	Picnic Shelter Sheds Significance: Local
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Acid Sulfate Soils	Class 1
	Class 3
	Class 4
	Class 5
Terrestrial Biodiversity	Biodiversity

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

- State Environmental Planning Policy (Affordable Rental Housing) 2009: Land Application (pub. 31-7-2009)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Coastal Management) 2018: Land Application (pub. 17-12-2018)
- State Environmental Planning Policy (Coastal Management) 2018: Subject Land (pub. 23-3-2018)
- State Environmental Planning Policy (Concurrences) 2018: Land Application (pub. 21-12-2018)
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017: Land Application (pub. 1-9-2017)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004: Land Application (pub. 31-3-2004)
- State Environmental Planning Policy (Infrastructure) 2007: Land Application (pub. 21-12-2007)
- State Environmental Planning Policy (Koala Habitat Protection) 2019: Land Application (pub. 20-12-2019)
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007: Land Application (pub. 16-2-2007)
- State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007: Land Application (pub. 28-9-2007)
- State Environmental Planning Policy (Primary Production and Rural Development) 2019: Land Application (pub. 28-2-2019)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Subject Land (pub. 25-8-2017)
- State Environmental Planning Policy No 19—Bushland in Urban Areas: Land Application (pub. 24-10-1986)
- State Environmental Planning Policy No 1—Development Standards: Land Application (pub. 17-10-1980)
- State Environmental Planning Policy No 21—Caravan Parks: Land Application (pub. 24-4-1992)
- State Environmental Planning Policy No 33—Hazardous and Offensive Development: Land Application (pub. 13-3-1992)

- State Environmental Planning Policy No 36—Manufactured Home Estates: Land Application (pub. 16-7-1993)
- State Environmental Planning Policy No 44—Koala Habitat Protection: Land Application (pub. 6-1-1995)
- State Environmental Planning Policy No 50—Canal Estate Development: Land Application (pub. 10-11-1997)
- State Environmental Planning Policy No 55—Remediation of Land: Land Application (pub. 28-8-1998)
- State Environmental Planning Policy No 64—Advertising and Signage: Land Application (pub. 16-3-2001)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)
- State Environmental Planning Policy No 70—Affordable Housing (Revised Schemes): Land Application (pub. 1-5-2002)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

1.5 m Buffer around Classified Roads	Classified Road Adjacent
Bushfire Prone Land	Vegetation Buffer
	Vegetation Category
Crown Land	Crown Land
Local Aboriginal Land Council	METROPOLITAN

10. APPENDIX B – PITTWATER LOCAL ENVIRONMENTAL PLAN 2014

Pittwater Local Environmental Plan 2014

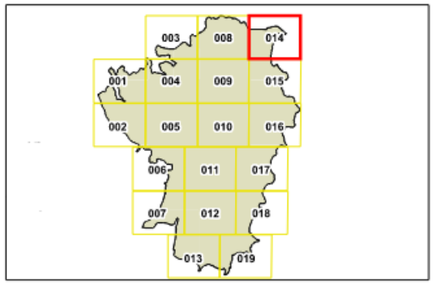
Land Zoning Map - Sheet LZN_014

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- B6 Enterprise Corridor
- B7 Business Park
- E1 National Parks and Nature Reserves
- E2 Environment Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN2 Light Industrial
- IN4 Working Waterfront
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- SP1 Special Activities
- SP2 Infrastructure
- SP3 Tourist
- W1 Natural Waterways
- W2 Recreational Waterways

Cadastre

Cadastre 7/7/2012
© Land & Property Information (LPI)



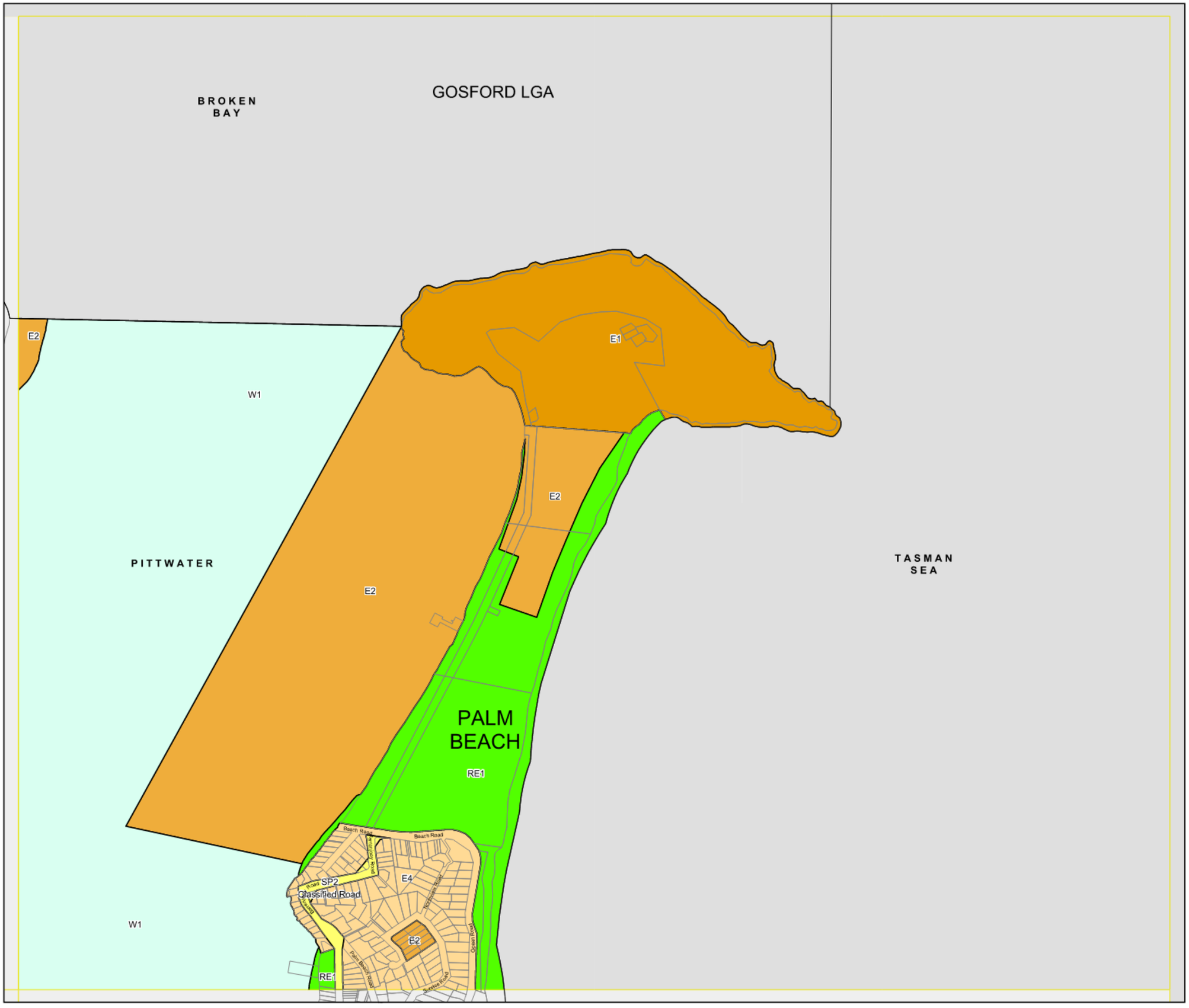
N

0 100 200
metres

Scale: 1:10,000 @ A3

Projection: GDA 1994
MGA Zone 56

File Number: 6370_COM_LZN_014_010_20140623



11. APPENDIX C – LAND REGISTRY SERVICES DOCUMENT

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 7005/1117451

SEARCH DATE	TIME	EDITION NO	DATE
24/4/2020	10:05 AM	-	-

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 7005 IN DEPOSITED PLAN 1117451
AT PALM BEACH
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF NARRABEEN COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1117451

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES (CA147898)

SECOND SCHEDULE (2 NOTIFICATIONS)

* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

DP1229774 NOTE: PLAN OF PROPOSED EASEMENT

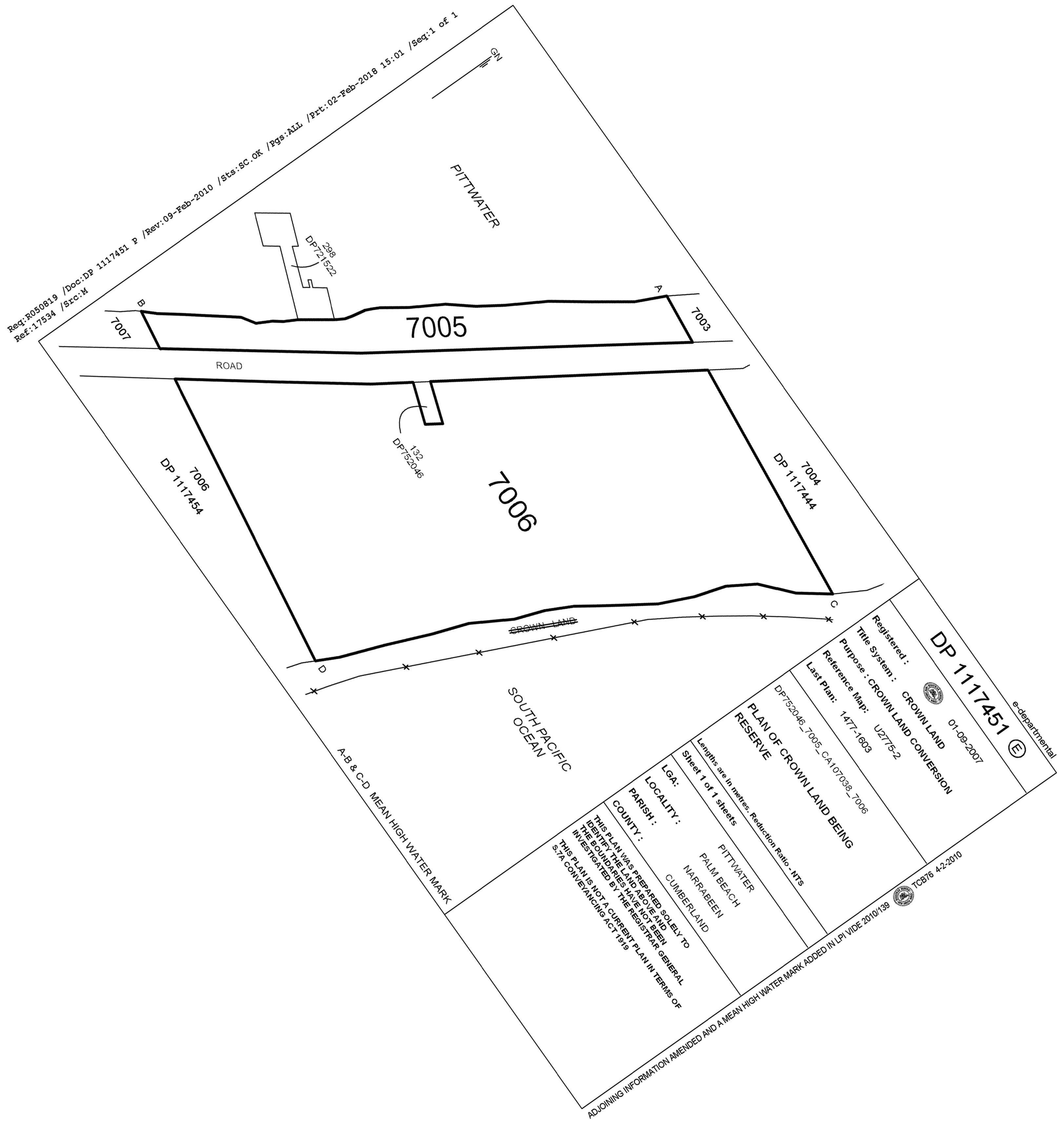
UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

17534D PRINTED ON 24/4/2020

12. APPENDIX D – SURVEY PLANS

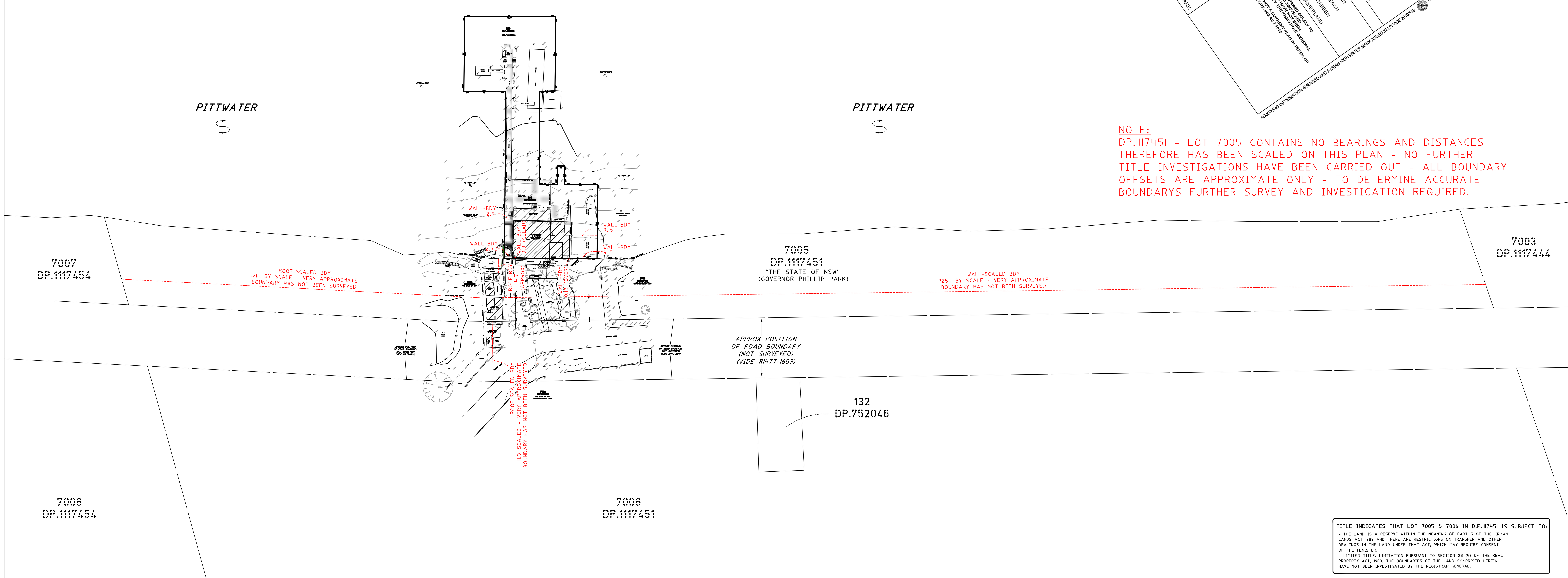
A0



NOTE:
LOT 7005 IN DP.1117451 AND ROAD RESERVE HAVE BEEN ADDED BY SCALE ONLY AND IS VERY APPROXIMATE - NO SURVEY OF THESE BOUNDARYS HAS BEEN UNDERTAKEN AT THIS DATE.

IF ACCURATE SURVEY BOUNDARY OFFSETS ARE REQUIRED THEN FURTHER SURVEY MUST BE UNDERTAKEN.

NOTE:
DP.1117451 - LOT 7005 CONTAINS NO BEARINGS AND DISTANCES THEREFORE HAS BEEN SCALED ON THIS PLAN - NO FURTHER TITLE INVESTIGATIONS HAVE BEEN CARRIED OUT - ALL BOUNDARY OFFSETS ARE APPROXIMATE ONLY - TO DETERMINE ACCURATE BOUNDARYS FURTHER SURVEY AND INVESTIGATION REQUIRED.



LOCALITY PLAN

NOT TO SCALE

0 10 20 30 40 50

SCALE 1:500

TITLE INDICATES THAT LOT 7005 & 7006 IN D.P.1117451 IS SUBJECT TO:
- THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

TITLE INDICATES THAT LOT 298 IN D.P.721522 IS SUBJECT TO:
- 3942964 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989)
- 3942965 CROWN LEASE TO CARMEL EUGENE WALTON, RUSSELL WALTON, WENDY WALTON, CHRISTOPHER HOGG & JOANNE HOGG (LE 305016). EXPIRES: 30/4/2022.
- 3942966 LEASE NO. LE 305016 (3942965) MAY NOT BE TRANSFERRED, MORTGAGED, SUB-LEASED OR DEALT WITH IN ANY SPECIFIED MANNER WITHOUT THE CONSENT OF THE MINISTER ADMINISTERING THE CROWN LANDS ACT 1989
- AB365809 LEASE OF LEASE 3942965 TO AIRFOTO PTY LIMITED OF SHOP 3, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 13/9/2009. OPTION OF RENEWAL: FIVE YEARS.
- AB879636 TRANSFER OF LEASE AB365809 LESSEE NOW KRUG AGENCIES PTY. LIMITED.
- AC192396 LEASE OF LEASE 3942965 TO DAWSON BROWN ARCHITECTURE PTY LIMITED OF SHOP 4, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 28/2/2007. OPTION OF RENEWAL: 1 YEAR.
- AC251936 LEASE OF LEASE 3942965 TO BARRENJOEY BOATING SERVICES PTY LIMITED OF SHOP 1, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK , PALM BEACH. EXPIRES: 28/2/2011. OPTION OF RENEWAL: 5 YEARS.
- AC522166 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LIMITED, NITOLA PTY LIMITED & N B T PTY LIMITED
- AF70815 TRANSFER OF LEASE AC251936 LESSEE NOW BIGWEST PTY LIMITED & NORTH SUMMER BAY INVESTMENTS PTY LTD
- AF495746 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LTD, NBT PTY LTD, NITOLA PTY LTD & CHAMPAMES LAKES PTY LTD
- AH20977 VARIATION OF LEASE AC251936 EXPIRY DATE NOW 28/2/2016.

