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Dear Ms Landers

**DA2021/0558 – PROPOSED ‘PARKSIDE’ DEVELOPMENT
8 PARK AVENUE, YAMBA
FLOOD EMERGENCY MANAGEMENT PLAN & FLOOD RISK ASSESSMENT**

At the meeting of the Northern Regional Planning Panel (**Panel**) on 10 March 2022, the Panel resolved to defer consideration of the DA until a Flood Emergency Management and Evacuation Plan had been developed following consultation with the SES.

Subsequently the Applicant engaged our firm to independently review the flood risks associated with the proposed development. Subject to the outcome of that review we were then invited to liaise with the SES and Council and to prepare a Flood Emergency Management Plan (**FEMP**) which addresses the reasons for deferral which were raised by the Panel on 10 March 2022.

This advice provides our response to these instructions. It supersedes the earlier letter we forwarded to Council on 14 June and now includes additional information provided by Manly Hydraulics Laboratory (**MHL**) and Council’s staff relating to river level monitoring.

Consultation with the SES

In May 2022 we contacted Deputy Zone Commander Mr Mark Elm at the NSW SES’ State Headquarters in Wollongong to discuss the proposed development and the flood emergency procedures in Yamba. Mark is responsible for the SES’ operations throughout all the Northern Rivers within the SES’ Northern Zone. Mark referred us to the SES’ Clarence Valley Controller, Mr George Szekely. Mr Szekely has responsibilities for the whole of the Clarence Valley including Yamba.

On 30 May 2022 we met with Mr Szekely in Yamba and discussed the SES’ flood evacuation procedures for Yamba and the potential flood management arrangements for ‘Parkside’. Given the severe flooding experienced in the Northern Rivers and the Clarence over the last few years, George and his team of 40 SES volunteers have been kept very busy and had performed numerous flood rescues. In particular the flood in February/March 2022 had resulted in Yamba being isolated for 6 to 7 days, noting that Yamba Road provides the only road access and this is cut when waters overtop the low points at Palmers Island and Oyster Channel.

Development of the FEMP for Parkside

In relation to the proposed Parkside development, the SES advised that relocation to the Yamba Evacuation Centre at the Bowlo Club was not warranted. The main concern with the isolation of persons within Yamba was the need for those with medical emergencies to be able to access the hospital in Maclean (or beyond). The preferred procedure was for those

people to evacuate Yamba ahead of the flooding whilst the vast majority of people stayed in place in Yamba.

Accordingly the flood emergency management plan (**FEMP**) and its evacuation strategy for 'Parkside' was developed consistent with this approach and embodies the following principles:

- dedicated community manager available 24/7 and responsible for monitoring any potential flood threat, alerting occupants and overseeing emergency management procedures;
- prior to flood waters cutting road access to Maclean, persons who may require regular medical treatment would evacuate to Maclean or beyond whilst others remained on site;
- the development would be serviced with a fully equipped community clubhouse which could provide safe refuge for all site occupants (and other residents from the local area). This facility would have its floor above the reach of the largest possible flood and be designed with backup power, food, water and shelter, to serve 'Parkside' and the local area during the probable maximum flood (which has a probability of occurrence of approximately 1 in 100,000 years).

A copy of the FEMP is provided in **Appendix A**.

The FEMP has also been evaluated against the recent flood in February/March 2022 including an assessment of the available warning times and evacuation egress from the site.

Consultation with Council

On 31 May 2022 we met with Council's planning staff to discuss the SES' flood management strategy, our proposed FEMP and our assessment of the Application against Council's controls. All of the flood risk matters raised during these discussions have been addressed.

There have been subsequent telephone and email correspondence with Council's staff including the Manager Water Cycle relating the river level gauges that are operated for Council by MHL and which provide valuable information during flooding of the Lower Clarence from river and elevated ocean levels.

Assessment of Flood Impacts on Adjacent Properties

Development of flood prone land has the potential to adversely impact adjacent property through the obstruction of flow conveyance or the denial of flood storage. These impacts commonly occur when flood prone land is filled.

