

225 Murray St, Allenstown Flood Hazard Assessment

Project Name:	225 Murray Steet. Flood Hazard Assessment		
Project Number:	22-340		
Project Address:	225 Murray Street, Rockhampton City (Lot 14 RP600212))	
Client:	Lance Goodman		
Client Contact:	Lance Goodman		
Dated:	19/09/22	Rev:	2

Revision	Revision	Issue Date
Original Issue	0	04/07/2022
Minor Updates	1	08/07/2022
Stormwater details & Sect 4.0 added (changes in italics)	2	19/09/22

1.0 Introduction

The scope of this document is to address the relevant provisions of the Rockhampton Region Planning Scheme 2015 with regards to the Fitzroy River Flood Overlay for 225 Murray Street, Rockhampton City.

Rev 2 : This report was previously submitted with no mention of the effects or heights of the relevant stormwater events. This revision aims to provide the necessary governance to this report suggesting the effects of stormwater are not as significant as flood waters and the development should be treated as such.

225 Murray St, as shown below, currently has Class 1a residential structure and seeks approval for a new Class 10a structure (carport).

The subject site is located in the flood hazard zone as defined by the Rockhampton Region Planning Scheme 2015 hazard overlays. As can be seen in Figure 2, the flood overlay map shows the site being within the H2 (medium) – H3 (high) zone.



Figure 1 - Site Location

2.0 Flood Hazard Assessment

The structure located at 225 Murray Street is and is a Carport structure. Due to its location, it triggers the need for a flood hazard assessment.

The purpose of the structure is to store cars and other items that are not suitable for indoor storage. The nature of the structures is such that it is generally open in nature, being that they would not obstruct the flow of flood waters, meaning that in a flood event water will be free to flow in and around the structure without causing nuisance turbulence or redirecting flows outside of the site.

It is seen that in a flood event, the site could be effectively managed with regards to achieving the acceptable outcomes set out in Appendix A by simply ensuring all doors are opened to allow water to flow unimpeded through the shed which would in turn mean existing flood risks are not made worse by alteration to the flow characteristics of the site. Further, insignificant increase in impervious area is seen to have resulted from the structures, hence the post-development case for the site will show very minimal impact on the peak discharge and stormwater quality.

Summarising, the structure covered under this report would not create any actionable nuisance to the surrounding properties.

3.0 Existing Site Conditions

The proposed site is situated within the Fitzroy River Flood Overlay Zones H2 – H3.



Figure 2 - Proposed General Arrangement

Figure 4 is an extract from the report "Flood Study Report Fitzroy River Flood Study, Rockhampton Regional Council" which was completed by Aurecon in 2011. This report shows that the peak depth in a 100 Year ARI is 0.0m to 0.5m. From the same report it was shown that the velocity of the water flowing through the site during a 100 Year ARI event will almost be negligible.



Figure 3 - Flood Depth Mapping (Aurecon, 2011)

It is seen that the proposal is acceptable based on the following:

- 1. The building is not habitable, and the amount of displaced floodwater is negligible.
- 2. Resilience to the existing flood event affects will be provided in accordance with the RRC Planning Scheme outcomes towards a defined flood event. This is achievable as the existing structure is constructed using structural steel. This coupled with the fact that the floodwater is slow moving due to being backflow from the Fitzroy River.
- 3. All electrical infrastructure has been installed at a minimum height of 1200mm above FFL.
- 4. Local and global (Riverine Flooding) flood heights will not increase as a result of the development. This is due to the fact that there will be no material change to existing hydraulic parameters and no loss of storage.
- 5. As there will be no change to depth or velocity, there will be no increase to the sites Flood Hazard Category and therefore no risk to persons, infrastructure or property.
- 6. There are no proposed earthworks aside from minor levelling of ground under the shed.
- 7. Sufficient notice period of two weeks has been the case for previous Riverine Flooding events and we know this would not change in the future. Given the structure is not habitable or commercial the management required after notice include:
 - 1. Removal of loose material and potential debris.
 - 2. Relocation of all equipment off site
 - 3. Relocation of all animals off site
 - 4. Open all doors and windows to allow ingress of flood waters

4.0 Stormwater Heights (added as Rev 2)

After our initial submission of this report an Information Request regarding this report which had no reference to Stormwater levels. Subsequent to that an application was made to Rockhampton Regional Council to gain the Flood report which had stormwater data within it. The following information was used from the RRC supplied Flood Report (attached in full as Appendix A).

