Rienco Consulting

Providing Specialist Services in the Fields of Hydrology and Hydraulics

Flood Impact Statement
Proposed Mixed-Use Development
50 Morisset St, Queanbeyan

for Lockbridge Pty Ltd

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Report title:

Flood Impact Statement
Proposed Mixed-Use Development at
50 Morisset Street, Queanbeyan

Prepared for:

Lockbridge Pty Ltd

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1 INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF THIS REPORT

The owners of 50 Morisset St, Queanbeyan, propose mixed residential/commercial development at the subject site, consisting of residential apartments and retail space. The subject site is flood affected in the 1% AEP and Probable Maximum Flood (PMF) event based on the results of the *Queanbeyan Floodplain Risk Management Study and Plan (2021)*.

As such, the client has engaged Rienco Consulting to prepare a Flood Impact Statement suitable for lodgement with Queanbeyan-Palerang Regional Council (QPRC).

The purpose of this report is to:

a) Provide a summary of flood behaviour across the subject site and surrounds. This flood behaviour is sourced from Council's *Queanbeyan Floodplain Risk Management Study and Plan (2021)* via their flood certificate issued for the site.

b) Review the proposed development, together with the existing flood behaviour, and assess it against the prescriptive controls of the Queanbeyan Draft Flood Policy 2021 to confirm the suitability of the proposed development.

c) Summarise the above in a manner suitable for lodgement with QPRC for the Development Application for the proposed development (final report).

1.2 LIMITATIONS AND ASSUMPTIONS

This report has been strictly prepared for the purposes stated in this report for exclusive use by the client. No other warranty, expressed or implied, is made as to the advice included in this report. This study specifically focuses on flood behaviour at the subject site, given current conditions. This study does not address flood behaviour for other sites within the overall catchment.

2 BACKGROUND INFORMATION

2.1 SITE DESCRIPTION

The Site is located at 50 Morisset Street, Queanbeyan. It is located in the Queanbeyan commercial district and has a site area of approximately 800 m^2. **Figure 2.1-1** describes the subject site and surrounds, with the subject site shown indicatively in red. The existing site comprises an at-grade open carpark.

Figure 2.1-1 Overview of Subject Site

Note: Indicative site boundary shown in red. Image supplied by Nearmaps.

Based on survey provided by DZT Architectural Projects, the pavement levels at the frontage to the property range from RL +572.8m AHD (on Collett Street) to RL +573.8m AHD (on Morisset Street). The site frontage slopes east towards Collett Street.

2.2 PROPOSED DEVELOPMENT

The Applicant seeks approval for use of the Site as mixed use, predominantly residential development, including residential apartments, retail space and basement carparking.

2.3 SITE INSPECTION

We confirm that in the preparation of this advice, we have inspected the site and surrounds, to confirm the nature of any assumptions made in this report and the suitability of the information relied upon in this advice.

3 FLOOD RELATED MATTERS

3.1 EXISTING FLOOD BEHAVIOUR AND RISK PRECINCTS

The site is denoted as being flood affected by Council's *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021).* The 1% Annual Exceedance Probability (AEP) and the Probable Maximum Flood Levels (PMF) were identified from the QFRMSP. These are extracted from the QFRMSP as **Figure 3.1-1** and **Figure 3.1-2** respectively, with the subject site shown (approximately) by the red rectangle.