We understand the development site was filled approximately two decades ago and there is no filling proposed of land that is below the 1 in 100 chance per year flood level. The filling which is proposed is all occurring on higher land above the flood level and so there can be no impacts on flow conveyance or loss of flood storage. Consequently the development will not have a flood impact on other properties.

The filling which is being placed will allow stormwater runoff to be controlled and directed to a new outlet on the eastern side of Shores Drive. This will reduce the existing stormwater problems in the area including drainage flows which are currently discharged to The Halyard.

Assessment against Council's LEP and DCP Controls

An assessment of the development proposal against the flood controls within the LEP and DCP has also been prepared. These assessments are provided in **Appendices B** and **C**.

These assessments demonstrate that the Application is consistent with Council's LEP and DCP controls.

Appropriateness of the DA having regard to NSW Floodplain Development Practice

1. The proposed FEMP will allow the flood risks to occupants to be safely managed consistent with the SES' existing flood strategy for Yamba, Council's LEP and DCP controls, and the requirements of the NSW Floodplain Development Manual.
2. The provision of a fully equipped community refuge on the site above the reach of the largest possible flood will not only provide a safe haven for Parkside's occupants but also the local community. This will assist the SES' flood emergency management in the area during extreme floods.
3. The development cannot have any adverse flood impacts on adjacent properties given that the site is already substantially filled above the 1 in 100 chance per year flood level.
4. The additional filling and reshaping of the site's ground surface and the construction of a new stormwater system, will not only provide for proper drainage of the site but will also improve stormwater drainage for the adjacent residential developments.
5. There is an existing approval for more than a dozen residential super-lots on the site. We are advised by Council that the development flowing from this subdivision was envisaged to comprise 185 three bedroom dwellings compared to the 136 two bedroom dwellings within the current Application. The presence of a dedicated community manager and a coordinated warning/evacuation system, and the smaller number of dwellings/occupants means that the flood risk of the current Application is significantly less than that which may occur if the existing super-lots are subsequently developed as envisaged when the land was subdivided.

Having reviewed the flood risks to people and property which would result from approval of the development, and having prepared a FEMP in accordance with the SES' existing flood strategy for Yamba, it is our opinion that the development proposal is consistent with NSW floodplain development practice and Council's LEP and DCP controls.

We therefore support this development proposal.

Yours sincerely



Drew Bewsher
Director

<u>List of Appendices</u>	Page
Appendix A – Flood Emergency Management Plan (FEMP)	5
Appendix B – Consistency with Council’s LEP Controls	24
Appendix C – Consistency with Council’s DCP Controls	27

APPENDIX A

**FLOOD EMERGENCY MANAGEMENT PLAN
(FEMP)**

DRAFT FLOOD EMERGENCY MANAGEMENT PLAN

PROPOSED MULTI-UNIT HOUSING 'PARKSIDE'

8 PARK AVENUE, YAMBA

29 June 2022



Yamba Road (Source: Daily Examiner)



FOREWORD

This Flood Emergency Management Plan (FEMP) was drafted by Bewsher Consulting Pty Ltd for Hometown Australia based on information available at the time, including the following documents, reports and websites:

- Lower Clarence River Flood Study Review (WBM Oceanics, Mar 2004)
- Lower Clarence Flood Model Update (BMT WBM, Sep 2013) together with GIS files supplied by Clarence Valley Council
- NSW North Coast Flood Summary January-March 2013 (MHL, May 2013)
- North Coast Flood Summary February/March 2022 (MHL, June 2022)
- Water level data for February/March 2022 flood purchased from Manly Hydraulics Laboratory (MHL)
- Yamba Floodplain Risk Management Study (WMA, Oct 2008)
- Yamba Floodplain Risk Management Plan (WMA, Feb 2009)
- Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.13 (Bureau of Meteorology, Mar 2020) (see Attachment A)
- Clarence Valley Local Flood Plan (NSW SES, Jun 2017) (see Attachment A)
- Yamba and Palmers Island FloodSafe guide (see Attachment A)
- Digital elevation model downloaded from Elvis – Elevation Foundation Spatial Data (Woodburn 2010)
- Flood Evacuation Assessment Guideline, prepared by Molino Stewart, May 2013
- Molino, S. et al. 'A technical guideline for the use of the SES Timeline Evacuation Model in flood evacuation planning', paper presented at Floodplain Management Australia conference, Tweed Heads, May 2013
- Various documents related to the proposed development from the planning portal.