NOTES

- **WALL TO BOUNDARY DIMENSIONS SHOWN HEREON MUST NOT BE USED FOR CONSTRUCTION. IF CONSTRUCTION IS INTENDED TO BE UNDERTAKEN ON OR ADJACENT TO PROPERTY BOUNDARIES THE BOUNDARIES OF THE LAND MUST BE MARKED.**
- **THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.**
- **AREA IS APPROXIMATE ONLY AND HAS BEEN CALCULATED BY TITLE DIMENSIONS. ALL TITLE DIMENSIONS OF THE LAND HAVE NOT BEEN CONFIRMED BY SURVEY. IF AREAS ARE CRITICAL WE RECOMMEND A BOUNDARY SURVEY FOR PUBLIC RECORD.**
- **IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED**
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF BLUE PACIFIC CONSTRUCTIONS PTY LTD.
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED. UNDERGROUND SERVICES HAVE NOT BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.

LEGEND:

BB = BOTTOM OF BANK
BBQ = BARBEQUE
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BOL = BOLLARD
BW = BOTTOM WALL
CHI = CHIMNEY
CON = CONCRETE
DD = DISH DRAIN
DK = DECK
FCE = FENCE
FL = FLOOR LEVEL
GDN = GARDEN
JET = JETTY
LID = MISCELLANEOUS PIT LID
NS = NATURAL SURFACE
PAV = PAVING
PIL = PILE
RF = TOP OF ROOF
RMP = RAMP
RR = ROOF RIDGE
STR = STAIRS
TB = TOP OF BANK
TG = TOP OF GUTTER
TR = TREE
TW = TOP OF WALL
—EO— = ELECTRICITY OVERHEAD
—S— = SEWER UNDERGROUND
TREE SPREAD-DIAMETER-HEIGHT

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.
MARKS ADOPTED: PM11657 & PM40338

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: PM 11657
R.L. 2.171 (ORDER L2)
SOURCE: S.C.I.M.S. (02/02/18)

2	LOCATION PLAN ADDED, LOT 7005 SCALED AND BOUNDARY OFFSETS ADDED	30/04/20
1	FIRST ISSUE	21/08/19

CLIENT:
BLUE PACIFIC CONSTRUCTIONS PTY LTD
74 CABARITA ROAD,
AVALON NSW 2108

SURVEY PLAN
SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOR PHILLIP PARK PALM BEACH NSW 2108

CMS SURVEYORS
C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

LGA: NORTHERN BEACHES			SHEET 1 OF 3
SURVEYED L.J.	DRAWN R.N./GP	CHECKED L.J.	APPROVED S.M./MDL
SURVEY INSTRUCTION 17534C	SCALE 1:500 @ A0	DATE OF SURVEY 05/02/18-17/07/18 12/06/19-19/08/19	
DRAWING NAME 17534detail		ISSUE 2	
CAD FILE 17534Cdetail 2.dwg			


A0
ADJOINS SHEET 2
ADJOINS SHEET 2
APPROX TRUE NORTH
MGA NORTH
PITTWATER
PITTWATER
"BARRENJOEY BEACH"
(SANDY BEACH)
"BARRENJOEY BEACH"
(SANDY BEACH)
298
D.P.721522
"THE STATE OF NSW"
1887m² DP.721522
TIMBER JETTY
(DINING AREA)
TIMBER JETTY EDGE
COVERED DECKS
(METAL ROOF)
"THE BOATHOUSE"
1 & 2 STOREY
CLAD BUILDING
METAL ROOF
TIMBER STEPS
CHIMNEY
CONCRETE BOAT RAMP
MEAN HIGH WATER MARK (D.P.721522)
DRILL HOLE-BDY (6.5)
HYDRANT ROOM
TIMBER DECK
SANDSTONE PLANTER
SANDSTONE TABLE
BENCH MARK
NAIL IN CONCRETE
RL 2.48 (AHD)
7005
D.P.1117451
"THE STATE OF NSW"
7005
D.P.1117451
"THE STATE OF NSW"
(GOVERNOR PHILLIP PARK)
"PALM BEACH GOLF COURSE"
METAL CONTAINER SHED (FRIDGE)
METAL STORAGE SHED
TIMBER SHED (STORAGE AREA) PLASTIC ROOF
(GAS BOTTLES)
PAVED DINING AREA
PAVED DINING AREA
ROCKY GARDEN
GOLF PUTTING GREEN
BITUMEN ROAD
GRAVEL PARKING
APPROX POSITION
OF ROAD BOUNDARY
(NOT SURVEYED)
(VIDE R1477-1603)
APPROX POSITION
OF ROAD BOUNDARY
(NOT SURVEYED)
(VIDE R1477-1603)
7006
D.P.1117451
"THE STATE OF NSW"
(GOVERNOR PHILLIP PARK)
SCALE 1:100

NOTES

- **WALL TO BOUNDARY DIMENSIONS SHOWN HEREON MUST NOT BE USED FOR CONSTRUCTION. IF CONSTRUCTION IS INTENDED TO BE UNDERTAKEN ON OR ADJACENT TO PROPERTY BOUNDARIES THE BOUNDARIES OF THE LAND MUST BE MARKED.**
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LEGEND:

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RR = ROOF RIDGE
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TG = TOP OF GUTTER
TR = TREE
TW = TOP OF WALL
EO = ELECTRICITY OVERHEAD
S = SEWER UNDERGROUND
TREE SPREAD-DIAMETER-HEIGHT

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.
MARKS ADOPTED: PM11657 & PM40338

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: PM 11657
R.L. 2.171 (ORDER L2)
SOURCE: S.C.I.M.S. (02/02/18)

2	LOCATION PLAN ADDED, LOT 7005 SCALED AND BOUNDARY OFFSETS ADDED	30/04/20
1	FIRST ISSUE	21/08/19

TITLE INDICATES THAT LOT 7005 & 7006 IN D.P.1117451 IS SUBJECT TO:

- THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
- LAND THAT MAY BE THE SUBJECT TO A LICENCE AGREEMENT WITH COUNCIL OR THE CROWN HAS NOT BEEN INVESTIGATED IN THIS SURVEY.

TITLE INDICATES THAT LOT 298 IN D.P.721522 IS SUBJECT TO:

- 3942964 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989)
- 3942965 CROWN LEASE TO CARMEL EUGENE WALTON, RUSSELL WALTON, WENDY WALTON, CHRISTOPHER HOGG & JOANNE HOGG (LE 305016). EXPIRES: 30/4/2022.
- 3942966 LEASE NO. LE 305016 (3942965) MAY NOT BE TRANSFERRED, MORTGAGED, SUB-LEASED OR DEALT WITH IN ANY SPECIFIED MANNER WITHOUT THE CONSENT OF THE MINISTER ADMINISTERING THE CROWN LANDS ACT 1989
- AB365809 LEASE OF LEASE 3942965 TO AIRFOTO PTY LIMITED OF SHOP 3, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 13/9/2009. OPTION OF RENEWAL: FIVE YEARS.
- AB879636 TRANSFER OF LEASE AB365809 LESSEE NOW KRUG AGENCIES PTY. LIMITED.
- AC192396 LEASE OF LEASE 3942965 TO DAWSON BROWN ARCHITECTURE PTY LIMITED OF SHOP 4, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 28/2/2007. OPTION OF RENEWAL: 1 YEAR.
- AC251936 LEASE OF LEASE 3942965 TO BARRENJOEY BOATING SERVICES PTY LIMITED OF SHOP 1, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK , PALM BEACH. EXPIRES: 28/2/2011. OPTION OF RENEWAL: 5 YEARS.
- AC522166 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LIMITED, NITOLA PTY LIMITED & N B T PTY LIMITED
- AF70815 TRANSFER OF LEASE AC251936 LESSEE NOW BIGWEST PTY LIMITED & NORTH SUMMER BAY INVESTMENTS PTY LTD
- AF495746 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LTD, NBT PTY LTD, NITOLA PTY LTD & CHAMPAMES LAKES PTY LTD
- AH20977 VARIATION OF LEASE AC251936 EXPIRY DATE NOW 28/2/2016.

- LAND THAT MAY BE THE SUBJECT TO A LICENCE AGREEMENT WITH COUNCIL OR THE CROWN HAS NOT BEEN INVESTIGATED IN THIS SURVEY.