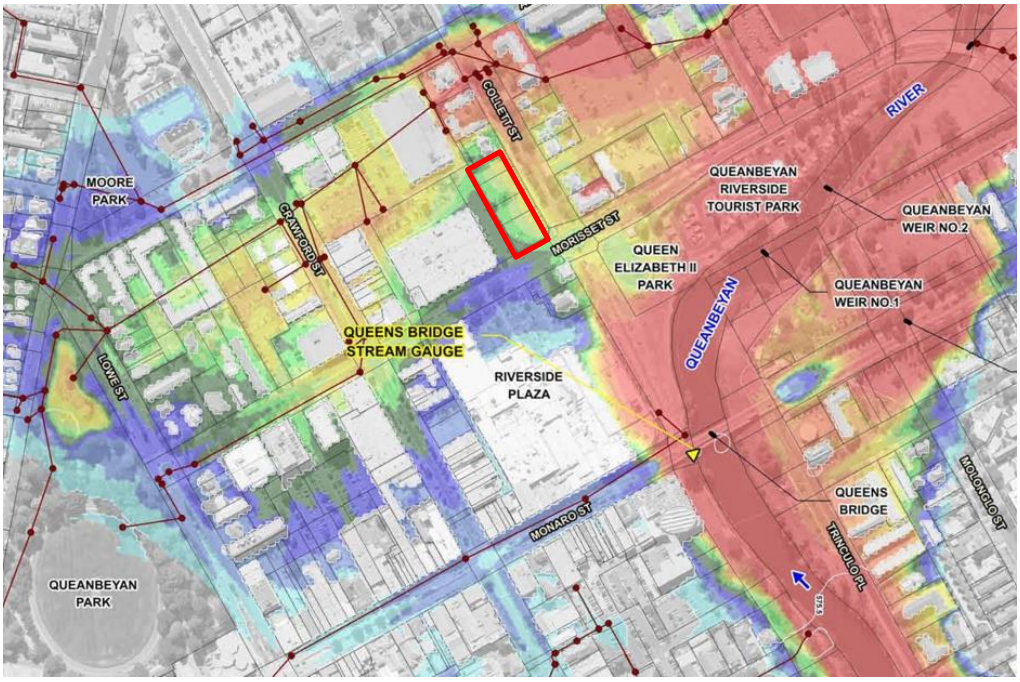

Figure 3.1-1 1% AEP Peak Flood Depth of Inundation

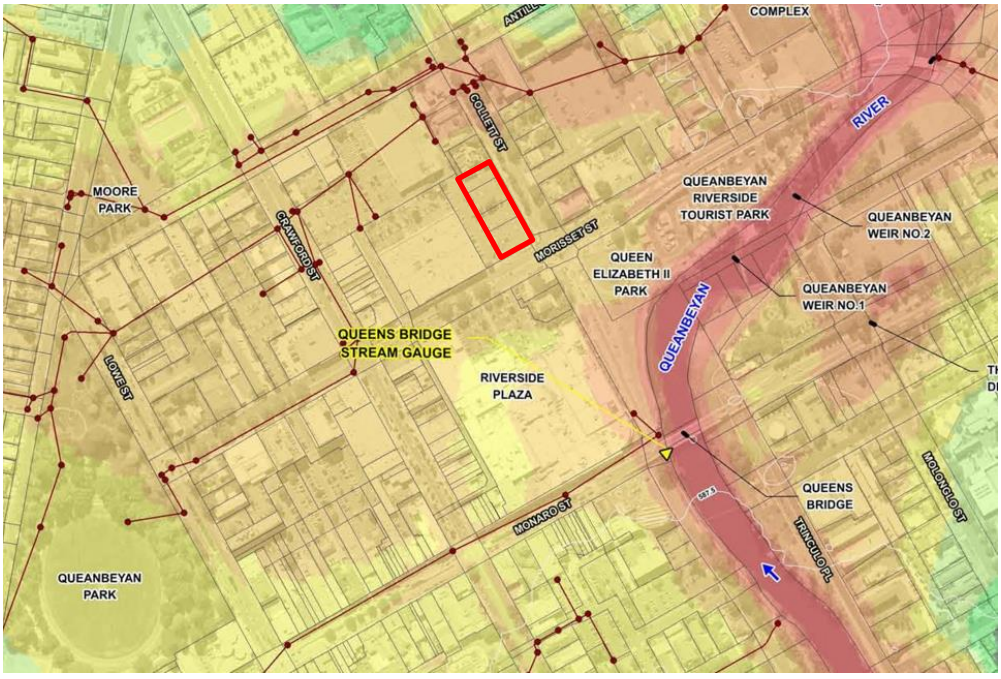

Figure 3.1-2 PMF Peak Flood Depth of Inundation

At the front of the site the lowest ground surface level is approximately RL +573.0m AHD, and the peak 1% AEP flood surface level is approximately RL +575.5m AHD. This equates to a peak flood depth of 2.5 metres. In the Probable Maximum Flood (PMF) peak flood depths are approximately 14 metres throughout the site.

The QFMRSP (2021) indicates that the vicinity of the proposed development is classified as being unaffected by local flooding. In mainstream flooding conditions, the QFMRSP (2021) indicates that the vicinity of the proposed development is classified as High Hazard Flood Storage. The QFMRSP (2021) describes the site as being within the Inner Floodplain (2B) planning control category.

4 MERIT-BASED ASSESSMENT

4.1 ADDRESSING QPRC LEP CLAUSE 5.21

Queanbeyan-Palerang Regional Local Environmental Plan (QPRLEP, 2022) sets forth its requirements for land for which the QPRLEP applies. **Table 4.1-1** describes each QPRLEP clause in relation to Clause 5.21, and commentary on how the proposed development relates to the requirements of the LEP.