The FEMP should be finalised once the development is complete and within the first 6 months of operations.

The FEMP is then to be reviewed and updated by Hometown Australia at regular intervals, and after floods.

PART A – EMERGENCY CONTACTS

AGENCY	PHONE(S)
NSW State Emergency Service (SES)	000 (life threatening emergencies) 132 500 (emergency assistance for flood/storm) https://www.facebook.com/nswsesyamba (NSW SES Yamba Unit) https://www.ses.nsw.gov.au/ 34 Fairtrader Drive, Yamba
Bureau of Meteorology	1300 659 218 (NSW weather warning service) www.bom.gov.au/nsw/warnings/ (NSW warnings) www.bom.gov.au/nsw/flood/northcoast.shtml (latest river heights)
Police	000 (emergency) (02) 6603 0199 (Yamba Police Station, not open 24 hrs)
Fire and Rescue NSW	000 (emergency) (02) 6646 2058 (Yamba fire station)
Rural Fire Service	1800 679 737 (bushfire information line)
Ambulance	000 (emergency)
Clarence Valley Council	(02) 6643 0200 https://www.facebook.com/clarencevalleycouncil https://emergency.clarence.nsw.gov.au/dashboard/flood
Road closures	https://www.livetraffic.com/ https://northernrivers.myroadinfo.com.au/overview.asp https://www.clarence.nsw.gov.au/Emergency-management/Preparing-for-an-emergency/Flood-monitoring-stations (flood cameras)

PART B – FLOOD RISK SUMMARY

As noted in the Yamba Floodplain Risk Management Study, flooding at Yamba could occur as a result of different mechanisms:

- inundation due to high flows in the Clarence River during floods
- inundation from the Clarence River during times of high ocean levels (storm surge and/or high tides)
- intense rain over the township of Yamba causing ponding in low lying areas.

The focus of this flood emergency management plan is riverine flooding including riverine flooding associated with elevated ocean levels. However attention is also given to ocean induced inundation.

PAST FLOODS

The Lower Clarence River has a long history of flooding. The February/March 2022 flood was the highest at Maclean since 1974 (see Table 1). The gauge locations in Table 1 are mapped in Figure 1. 'Parkside' is located between the Oyster Channel and Yamba gauges. Maclean and Palmers Island Bridge gauges are also relevant for the evacuation route from Yamba to Maclean.

Table 1 - Flood history (m AHD)

Flood	Maclean gauge	Palmers Island Bridge gauge	Oyster Channel gauge	Yamba tide gauge	Sources
1890 Mar	3.54				NSW SES, 2017
1948 Jun	2.82				NSW SES, 2017
1950 Jun	3.20				NSW SES, 2017
1954 Feb	3.04				NSW SES, 2017
1956 Feb	2.59				NSW SES, 2017
1959 Jan	2.51				NSW SES, 2017
1963 May	3.10				NSW SES, 2017
1967 Jun	3.36	2.6			BMT WBM, 2013 NSW SES, 2017
1968	2.2	1.8			BMT WBM, 2013
1974 Jan	2.59				NSW SES, 2017
1974 Mar	3.41				NSW SES, 2017
1976 Feb	2.77				NSW SES, 2017
1980	2.5	2.0			BMT WBM, 2013
1988 Apr	2.80			1.0	BMT WBM, 2013 NSW SES, 2017
1989 Apr 4	2.72				NSW SES, 2017
1989 Apr 28	2.53				NSW SES, 2017
1996 May	3.00				NSW SES, 2017
2001 Feb	2.63				NSW SES, 2017
2001 Mar	3.26				NSW SES, 2017
2009 May	3.15	2.3	1.6	1.4	BMT WBM, 2013 NSW SES, 2017
2011 Jan	2.98				NSW SES, 2017
2013 Jan	3.11	2.55	1.34	1.23	MHL, 2013
2013 Feb	2.42	1.95	1.07	1.10	MHL, 2013
2013 Mar	1.59	1.36	0.93	0.97	MHL, 2013
2022 Feb/Mar	3.36	2.79	1.80	1.60	MHL, 2022