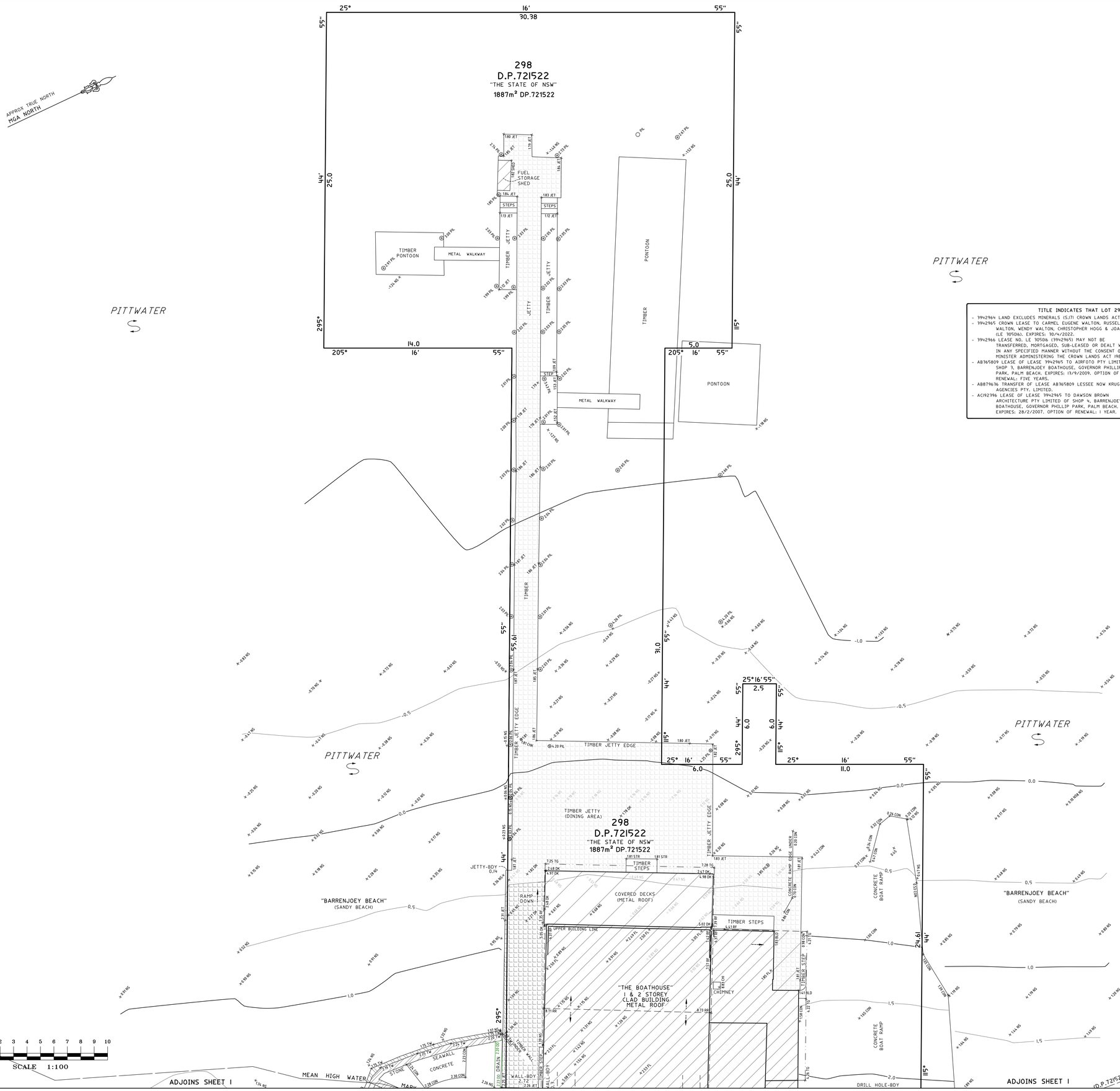
CLIENT:
BLUE PACIFIC CONSTRUCTIONS PTY LTD
74 CABARITA ROAD,
AVALON NSW 2108

SURVEY PLAN
SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOR PHILLIP PARK PALM BEACH NSW 2108

CMS SURVEYORS
C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

LGA: NORTHERN BEACHES		SHEET 2 OF 3	
SURVEYED L.J.	DRAWN R.N./GP	CHECKED L.J.	APPROVED S.M./MDL
SURVEY INSTRUCTION 17534C	SCALE 1:100 @ A0	DATE OF SURVEY 05/02/18-17/07/18 12/06/19-19/08/19	
DRAWING NAME 17534detail		ISSUE 2	
CAD FILE 17534Cdetail 2.dwg			

A0



TITLE INDICATES THAT LOT 7005 & 7006 IN D.P.1117451 IS SUBJECT TO:

- THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
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TITLE INDICATES THAT LOT 298 IN D.P.721522 IS SUBJECT TO:

- 3942964 LAND EXCLUDES MINERALS (S.17 CROWN LANDS ACT 1989)
- 3942965 CROWN LEASE TO CARMEL EUGENE WALTON, RUSSELL WALTON, WENDY WALTON, CHRISTOPHER HOGG & JOANNE HOGG (LE 7050(4)). EXPIRES: 30/4/2022.
- 3942966 LEASE NO. LE 7050(6 (3942965) MAY NOT BE TRANSFERRED, MORTGAGED, SUB-LEASED OR DEALT WITH IN ANY SPECIFIED MANNER WITHOUT THE CONSENT OF THE MINISTER ADMINISTERING THE CROWN LANDS ACT 1989
- AB765809 LEASE OF LEASE 3942965 TO AIRFOTO PTY LIMITED OF SHOP 3, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 13/9/2009, OPTION OF RENEWAL: FIVE YEARS.
- AB879636 TRANSFER OF LEASE AB765809 LESSEE NOW KRUG AGENCIES PTY. LIMITED.
- AC192396 LEASE OF LEASE 3942965 TO DAWSON BROWN ARCHITECTURE PTY LIMITED OF SHOP 4, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK, PALM BEACH. EXPIRES: 28/2/2007. OPTION OF RENEWAL: 1 YEAR.
- AC259136 LEASE OF LEASE 3942965 TO BARRENJOEY BOATING SERVICES PTY LIMITED OF SHOP 1, BARRENJOEY BOATHOUSE, GOVERNOR PHILLIP PARK , PALM BEACH. EXPIRES: 28/2/2011. OPTION OF RENEWAL: 5 YEARS.
- AC522166 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LIMITED, NITOLA PTY LIMITED & N B T PTY LIMITED
- AF708115 TRANSFER OF LEASE AC259136 LESSEE NOW BIGWEST PTY LIMITED & NORTH SUMMER BAY INVESTMENTS PTY LTD
- AF495746 TRANSFER OF LEASE 3942965 LESSEE NOW ISLAND GETAWAY PTY LTD, NBT PTY LTD, NITOLA PTY LTD & CHAMPAMES LAKES PTY LTD
- AH20977 VARIATION OF LEASE AC259136 EXPIRY DATE NOW 28/2/2016.

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-
-
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

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TB = TOP OF BANK
TG = TOP OF GUTTER
TR = TREE
TW = TOP OF WALL
+ ELECTRICITY OVERHEAD
= SEWER UNDERGROUND
TREE SPREAD-DIAMETER-HEIGHT

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.
MARKS ADOPTED: PM16657 & PM40338

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: PM 16657
R.L. 2.171 (ORDER LZ)
SOURCE: S.C.I.M.S. (02/02/18)

2	LOCATION PLAN ADDED, LOT 7005 SCALED AND BOUNDARY OFFSETS ADDED	30/04/20
1	FIRST ISSUE	21/08/19

CLIENT:
BLUE PACIFIC CONSTRUCTIONS PTY LTD
74 CABARITA ROAD,
AVALON NSW 2108

SURVEY PLAN
SHOWING DETAIL & LEVELS OVER LOT 298 IN D.P.721522 "THE BOATHOUSE" GOVERNOR PHILLIP PARK PALM BEACH NSW 2108

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/39A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

LGA: NORTHERN BEACHES | SHEET 3 OF 3

SURVEYED	DRAWN	CHECKED	APPROVED
L.J.	R.N./GP	L.J.	S.M./MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
17534C	1:100 @ A0	05/02/18-17/07/18 12/06/19-19/08/19

DRAWING NAME: 17534detail
ISSUE: 2
CAD FILE: 17534Cdetail 2.dwg

13. APPENDIX E – SURVEYOR CORRESPONDENCE

Subject: FW: Boat House - Palm Beach #17534D
Attachments: 7005 1117451.pdf

From: Stuart McEvoy <SMcEvoy@cmssurveyors.com.au>
Date: 24 April 2020 at 10:11:37 am AEST
To: "bluepacificconst@bigpond.com" <bluepacificconst@bigpond.com>
Subject: RE: Boat House - Palm Beach #17534D

Hi Peter,

Lot 7005 Folio attached – Land owner is NSW Govt (Crown Lands) – No evidence of any dealing referring to a lease/licence

I hope this helps, please call me if you wish to discuss further

Best regards,

Stuart McEvoy | Director - Registered Land Surveyor
BEng(Geom.)(Hons)UNSW MIS NSW MSSSI

CMS SURVEYORS

SYDNEY
Head office
02 9971 4802
PO Box 463,
Dee Why NSW 2099

COOTAMUNDRA
02 6942 3395
PO Box 525,
Cootamundra NSW 2590

www.cmssurveyors.com.au

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Winner 2017 Awards - Extra & Innovation
Winner 2016 Awards - T Excellence