Table 4.1-1 – LEP Requirements Addressed for Proposed Development

LEP Requirement Clause 5.21 (2)	How the Proposal Addresses the Requirement
Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development is compatible with the flood function and behaviour on the land.	The flood function is flood storage and the flood and the flood behaviour is • Peak flood depth of 2.5 metres in the 1% AEP event, and • Peak flood depth of 14 metres in the PMF event. The development is compatible with the above as it includes specific measures to take into account the flood function and behaviour on the land, viz: • FFL's meeting the DCP requirement. • Structural soundness of the building. • Evacuation controls meeting QPRC's guidance. It is therefore considered that the consent authority can be satisfied with respect to this clause.
Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties	Impacts on flood behaviour are anticipated to be minimal, given the minor change in built form across the site compared to the surrounding development (i.e. the surrounding obstructions to flow). The development is unlikely to adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties. It is therefore considered that the consent authority can be satisfied with respect to this clause.
Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood	Safe occupation of the land is enhanced by the proposal, as evacuation is facilitated, where required, in the PMF. It is therefore considered that the consent authority can be satisfied with respect to this clause.

Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development incorporates appropriate measures to manage risk to life in the event of a flood	Appropriate measures to manage risk to life in the event of a flood are achieved when the development includes: • FFL's meeting the DCP requirement. • Structural soundness of the building. • Evacuation controls meeting QPRC's guidance. It is therefore considered that the consent authority can be satisfied with respect to this clause.
Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.	The proposed development will not materially change flood behaviour, and does not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses. It is therefore considered that the consent authority can be satisfied with respect to this clause.
LEP Requirement Clause 5.21 (3)	**How the Proposal Addresses the Requirement**
In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the impact of the development on projected changes to flood behaviour as a result of climate change,	The QFRMSP (2021) concludes that *peak 1% AEP flood levels along the Queanbeyan River would generally be increased in the range 1.5 to 2.0 metres*. The impact of the development, on those changes, would be immaterially small. Therefore, the consent authority can be satisfied that this matter has been sufficiently considered.
In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the intended design and scale of buildings resulting from the development	The design and scale of buildings on the floodplain has been considered in the carrying out of this report. Therefore, the consent authority can be satisfied that this matter has been sufficiently considered insofar as a hydrologist can comment on the design and scale of buildings resulting from the development.
In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,	Appropriate measures to manage risk to life in the event of a flood are achieved when the development includes: • FFL's meeting the DCP requirement. • Structural soundness of the building. • Evacuation controls meeting QPRC's guidance. Therefore, the consent authority can be satisfied that this matter has been sufficiently considered.
In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the potential to	There is no need to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding,

modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.	because the building is designed commensurate with the flood behaviour. The surrounding area is not considered under any material threat from coastal erosion. Therefore, the consent authority can be satisfied that this matter has been sufficiently considered.

It can be seen from **Table 4.1-1** that the proposed development meets or exceeds QPRC's LEP requirements.

4.2 OTHER FLOOD-RELATED DEVELOPMENT CONTROLS

QPRC's DCP prescribes flood-related planning controls for all development on the floodplain. However, QPRC have recently adopted the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* which provides an updated set of planning controls for the subject site. It is acknowledged that these planning controls are not the planning controls contained within the current DCP, and that the DCP has a high statutory 'weight' than the recently adopted *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021).*

However, this is not to say that the new planning controls should not be applied, or are not relevant. It is the case that QPRC have adopted the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* and therefore adopted the planning controls. The inclusion of these planning controls into the DCP is simply a matter of process. In this circumstance, we consider that it is more prudent to assess the proposal against the controls in the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* because they are the modern set of controls, adopted by QPRC, that are catchment specific and informed by a modern assessment of flood behaviour and risk.

To this end, **Table 4.2-1** below summarise the relevant planning controls from the adopted *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* together with commentary on how the proposal can meet those controls. The development is 'commercial' within the Inner Floodplain (Hazard Category 2B) area. The residential are also met by default.

Table 4.2-1 – Applicable Flood-Related Planning Controls

DCP Control	How the Proposal Addresses the Control
Floor Level. Ground Floor Commercial - Floor levels to be equal to or greater than the 5% AEP flood level on the Queanbeyan River, or 1% AEP flood level plus 0.5 m freeboard due to local catchment flooding, whichever is the greater. Residential - Floor levels to be equal to or greater than the 1% AEP flood level plus 1.2 m freeboard.	The proposed FFL is RL +573.5m AHD for the ground floor commercial area. The 5% AEP flood level on the Queanbeyan River is RL +572.5m AHD. The 1% AEP flood level from the local catchment is confined to the northern portion of the site and is approximately RL +573.0m AHD. The proposed commercial FFL is greater than the 5% AEP flood level on the Queanbeyan River, and greater than the 1% AEP flood level plus 0.5 m freeboard due to local catchment flooding. The proposed residential FFL is RL +578.6m AHD. The peak 1% AEP is RL +575.5m AHD, being several metres above the 1% AEP peak flood surface level in the Queanbeyan River. The proposal meets the development control.