Hydrographs showing the relationship between time and river heights for the February/March 2022 flood are provided in Figure 2. A feature is the strong tidal signal, which increases towards the coast. On Wednesday 2 March, Council reported that high tides influencing floodwaters caused significant localised inundation in Yamba.

The hydrographs in Figure 2 also demonstrate the long duration of flooding at Maclean. Council records indicate that Yamba Road was closed at Palmers Channel South Bank Road at 4:45am on Monday 28 February, and reopened on Sunday 6 March at 11:30am (after appropriate inspections/cleaning/removal of mud) (see Attachment B). This indicates that access between Yamba and Maclean was cut for 6–7 days. An image of the flooded route is provided in Figure 3.

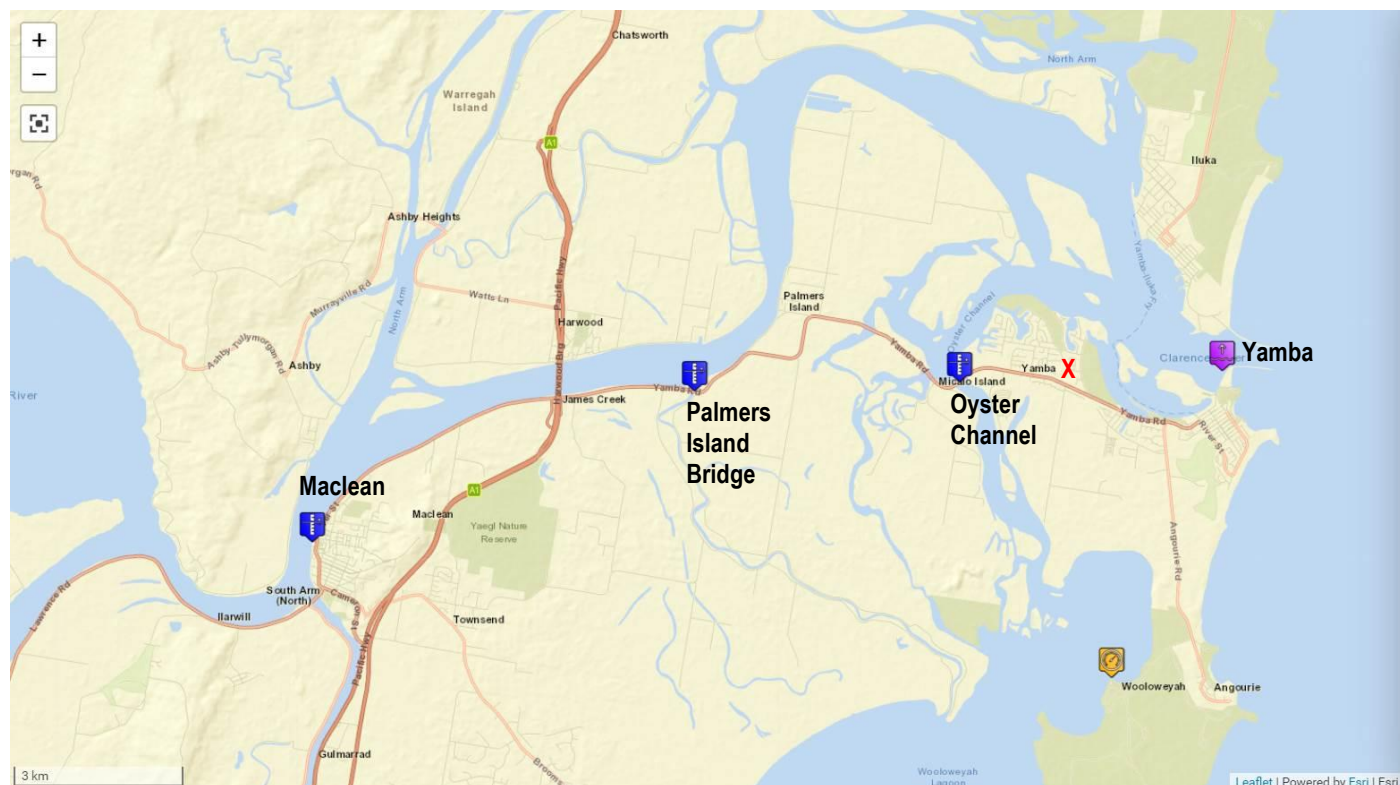


Figure 1 - Location of river gauges, with 'Parkside' shown by 'X'
Source: MHL

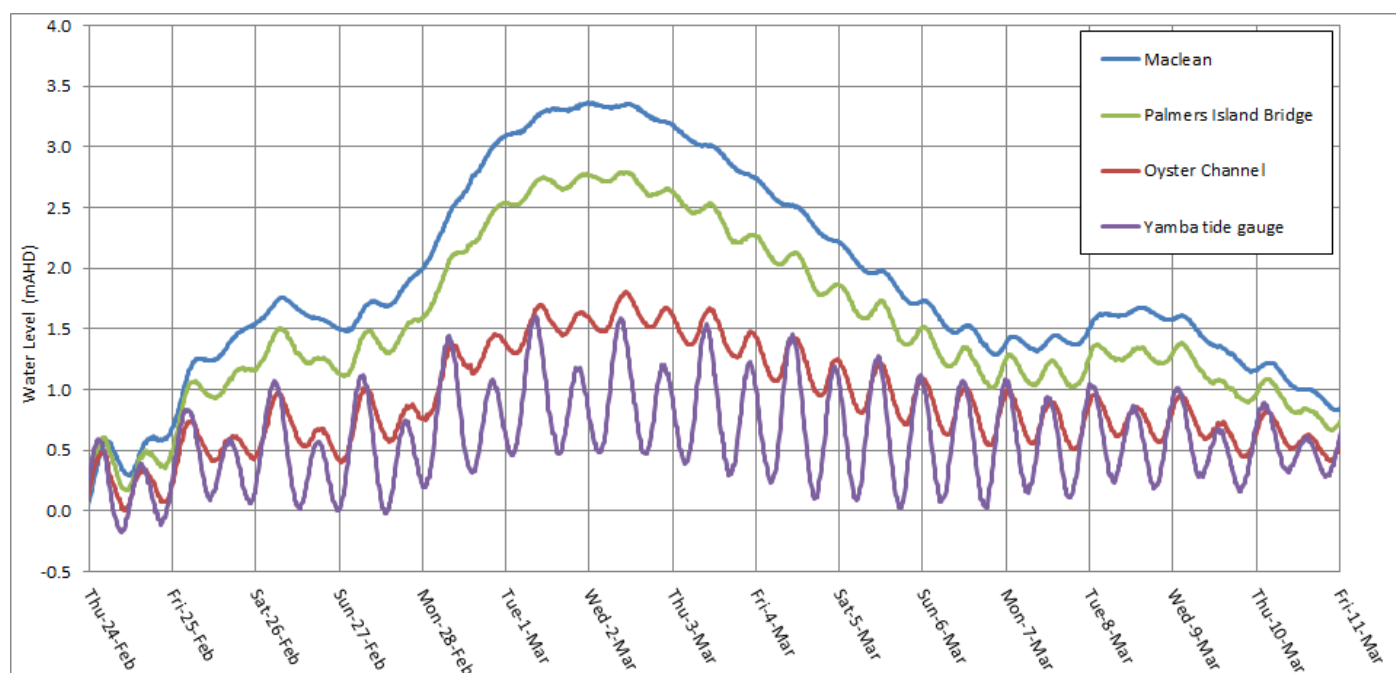


Figure 2 – Flood height hydrographs, Feb/Mar 2022 flood
Data source: Department of Planning and Environment



Figure 3 – Flooding of Yamba Road near James Creek Road intersection, below the raised new Pacific Highway bridge at Harwood, Feb/Mar 2022
Source: Clarence Valley Council

POTENTIAL FLOODS