From: Stuart McEvoy
Sent: Friday, 24 April 2020 9:37 AM
To: bluepacificconst@bigpond.com
Subject: RE: Boat House - Palm Beach #17534D

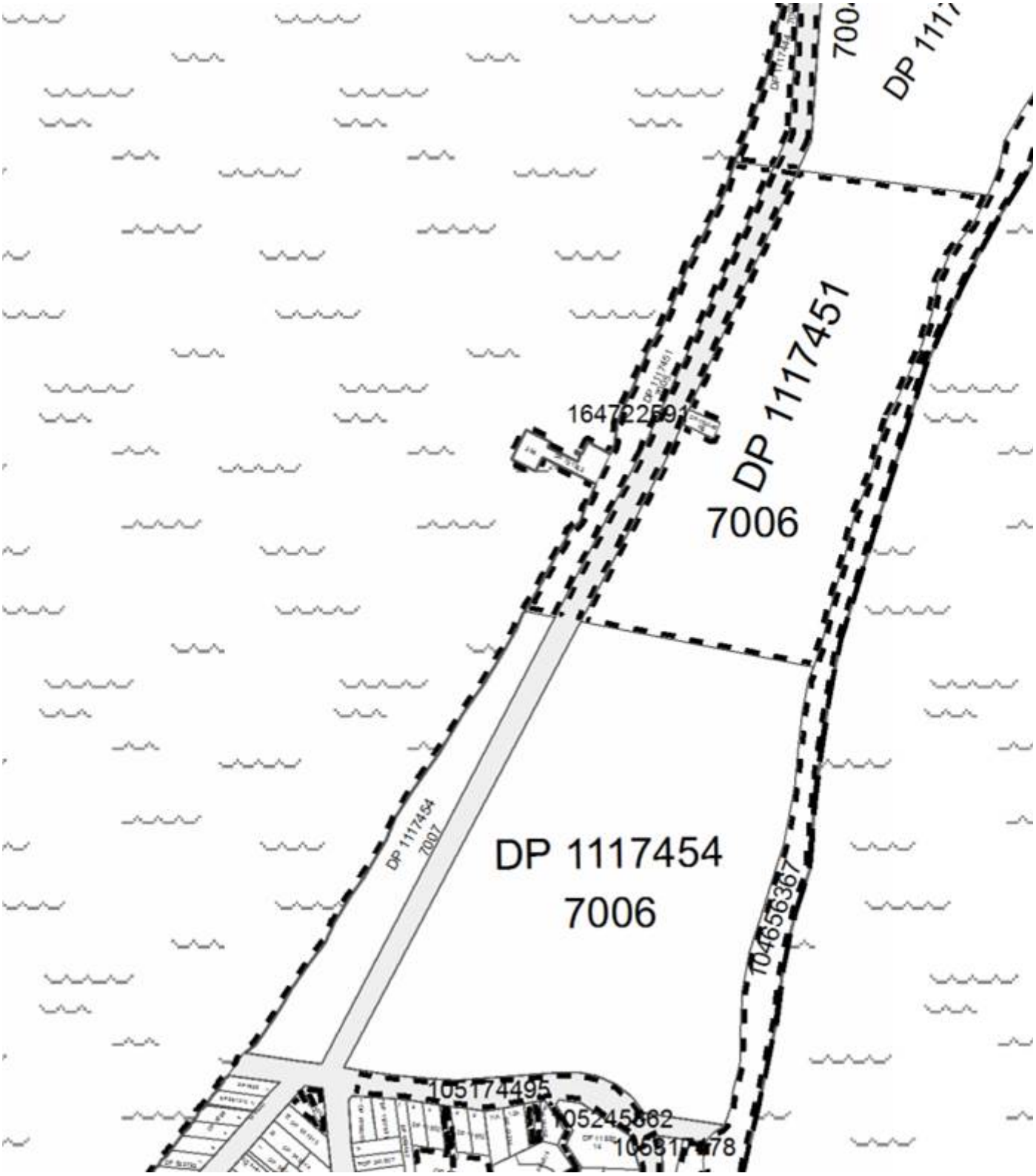
FFYI, cheers

From: Stuart McEvoy
Sent: Wednesday, 22 April 2020 10:01 AM
To: bluepacificconst@bigpond.com
Subject: Boat House - Palm Beach #17534D

Hi Pete,

Will this help ?

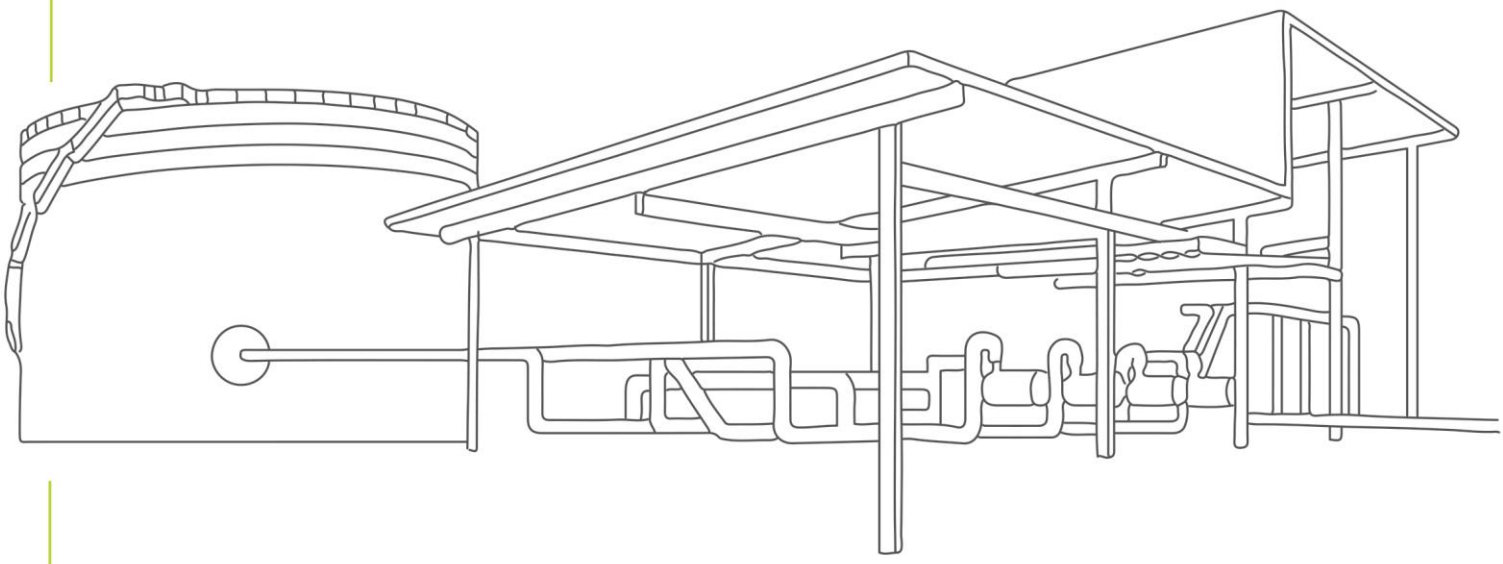

DP 721522
298
DP 1117451
7005
132
DP 752046
DP 111
7006
7007
7006
DP 1117454
DP 1117454


DP 1117451
7006
DP 1117454
7006
DP 1117454
7007
105174495
105245862

Cheers,

14. APPENDIX F – DANGEROUS GOODS REPORT

ASSESSMENT REPORT – DG ADVICE



TFA Project Group

CREATE · PLAN · DELIVER

PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

REPORT

AS1940:2017 DESIGN COMPLIANCE

CLIENT: Blue Pacific Construction

ADDRESS: Blue Pacific Constructions Pty Ltd
Beach Road Palm Beach NSW 2108

TFA REFERENCE: 20225

TFA CONTACT: Keith Sharp

Document Control:

REVISION	DATE	PREPARED BY	REVIEWED BY	COMMENTS
1	04/08/2020	B.Kallichurn	K. Sharp	Client Issue
2	07/08/2020	B.Kallichurn	K. Sharp	Amended LPG Location
3	11/08/2020	B.Kallichurn	K. Sharp	Modified LPG Layout
4	11/08/2020	B.Kallichurn	K. Sharp	Minor amendments
5	08/02/2020	B.Kallichurn	K. Sharp	Updated to reflect DA updates (LPG only)

TFA Project Group

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Fortitude Valley QLD 4006
H/O Phone: +61 7 3854 2900
Fax: +61 7 3854 2999

SYDNEY
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33 Lexington Drive
Bella Vista NSW 2153
NSW Phone: +61 2 8814 5219
Australia Wide: 1300 794 300

MELBOURNE
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401 Docklands Drive
Docklands VIC 3008
VIC Phone: +61 3 9640 0206
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PERTH
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1060 Hay Street
West Perth WA 6005
WA Phone: +61 8 9480 0430
ABN: 34 612 132 233

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Pacific Blue Constructions (herein referred to as the Client), have engaged the services of the TfA Project Group to conduct a desktop study and assessment for the proposed storage of 210L of boat fuel in a fuel store and 5 x 140kg LPG cylinders (filled insitu) adjacent to the bin area at the Boat house (Beach Road Palm Beach NSW 2108) property. TfA have considered compliance against AS1940:2017, AS1596:2014 and AS60079.10.1: 2009.