<u>Riverine</u>		Creek \ Local Catchmer	<u>it</u>
AEP 1% WSL Min:	8.19	AEP 1% WSL Min: 7.84	!
AEP 1% WSL Max:	8.19	AEP 1% WSL Max: 7.99	
AEP 1% Velocity Min:	0.02	AEP 1% Velocity Min: 0.09)
AEP 1% Velocity Max:	0.11	AEP 1% Velocity Max: 0.57	,

Figure 4 – Excerpts from RRC Flood Date

After looking at the relevant data it is obvious that the 1% Stormwater Level is lower by 350mm and as such the provisions nominated in this report applicable to the floodwater management will also apply to the stormwater management.

5.0 Conclusion

There appears to be no great engineering infrastructure difficulties with the proposed changes to the aforementioned property. It is seen that the proposal will not affect flooding, either on the property or upstream/downstream in any way and conforms to the acceptable outcomes as set out by the RRC planning scheme.

Yours sincerely,

Scott Thomas Manager – B. Eng (Civil/Structural) RPEQ 16203

Appendix A : RRC Supplied Flood Report

Fitzroy River – H1 or H2 or North Rockhampton flood management area or Creek catchment planning area 2

Performance outcomes	Acceptable outcomes
Development in Fitzroy River flood areas – H1 (low hazard area) or H2 (medium hazard area) or North Rockhampton flood management area or Creek
catchment flood - planning area 2	
Editor's note—Refer to overlay maps <u>OM-8A</u> and <u>OM-8C</u>	A011
Development (including extensions) for non-residential purposes is able to	For non-residential development, at least thirty (30) per cent of the gross floor area of all
provide a safe refuge for people and for the storage of goods during times	new buildings and structures is located a minimum of 500 millimetres above the defined
of flood inundation.	flood level.
	Editor's note—Areas less than those nominated above may be supported where accompanied by a flood impact report in accordance with SC6 10— Flood bazard planning scheme policy.
	input report in decordance with <u>eco. To record indenting conome policy.</u>
	Development is for residential purposes.
	AND
	A01 2
	A report from a registered professional engineer of Queensland certifies that the
	development in the flood area will not result in a material increase in flood level or flood
	hazard on upstream, downstream or adjacent properties.
	As provided in this report
PO2	
Development is located to minimise susceptibility to and potential impacts	For residential uses the finished floor levels of all habitable rooms shall be constructed a
of flooding.	minimum of 500 millimetres above the defined flood level.
	No habitable rooms in the structures
	AND
	A02.2
	A report from a registered professional engineer of Queensland certifies that the
	development in the flood area will not result in a material increase in flood level or flood
	nazard on upstream, downstream or adjacent properties.
	As provided in this report.

 Table 8.2.8.3.1 Development outcomes for assessable development and requirements for accepted development (part)

Patcol Group | 225 Murray St, Flood Assessment Report, 22-340 | 6

PO3 Development avoids the release of hazardous materials into floodwaters.	AO3.1 All hazardous materials and hazardous manufacturing equipment and hazardous containers are located and stored a minimum of 500 millimetres above the defined flood level.
	No hazardous materials, hazardous manufacturing equipment or hazardous containers are to be stored at the site.
	Editor's note—Refer to the <u>Work Health and Safety Act 2011</u> and associated regulation, the <u>Environmental</u> <u>Protection Act 1994</u> and the relevant building assessment provisions under the <u>Building Act 1975</u> for requirements related to the manufacture and storage of hazardous substances.

Fitzroy River – H3-H4 or H5-H6 or Creek catchment flood planning area 1

Table 8.2.8.3.1 Development outcomes for assessable development and requriements for accepted development (part)

Performance outcomes	Acceptable outcomes
Development in Fitzroy River flood areas – H3-H4 (high hazard areas) or	r H5-H6 (extreme hazard areas) or Creek catchment flood - planning area 1
Editor's note—Refer to overlay maps <u>OM-8A</u> and <u>OM-8C</u>	
PO4	AO4.1
Development does not involve the further intensification of land uses and	AO4.1.1
does not increase the risk to people and property.	Development does not involve new buildings or structures.
Editor's Note—Flood hazard risk assessment can be undertaken in accordance with <u>SC6.10</u> — Flood hazard planning scheme policy.	 Development approval is proposed for existing structures OR AO4.1.2 Where involving the replacement or alteration to an existing non-residential building or structure: 1. there is no increase in the existing or previous buildings' gross floor area; and 2. the finished floor level of any replacement or alteration to an existing building is constructed a minimum of 500 millimetres above the defined flood level. No alteration to the existing structure OR

	AO4.1.3
	Where involving the replacement or alteration to an existing caretaker's
	Where involving the replacement of alteration to an existing caretakers
	accommodation, <u>dwelling house</u> or <u>dwelling unit</u> :
	1. there is no increase in the number of dwellings;
	2 there is no increase in the existing or previous buildings' gross floor area; and
	2. There is no increase in the existing of previous buildings gross noor area, and
	3. the finished floor level of all habitable rooms shall be constructed a minimum of 500
	millimetres above the defined flood level.
	No existing dwelling structure
	AND
	004.1.4
	A04.1.4
	Where located in the rural zone, the <u>total floor area</u> of class 10a buildings and structures on
	the site do not exceed a total of fifty (50) square metres, and are set back a minimum of
	twenty (20) metres from all site boundaries
	twenty (20) metres normali <u>site</u> boundaries.
	Structure not located in the rural zone.
P05	A05.1
Development avoids the release of hazardous materials into floodwaters	Materials manufactured used or stored on site are not hazardous in nature
	No bazardous materials to be manufactured, used or stored on site
	No hazardous matchais to be manufactured, dsed of stored off site.