The table below shows the heights at the gauges of potential floods. The February/March 2022 flood at Maclean and Palmers Island Bridge is estimated to have a 1 in 50 chance of occurring (or being exceeded) in any year. Based on the modelling that informed the Lower Clarence Flood Model Update, it was a more frequent flood downstream (a 1 in 20 chance per year at Oyster Channel).

Table 2 - Design flood levels (m AHD)

Flood	Maclean gauge	Palmers Island Bridge gauge	Oyster Channel gauge	Yamba gauge
1 in 5 chance per year	2.4	1.9	0.9	0.9
1 in 20 chance per year	3.1	2.6	1.8	2.0
1 in 50 chance per year	3.4	2.8	1.9	2.2
1 in 100 chance per year	3.6	3.0	2.2	2.5
Extreme	5.1	4.2	3.7	2.6

Sources: Lower Clarence Flood Model Update (BMT WBM, 2014) for Maclean; GIS raster from Lower Clarence Flood Model Update (BMT WBM, 2014) supplied by Clarence Valley Council (gauge locations plotted from MHL geocoordinates)

Information from the Lower Clarence Flood Model Update is also available to understand flooding at 'Parkside'. Flood levels and depths at the site and at the junction of Park Avenue and Shores Drive are shown in Table 3.

The ground level at 'Parkside' has been filled previously, meaning that very little of the site is impacted in the 1 in 100 chance in a year flood (Figure 4). However, the site would be flooded in the extreme event.