The 210L drum of boat fuel in the proposed fuel store shed is considered minor storage under AS1940 and the proposed installation is in general accordance with the requirements of AS1940.

The nearby sewerage control panel must be installed a minimum of 1.5m above the ground or alternatively moved to a distance of 5m to avoid the hazardous zone.

The proposed location for the 5 x 140kg LPG cylinders stored adjacent to the bin area is considered to be in general accordance with the requirements of AS1596.

An LPG detector and light is proposed to be installed. It is recommended the detector be located at the loading bay end of the cylinders near the ground. The light should be located in a highly visible location. Deliveries at the loading bay should not be permitted if an LPG leak is detected or during in-situ filling of the LPG cylinders.

2.0 CLASSIFICATION METHODOLOGY

2.1 Basis

The basis of this review, as provided by the Client is as follows:

Boat Fuel:

- **Fuel stored:** 210L of Premium Unleaded 95, UN1203, ADG class 3, Packaging Group II, GHS category 2
- **Shed details:** 1,500mm x 1,600mm concrete shed with single door.
- **Additional fuels/LPG stored**: None
- **Fuel decanted in shed**: Yes
- **Drawings used in assessment:** SD01 20/2/20, SD03 20/2/20
- **Applicable standard:** AS1940: 2017 and AS60079.10.1: 2008

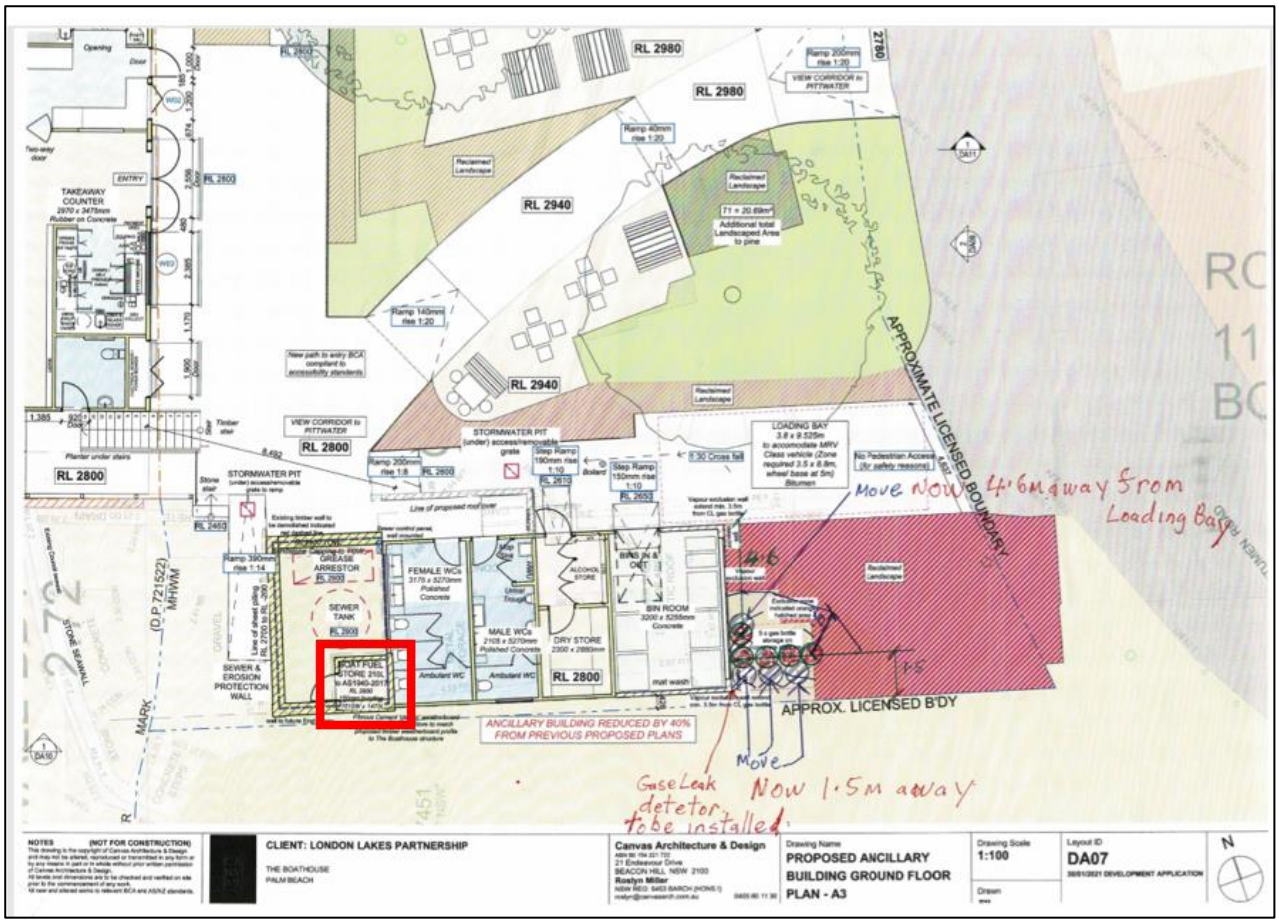

Figure 1: Fuel shed location – (extract drawing DA07)

LPG bottles:

- **LPG stored:** 5 x 140kg LPG gas bottles, , ADG class 2, Flammable Gases: Category 1
- **Storage details:** Bottles filled in-situ and connected in service
- **Ventilation:** Adequate (stored outside)
- **LPG filling on-site**: Yes in-situ
- **Drawings used in assessment:** DA07 (received 05/02/2021)
- **Applicable standard:** AS1596: 2014 and AS60079.10.1: 2008

2.2 General

- Review the information (drawings and images) provided by the Client.
- Desktop review only of drawings to confirm product volume and spillage containment volume.
- Identify relevant separation distance criteria compliance.
- This assessment and the check list has been prepared in accordance with:
    i. AS1940:2017 - the storage and handling of flammable and combustible liquids
    ii. AS60079.10.1:2008 – classification of areas explosive gas atmospheres
    iii. AS1596:2014 – The storage and handling of LP Gas
- The resulting classifications from the method prescribed by AS1940:2017, AS1596:2014 and AS60079.10.1:2008 are assessed with the most appropriate classification adopted for each particular source of release.

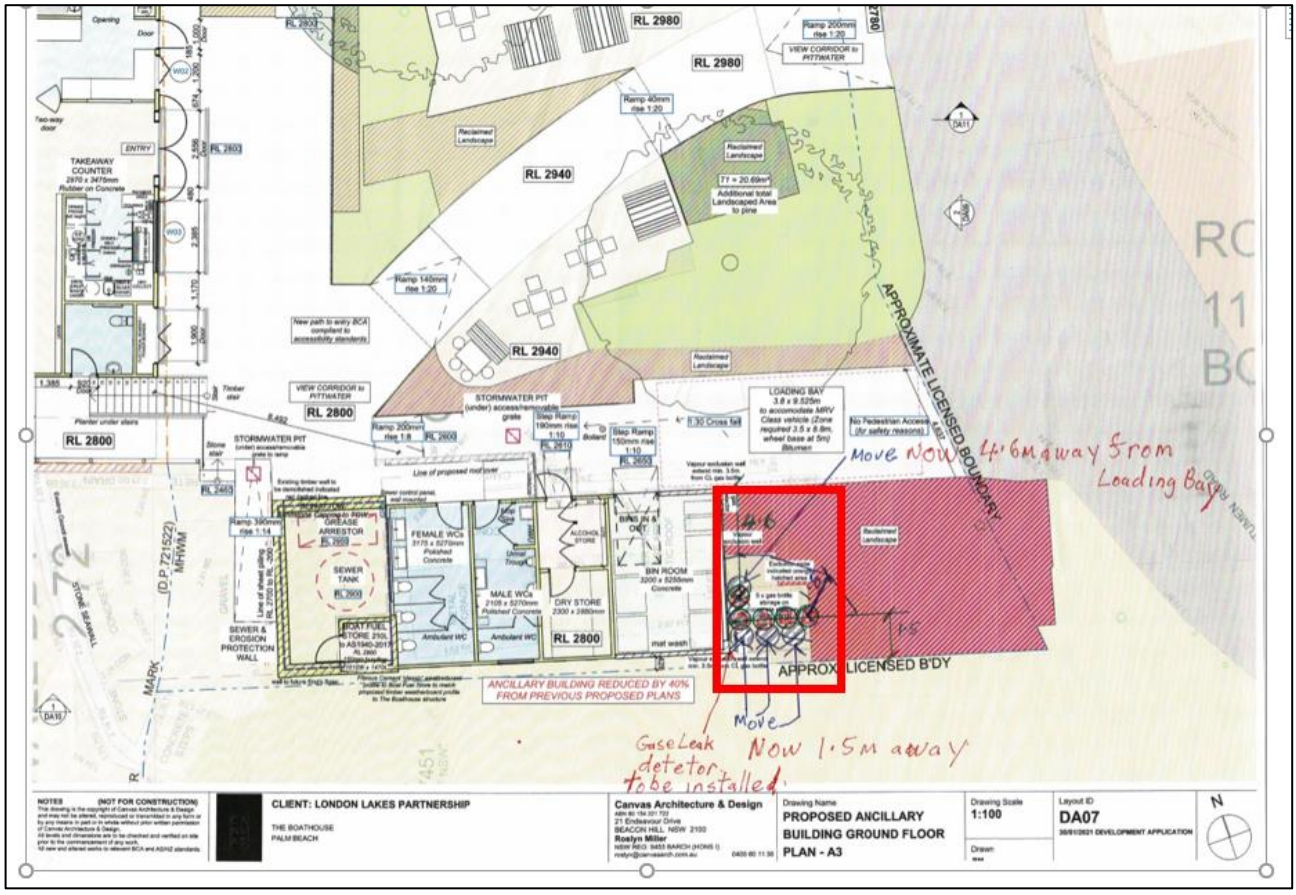

Figure 2: LPG Cylinder location (extract drawing D07)