Fitzroy River – all hazard areas, North Rockhampton flood management area or Creek catchment – all planning areas

Fable 8.2.8.3.2 Develo	pment outcomes fo	or assessable d	evelopment
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Performance outcomes	Acceptable outcomes
Development in Fitzroy River flood area – all hazard areas, North Rockha	ampton flood management area or Creek catchment flood – all planning areas
Editor's note—Refer to overlay maps <u>OM-8A</u> and <u>OM-8C</u>	
PO8	No acceptable outcome is nominated.
Development is located to minimise susceptibility to and potential impacts	
of flooding.	Development has been located to minimise susceptibility to and potential impacts of
	flooding.
PO9	AO9.1
Underground car parks are designed to prevent the intrusion of floodwaters.	Development with underground car parking is designed to prevent the intrusion of
	floodwaters by the incorporation of a bund or similar barrier a minimum of 500 millimetres
	above the defined flood level.
	No underground carparks.

PO10	
Development:	No acceptable outcome is nominated.
 does not result in any reduction of onsite flood storage capacity; or does not result in any change to depth, duration or velocity of floodwaters within the premises; and does not change flood characteristics outside the premises, including but not limited to causing: loss of flood storage; or loss of or changes to flow paths; or acceleration or retardation of flows; or any reduction in flood warning times elsewhere on the <u>floodplain</u>. 	 Development does not result in a reduction of onsite flood storage; Development does not result in a change to depth, duration or velocity of floodwater within the premises, and; Does not change flood characteristics outside the premises, including but not limited to causing; Loss of flood storage, Loss of or changes to flow paths, Acceleration or retardation of flows, and; Any reduction of flood warning times.
Editor's note— <u>Council</u> may require the applicant to submit a <u>site</u> -based flood study that investigates the impact of the development on the <u>floodplain</u> and demonstrates compliance with the relevant performance outcome.	
PO11 Essential community infrastructure and community facilities are protected from, and able to function effectively during and immediately after, a defined flood event.	 AO11.1 A use for a purpose listed in <u>Table 8.2.8.3.3</u>: is not located within the flood hazard area; and has at least one (1) flood free access road.
	Development is not essential community infrastructure, community facilities or public asset.
PO12 Development provides safe and trafficable access to the local evacuation centres and evacuation services and have regard to:	AO12.1 Trafficable access to and from the development complies with the Capricorn Municipal Guidelines.
 evacuation time; number of persons affected; types of vehicles personary for evacuation purposes; 	Trafficable access will be provided with regards to the requirements of the Capricorn Municipal Development Guidelines.
 types of venicles necessary for evacuation purposes, the distance to flood free land; and 	AND
the evacuation route.	AO12.2 Trafficable access to and from the development within the creek catchment planning areas are in accordance with the Queensland Urban Drainage Manual. Trafficable access will be provided with regards to the requirements of the Queensland Urban Drainage Manual Note—Trafficable access for <u>emergency services</u> or community related uses is obtained from at least one (1) route (minor collector or higher) for <u>emergency services</u> purposes. The development is to ensure that safe access, to the road network between the development <u>site</u> and the closest centre zone, is provided.

Patcol Group | 225 Murray St, Flood Assessment Report, 22-340 | 9

Editor's note—Trafficable access requirements for creek catchment planning areas has not been identified
and reference has been made to the provisions under the Queensland Urban Drainage Manual. This is due
to the short period that property may be isolated.

Fitzroy River – H3-H4 or H5-H6, North Rockhampton flood management area or Creek catchment – planning area 1

Table 8.2.8.3.2 Development outcomes for assessable development

Performance outcomes	Acceptable outcomes	
Development in Fitzroy River flood areas – H3-H4 (high hazard areas) or H5-H6 (extreme hazard areas), North Rockhampton flood management area or Creek		
catchment flood – planning area 1		
Editor's note—Refer to overlay maps <u>OM-8A</u> and <u>OM-8C</u>		
PO13		
Development that involves temporary or moveable residential structures (for	No acceptable outcome is nominated.	
example caravan parks and camping grounds) are not located with the		
Fitzroy River high and extreme hazard areas, North Rockhampton flood	The development is not temporary or moveable.	
management area and Creek catchment planning area 1.		