The primary constraint on evacuation to Maclean is the lowpoint on Yamba Road at the intersection with Palmers Channel South Bank Road. In the February/March 2022 flood, this was cut at 4:45am on Monday 28 February. Local flooding in Yamba closing roads was not reported until Tuesday 1 March (Yamba Road at Angourie Road roundabout – Attachment B). Evacuation from 'Parkside' to the Yamba Bowlo evacuation centre could be blocked by flooding at the Yamba Road/Angourie Road roundabout or by flooding close to 'Parkside' near the corner of Park Avenue and Shores Drive, given the low road level there (1.33m AHD), and inundation depth of 0.6m in the modelled 1 in 20 chance per year flood (Figures 5, 6; Table 3). Shores Drive was reported by Council as flooded and not trafficable on Wednesday 2 March (but might have been in similar condition on Tuesday 1 March).

Table 3 - Local design flood levels and depths (m AHD)

Flood	'Parkside'		Corner Park Avenue and Shores Drive	
	Level (m AHD)	Depth (m) based on topography used in flood model	Level (m AHD)	Depth (m)
1 in 5 chance per year	n/a	n/a	n/a	n/a
1 in 20 chance per year	n/a	n/a	2.0 m AHD	0.6 m
1 in 50 chance per year	n/a	n/a	2.2 m AHD	0.8 m
1 in 100 chance per year	~2.2 – 2.5 m AHD	negligible	2.5 m AHD	1.1 m
Extreme	~3.3 – 3.6 m AHD	1.9m maximum*	3.3 m AHD	1.9 m

Sources: GIS raster from Lower Clarence Flood Model Update (BMT WBM, 2014) supplied by Clarence Valley Council