2.3 Assumptions and Qualifications

The assessment is based on a desktop review of the following information provided by Pacific Blue Constructions and the drawing in figure 2. The following qualifications are deemed imperative:

<u>Fuel Store</u>

- Fuel storage for 210litres of 95/98 petrol for boat hire with decanting taking place inside the store.
- Size of internal floor space 1590/1600 at rl 2.9 with bunding height of 150 making it Rl 3.05, being 250mm above the FFPL OF Rl 2.8
- Adjoining wall separating fuel store from ancillary building is 190 concrete filled besser block 60/60/60 rated
- Fuel store ceiling will be 2 layers of fire check

- The other fuel store walls will be non-combustible from the inside
- The southern elevation shows a wall area inside the room of 4.6m^2. However with ceiling height for the room set at 2.4 then effective area for wall from inside the room is 3.84m^2. Metal louvres to be installed on southern wall with ventilation area of 2.3m^2 which exceeds 50% of wall area.
- The door is 4.4 m away from the control panel for the sewer
- We are 5m away from the MHWM and beyond that water
- The door will be lockable from the outside.
- Light within fuel store to be hazard rated
- There are no buildings or source of fire to the south just an open space with no chance of a building being built in the future.

LPG Cylinders

- Position of bottles as shown in figure 2.
- Distance to closest edge of loading bay has been increased from 2.9m to 4.6m from LPG bottles.
- Delivery trucks are now located outside the hazardous zone.
- As the loading bay is 3.8m wide and a typical MRV CLASS VEHICLE is 2.5m, it is highly unlikely that the truck would encroach on the reclaimed landscape are.
- The distance from the side of the leased bound (southern end) to centre of gas bottles is a minimum 1.5m.
- The parking area to the east of the LPG bottles (as illustrated in previous version of the report) is now a landscape area only
- There is a 1.5m exclusion zone in front of the bottles from centre of bottles
- Based on site photos there appear to be no protected places or fixed sources of ignition within 3.5m to the south of the bottles, just an open space.
- Gas detection device to be installed attached to a flashing light.
- There are no forklifts used on site for unloading as the space is to small and no storage facility for them.

2.4 Materials properties

- As advised by the Client, no Safety Data Sheet (SDS) is available. The Client advised that Premium Unleaded 95 would be an adequate representation of the fuel stored on site.

2.5 Volume of product stored

- 210L fuel
- 5 x 140kg LPG

2.6 Storage conditions

Guidelines summarised in the Executive summary table may be used to classify each application on a case by case basis.

3.0 ASSESSMENT:

3.1 AS1940: 2017

AS1940 Clause No.	Criteria	Applicable (Y/N)	Compliant (Y/N)	Comment
	Location of minor storage			
2.2.4	Separation between minor storage and other stores. A minor storage shall be separated from any other store of flammable and/or combustible liquids that is larger than minor storage by— (b) at least 5 m	N	N/A	
Table 2.1	Up to 250L of flammable PG II permitted at commercial buildings, factories, workshops, hospitals and warehouses: a) In attached outhouses if separated by partition having an FRL of 60/60/60; or b) Outside, or in a detached shed or outhouse separated from the factory or workshop by at least 1m	Y	Y	210 L drum of petrol considered minor storage. Client installing 190mm concrete block wall (min 60/60/60) between shed and ancillary building. As per AS3600:2018, 175mm effective thickness provides a fire resistance period (FRP) of 240min for insulation
2.3.1 (d)	The storage shall be adequately ventilated	Y	Y	We understand one wall to be metal louvres with over 50% open area which meets the criteria of adequate ventilation. Refer recommendations (section 4.5.4.1 page)
	Operations			
2.3.2 (a)	Persons who handle the liquid shall be fully aware of the hazards involved	Y	-	Client to include in Operating Manual
2.3.2 (b)	All storage areas shall be secured against access by unauthorised persons at all times	Y	Y	Fuel shed to be lockable
2.3.2 (c)	Packages shall not be placed where they could hinder escape from a building in an emergency	Y	Y	Client to include in Operating Manual
2.3.2 (e)	Packages should be closed when not in use.	Y	Y	Client to include in Operating Manual
2.3.2(f)	The area in and around the minor storage shall be kept free of combustible materials and residues	Y	Y	Client to include in Operating Manual
2.3.2(g)	Any materials that might react dangerously if mixed shall be kept apart so that the possibility of reaction is minimized, e.g. fuel and pool chlorine	Y	Y	Client to include in Operating Manual

2.3.2 (h)	Liquids should not be stored near any hot surfaces (e.g. steam pipes, furnace walls, or engines) or where they might be accidently exposed to heat (e.g. from escaping steam)	N/A	N/A	
2.3.2 (i)	Liquids should be transferred and moved in a manner that reduces the likelihood of spillage, vapour escape or fire	Y	Y	Client to include in Operating Manual
2.3.4	Spills to be cleaned up immediately. Any waste to be disposed of immediately, in accordance with local regulations.	Y	Y	Spill kit to be kept nearby.
2.3.4	Liquids shall not be allowed to reach ignition sources, stored of other chemicals, or combustible materials (e.g. timber and paper), or flow into drains or into neighbouring land, or enter any creek, pond or waterway.	Y	Y	Internal light nominated as hazardous rated. Shed to be bunded and spills cleaned up immediately. Client to include in operating manual
	Fire protection and warning signs			
2.3.5(a)	At least one portable fire extinguisher, having a suitable rating for use within the range of materials being kept, shall be readily accessible and adjacent to the minor storage area. Where liquids are stored on open land, a fire extinguisher shall be provided if the liquids are decanted or transferred with 5m of the storage.	Y	Y	Fire extinguisher to be allowed for.
4.5.4.1	Natural ventilation-a natural ventilation system shall comprise one of the following, as appropriate to the design of the store: (a) At least two walls completely open to outside atmosphere (see figure 4.5 (a) in AS1940:2017) (b) A wall of wire mesh, or fixed louvres, lattice or the like, having at least 50% of its area as openings, is considered completely open. (c) One wall completely open to outside atmosphere, with no other vents, provided that the distance to, and the length of, the opposite wall do not exceed the length of the open wall (see figure 4.5 (b) in AS1940:2017) (d) Vents in one external wall, provided that the wall is at least 6m long and the opposite wall is not more than 5m away from it (e) One wall open to atmosphere as in Item (b) and vents in one opposite wall is not more than 50m away from it (f) Vents in two opposing walls	Y	Y	Shed construction to satisfy one of adequate natural ventilation criteria - metal louvres with over 50% open area.

3.2 Assessment against AS60079.10.1: 2009 - classification of areas explosive gas atmospheres.

3.2.1 210L Fuel storage:

3.2.1.1 Equipment Group and Temperature Classification:

Based on the SDS and AS/NZS 60079.10.1:2009 for the flammable material stored and handled within boat house, the most conservative classification is a Gas Group of IIA and a Temperature Class of T3.

3.2.1.2 ZA.5.2.3 Package storage including drum or pail storage

Whilst the shed is adequately ventilated in accordance with AS1940 ventilation is considered differently when classifying hazardous areas under AS60079.10.1. The extent of hazardous zones will be as follows:

(i) Where packages may be opened for occasional decanting, sampling or testing—extent of inadequately ventilated space, e.g. interior of structure.....Zone 1

(ii) Outside inadequately ventilated space to a height of 1.5 m above ground level and 5 m laterally from any opening in the space.....Zone 2

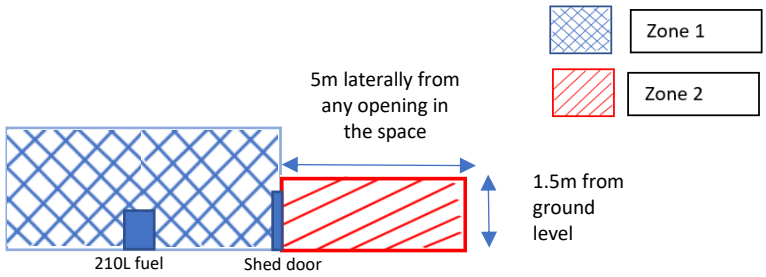

Figure 3: Package storage including drum or pail storage – inadequate ventilation

Based on the above it is noted the sewerage control panel is currently located 4.4m from the fuel store door. To avoid the hazardous zone is shall be installed a minimum of 1.5m above the ground or moved to a distance of 5m.