Building Components. All structures to have flood compatible building components below the 1% AEP flood level plus 1.2 m freeboard.	All materials on the architectural plans indicated for the structure are constructed from concrete, masonry or steel. This can be readily applied as a condition of consent. The proposal meets the development control.
Structural Soundness. Structure to be designed to withstand the forces of floodwater, debris and buoyancy up to the 1% AEP flood level plus 1.2 m freeboard.	This can be readily applied as a condition of consent, and included in the structural engineering scope at the Construction Certificate stage.
Flood Affectation. A Flood Risk Report may be required to demonstrate that the development will not increase flood hazard	This report constitutes compliance with this development control.
Below Ground Parking. Must have all access, ventilation and any other potential water entry point above the 1% AEP flood level plus 1.2 m freeboard and a clearly signposted flood free pedestrian evacuation route from the basement area separate to the vehicular access ramps Flood proofing to the 1% AEP flood level plus 1.2 m freeboard by mechanical or hydraulic means is not permitted	No below ground parking is proposed.
Evacuation Reliable internal access to the roof area of both the commercial and residential components of the building. Safe areas are to be provided on the roof of both the commercial and residential components of the building, the latter which must be set above the PMF. The areas must be sized so as to comfortably house all occupiers of the building under cover. A large window opening is to be provided on each residential floor level onto an area of external wall away from electricity connection to the building and free of projections which may prevent a rescue boat from approaching the escape window. The window is to be clearly marked as a potential escape route during times of flood.	 This is provided by the application, as described on the architectural plans. The roof of the building is set above the PMF and can be accessed via a hatch if required. This serves the emergency function without the need to comfortably house all occupiers of the building on the roof. This is provided by the application, as described on the architectural plans in the lift foyer area of each floor, up to the PMF level.
Management and Design Flood Risk Report may be required prior to development of this area	 This report constitutes compliance with this development control.

4.3 HYDRAULIC EFFECTS

Part 2.5.6 (a) (iii) of the QRDCP requires consideration of hydraulic effects of the development, viz:

> *Hydraulic Effects - A certificate from a suitably qualified Engineer will be required to show that the structure as designed will have virtually no effect on the flood levels at or*

> *upstream from the site of the subject building and will have no increase in stream velocity downstream of any part of the structure which will cause erosion or instability to any other structure or to the ground surface. If scouring is likely to occur the method of controlling such scourings is to be documented*.

After due consideration of the flood behaviour and the proposed development, we opine:

- The structure as designed will have virtually no effect on the flood levels at or upstream from the site of the subject building, and
- The structure as designed will have no increase in stream velocity downstream of any part of the structure which will cause erosion or instability to any other structure or to the ground surface.

The proposed development is infill development in the CBD of a town, commensurate with the objectives of the zone. It is implausible that any effects of the proposed development could be adverse, significant or detrimental to adjoining property.

All downstream land surfaces within hydraulic proximity of the proposed development are hard surfaces (i.e. asphalt, concrete etc). Any minor changes to flood behaviour as a result of the development could not plausibly impact on the ability of such surfaces to resist scour or erosion.

5 CONCLUSIONS AND RECOMMENDATIONS

Based on the information contained within this report, it can be concluded that:

- The subject site is located within the Queanbeyan River Catchment.
- Council have adopted the *Queanbeyan Floodplain Risk Management Study and Plan (2021)* and have provided indicative flood information at the site via their flood mapping within the QFRMSP.
- The subject site is affected by flooding in the 1% AEP event and the PMF.
- The Applicant seeks approval for use of the Site as a mixed use – residential and commercial building.
- QPRC's DCP prescribes flood-related planning controls for all development on the floodplain. However, QPRC have recently adopted the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* which provides an updated set of planning controls for the subject site.
- It is acknowledged that these planning controls are not the planning controls contained within the current DCP, and that the DCP has a high statutory 'weight' than the recently adopted *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021).*
- However, this is not to say that the new planning controls should not be applied, or are not relevant. It is the case that QPRC have adopted the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* and therefore adopted the planning controls. The inclusion of these planning controls into the DCP is simply a matter of process.
- In this circumstance, we consider that it is more prudent to assess the proposal against the controls in the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021)* because they are the modern set of controls, adopted by QPRC, that are catchment specific and informed by a modern assessment of flood behaviour and risk.
- We consider that the proposal wholly meets the requirements of the planning controls as noted in the *Queanbeyan Floodplain Risk Management Study and Plan (QFRMSP) (2021).*

Based on the information contained within this report, it is recommended that this report is included in the submission to QPRC for the proposed development.

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LOCATION CONTEXT PLAN

dezignteam | Lockbridge | Elanor

PROPOSED MIXED USE DEVELOPMENT
50 MORISSET STREET
QUEANBEYAN

SITE PLAN

rev	date	description
03	10/11/20 23	ISSUED FOR INFORMATION
02	03/11/23	ISSUED FOR INFORMATION
01	27/10/23	ISSUED FOR INFORMATION

scale **1 : 300 @ A1**

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revision **03** date **10/11/2023**