Note: * Additional proposed filling above 1 in 100 chance per year level is expected to reduce depths in the extreme flood

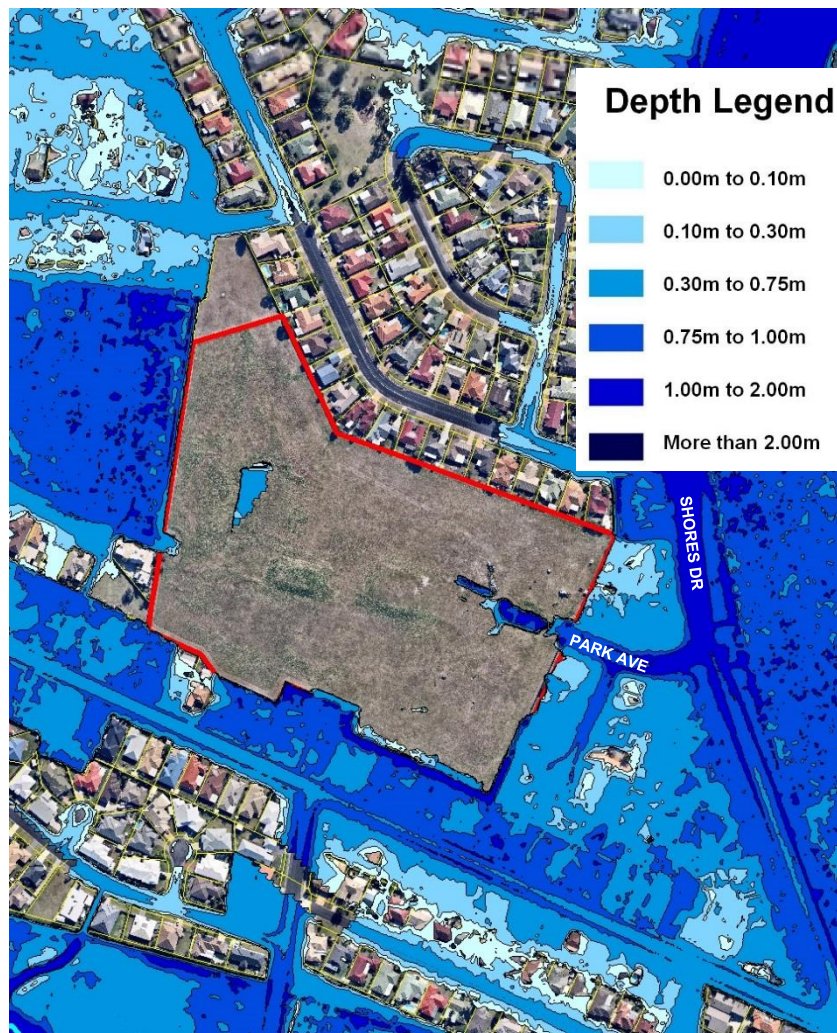


Figure 4 – 1 in 100 chance per year flood depths in vicinity of 'Parkside'

Derived from GIS raster from Lower Clarence Flood Model Update (BMT WBM, 2014) supplied by Clarence Valley Council and digital elevation model downloaded from Elvis – Elevation Foundation Spatial Data.