3.2.2 LPG storage

The basis for the LPG assessment is the 5 x 140kg LPG cylinders stored in the open area adjacent to the prep and washing area as advised by Blue Pacific Construction. Cylinders to be filled in-situ and connected for use. Note 140kg bottles non-standard size, if site chooses to upgrade to 5 x 210kg bottles, then the following assessment still applies:

3.2.2.1 Assessment against AS1596:2014 – The storage and handling of LP G

<u>As per Table 2.1:</u>
Maximum quantity for minor storage and usage = 60kg
Blue Pacific Construction store 5 x 140kg cylinders on site so this is **not** considered minor storage

Aggregate capacity (water capacity) = (5 x 140kg) x 2.3* = 1,610L
**1 kg LPG = 2.3L (water capacity) as per table C1 page 135*

As per table 4.1:
Cylinder locations
For aggregate capacity >1,000L ≤2,500L, minimum distance from **public places = 1.5m** and minimum distance from **protected place = 3m ****
*** this distance may be reduced to zero where there are no confining structures (other than the protected place in question), such as a solid fence or building, within 3m.*

Definitions:
Public places: (applicable clause extracted) Any place, other than private property, open to the public and including a street or road. Note LPG stored within site boundary – note within the site boundary is not considered public place.
Protected places: is a factory, office, workshop, store warehouse shop or building where people are employed, except a building used for the storage and handling of LPG.

General cylinder location criteria 4.4.3

- Cylinder location must not obscure or restrict access to the cylinders for refilling or egress from the building
- Nearby fences, walls or vapour barriers must not prevent cross ventilation.

The cylinders must be located at least

- 1m from doors or building air vents
- 1m from pits or drains
- 500mm away from openable windows.

Based on the above assessment, the proposed location for the LPG storage in figure 2 is considered in general accordance with the requirements of AS1596.

3.2.2.2 Assessment against AS60079.10.1: 2009 - classification of areas explosive gas atmospheres.

It must be noted that any electrical equipment installed within the hazardous zones must be certified for use in hazardous areas. It is recommended that non-hazardous electrics such as light switches, GPO's. lights etc are installed outside the hazardous zone.

ZA.6.5.2.17 Cylinders, whether in storage or installed for use, adequately ventilated, in situ fill type (with limited gas bleeding for contents checking) (refer AS60079.10.1:2008- ZA.43)

Within space 0.5 m above and 1.5 m laterally from any cylinder valve, extending to a distance of 3.5 m laterally at the base of the cylinder .....Zone 2

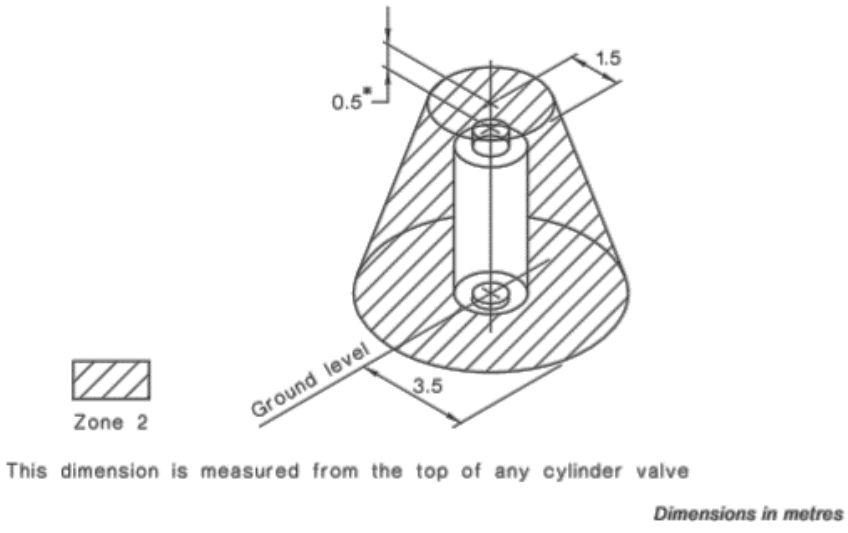

Figure 4: In situ fill cylinder (as per AS60079.10.1 - Figure ZA.43)

It is noted that:

- Distance to outside edge of parking bay previously noted as 2.9m. This distance is now 4.6m;
- As the parking bay is 3.8m wide and a typical MRV CLASS VEHICLE is 2.5m, it is highly unlikely that the truck would impede the reclaimed landscape are.
- The parking area to the east of the LPG bottles (as illustrated in previous report) is now a landscape area only
- In addition an LPG detector and light is proposed to be installed. It is recommended the LPG detector is installed at the loading bay end of the cylinders near the ground. The light should be in an easily visible location for staff and delivery personnel;
- The window in the adjacent wall are proposed to be a minimum of 600mm above the cylinders outside the hazardous zone;
- The proposed vapour barrier walls extend 3.5m horizontally from the cylinders effectively preventing the hazardous zone from extending into the bin enclosure.

4.0 OPERATING PROCEDURE GUIDELINES

Refer to AS1940:2017 Section 9 for complete guide on Operating Procedures, note below extract from AS1940:2017 Section 9 for clarity and general inclusions.

4.1 General requirements

Safe systems of work, including procedures commensurate with the quantity and nature of the liquids being kept, shall be developed, documented and implemented.

Written procedures shall be appropriate to the installation and shall include the following:

- A site plan (or plans) indicating tanks, plant, main pipework, switchboards or substations, emergency stop valves or actuating devices, fire protection systems and drainage.
- Operating procedures, covering all aspects of the day-to-day operation of the installation.
- Maintenance procedures, covering regular testing, inspection and monitoring of the equipment.
- Emergency procedures, covering actions to be taken in the event of fire, spillage, accident, equipment failure or other abnormalities or emergencies (see also Section 10).
- Construction and maintenance procedures, covering new facilities and repairs to and modification of existing plant.

4.2 Operating procedures

Operating procedures shall include, but not be limited to, the following as appropriate: (a) Initial commissioning procedures.

- Normal handling procedures.
- Liquid transfer procedures.
- Monitoring of essential functions and components.
- Control of hazards, including ignition sources.
- Manufacturer’s operating instructions for equipment.
- Earthing and bonding.
- Fault conditions.
- Housekeeping and site upkeep.
- Isolation, deactivation and identification of equipment not in use.
- Maintenance of clear spaces for access.
- Management of leakage, spillage and clean-up.
- Personnel safety and protective equipment.
- Environmental monitoring.
- Operation of utilities.
- Fire protection systems.

- Control of access, movement and activities.
- Every endeavour shall be made to prevent leaks or spills, and to control them if they do occur. A spill response kit shall be readily available where flammable or combustible liquids are stored, dispensed or in transit storage in order to prevent spills from reaching ignition sources, stores of other chemicals, or combustible materials (e.g. timber and paper), or flow into drains or onto neighbouring land, or enter any creek, pond or waterway. The following is a typical list of such materials and equipment:
- Adequate quantities of absorbent material, e.g. absorbent pads, loose absorbent or suitable proprietary substances.
- A sufficient number of resealable waste-recovery containers, e.g. drums, made of materials compatible with the substances being kept and appropriately marked as being for emergency use only.
- Portable pumps and decanting equipment. NOTE: Petrol-powered or non-flame proofed electric pumps are unsuitable for use with flammable liquids.
- Shovels.
- Yard brooms.
- Booms (on-ground and floating).
- Drain covers and drain plugs.

5.0 RECOMMENDATIONS

Boat Fuel storage

- Include operating procedure (refer section 5 above and section 9 - AS1940:2017 for guidelines)
- Store to be clear of combustible vegetation/refuse for a distance of at least 3m
- Fuel shed to be lockable and non-combustible construction
- Only hazardous certified electrical equipment to be installed in hazardous areas as described in section 3.1 above.
- The sewerage control shall be installed a minimum of 1.5m above the ground or moved to a distance of 5m.

LPG storage

- Cylinders should be stored on a concrete pad upright and prevented from falling.
- It is recommended the LPG detector is installed at the loading bay end of the cylinders near the ground. The light should be in an easily visible location for staff and delivery personnel.
- Unloading of trucks at the loading bay should not be permitted if an LPG leak is detected or during in-situ filling of the LPG cylinders.

Plans of management to be signed off before the building can receive its OCCUPATIONAL CERTIFICATE from the certifier.