Operational work

Table 8.2.8.3.2 Development outcomes for assessable development (part)

Performance outcomes	Acceptable outcomes
Operational work	
P017	A017.1
Development does not materially impede the flow of floodwaters through the <u>site</u> or worsen flood flows external to the <u>site</u> .	Development does not involve:
	 a) filling with a height greater than 100 millimetres; or b) block or solid walls or fences; or c) garden beds or other structures with a height more than 100 millimetres; or d) the planting of dense shrub hedges.
	Development does not impede the flow of floodwaters through the site or worsen flood flows external to the site – refer Report 20-411.

Appendix A : RRC Supplied Flood Report

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Mitigation Area: N/A Horizontal Datum: MGA 56, GDA 2020

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Elevation / WSL: mAHD Velocity: m/sec

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	KIVE	enne		Creek	LOCAL	catchment
PMF WSL Min:	11.88	AEP 2% WSL Min:	7.84	PMF WSL Min:	9.13	AEP 5% WSL Min:
PMF WSL Max:	11.88	AEP 2% WSL Max:	7.84	PMF WSL Max:	9.19	AEP 5% WSL Max:
PMF Velocity Min:	0.24	AEP 2% Velocity Min:	N/A	PMF Velocity Min:	0.15	AEP 5% Velocity Min:
PMF Velocity Max:	0.34	AEP 2% Velocity Max:	0.11	PMF Velocity Max:	0.59	AEP 5% Velocity Max:
AEP 0.05% WSL Min:	9.49	AEP 5% WSL Min:	7.55	AEP 0.05% WSL Min:	8.32	AEP 10% WSL Min:
AEP 0.05% WSL Max:	9.49	AEP 5% WSL Max:	7.55	AEP 0.05% WSL Max:	8.41	AEP 10% WSL Max:
AEP 0.05% Velocity Min:	0.01	AEP 5% Velocity Min:	0.01	AEP 0.05% Velocity Min:	0.12	AEP 10% Velocity Min:
AEP 0.05% Velocity Max:	0.05	AEP 5% Velocity Max:	0.10	AEP 0.05% Velocity Max	: 0.58	AEP 10% Velocity Max:
AEP 0.2% WSL Min:	8.94	AEP 10% WSL Min:	N/A	AEP 0.2% WSL Min:	8.12	AEP 18% WSL Min:
AEP 0.2% WSL Max:	8.94	AEP 10% WSL Max:	N/A	AEP 0.2% WSL Max:	8.23	AEP 18% WSL Max:
AEP 0.2% Velocity Min:	0.01	AEP 10% Velocity Min:	N/A	AEP 0.2% Velocity Min:	0.12	AEP 18% Velocity Min:
AEP 0.2% Velocity Max:	0.05	AEP 10% Velocity Max:	N/A	AEP 0.2% Velocity Max:	0.78	AEP 18% Velocity Max:
AEP 0.5% WSL Min:	8.53	AEP 18% WSL Min:	N/A	AEP 0.5% WSL Min:	7.92	AEP 39% WSL Min:
AEP 0.5% WSL Max:	8.53	AEP 18% WSL Max:	N/A	AEP 0.5% WSL Max:	8.06	AEP 39% WSL Max:
AEP 0.5% Velocity Min:	0.01	AEP 18% Velocity Max:	N/A	AEP 0.5% Velocity Min:	0.10	AEP 39% Velocity Min:
AEP 0.5% Velocity Max:	0.07	AEP 18% Velocity Max:	N/A	AEP 0.5% Velocity Max:	0.56	AEP 39% Velocity Max:
AEP 1% WSL Min:	8.19	AEP 39% WSL Min:	N/A	AEP 1% WSL Min:	7.84	AEP 63% WSL Min:
AEP 1% WSL Max:	8.19	AEP 39% WSL Max:	N/A	AEP 1% WSL Max:	7.99	AEP 63% WSL Max:
AEP 1% Velocity Min:	0.02	AEP 39% Velocity Min:	N/A	AEP 1% Velocity Min:	0.09	AEP 63% Velocity Min:
AEP 1% Velocity Max:	0.11	AEP 39% Velocity Max:	N/A	AEP 1% Velocity Max:	0.57	AEP 63% Velocity Max:
Pr	operty	Elevation		AEP 2% WSL Min:	7.78	
				AEP 2% WSL Max:	7.93	
Ground Elevation (Min):	7.23			AEP 2% Velocity Min:	0.08	
Ground Elevation (Max):	7.80			AEP 2% Velocity Max:	0.56	

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Dullully Flatt	Quote #: DNGROC520060	Client: Lance

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			subject to conditions of Decision Notice. Private Certifier: Fred Feather A918423
	DER	BY 51	