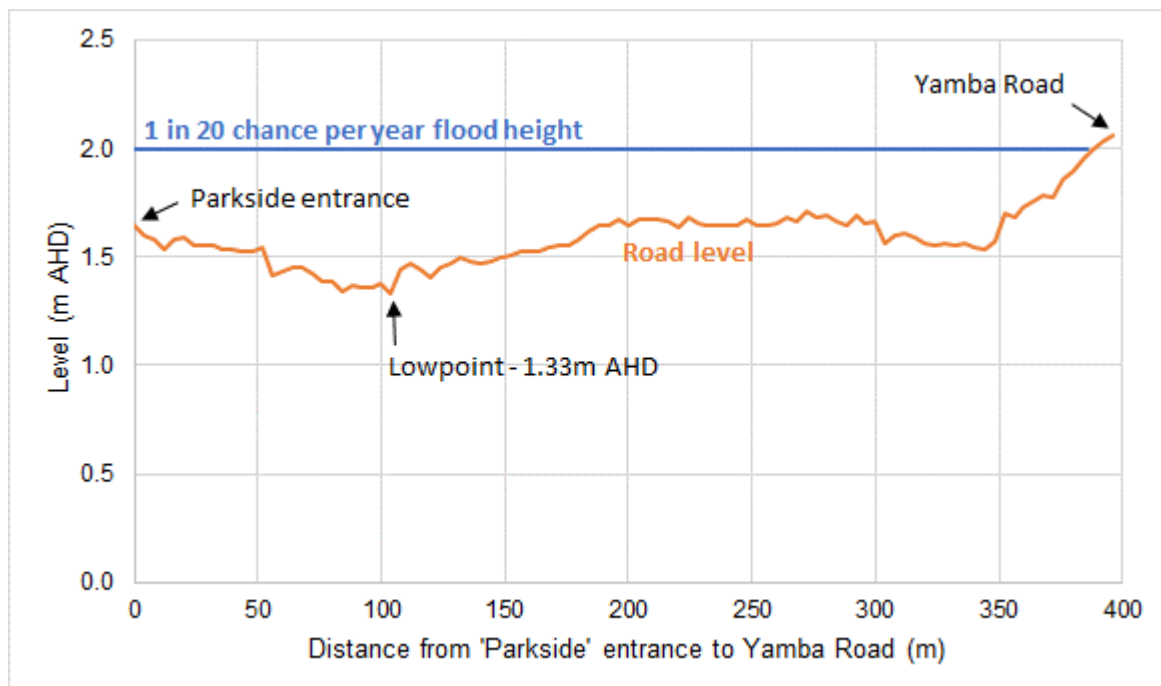


Figure 5 – Road levels from 'Parkside' to Yamba Road via Park Avenue and Shores Drive
 Derived from digital elevation model downloaded from Elvis – Elevation Foundation Spatial Data.



Figure 6 – View east down Park Avenue to Shores Drive
 Image: Drew Bewsher

EXPOSURE/VULNERABILITY

'Parkside' will provide over 50s independent living. Residential care is not provided. Most residents will have their own vehicle(s).

The proposed development is for 136 dwellings in a multi dwelling housing complex, plus an exhibition home, and community facilities including a clubhouse, pool, gym, and cinema.

The primary habitable floor level of the dwellings is to be a minimum of 3.01m AHD, which would put the dwellings about 0.5m higher than the surrounding 1 in 100 chance per year flood level. In the extreme (very rare) flood, the dwellings could be flooded to a maximum depth of about 0.6m.

The Clubhouse is to have a minimum floor level of 3.63m AHD (see plan in Attachment C), an independent power supply, and a water tank with 7 day's capacity, so as to provide a flood-free refuge in the (unlikely) event of the extreme flood.

A Community Manager will be available 24/7 to oversee emergency management procedures and ensure the safety of residents.

RESPONSE STRATEGY

The key elements of the proposed flood response are:

- 1) Any residents requiring 24/7 access to hospital (e.g. dialysis patients), or who otherwise cannot tolerate isolation, should **evacuate to Maclean early**, using an appropriate trigger.

For catchment/river-sourced flooding, several triggers are possible:

- a. Severe Weather Warning¹ for very heavy rain in the area is issued
- b. Flood Watch² for **moderate** or major flooding of the Clarence River is issued
- c. Flood Warning for **moderate** flooding, or predicted heights of 2.1m or higher, at Maclean is issued – likely to close Yamba Road
- d. river height triggers at Maclean and/or Palmers Island Bridge gauges (see below).

Selection of triggers could reflect people's individual circumstances, and the time of day (evacuation during daylight is preferable for road safety, especially during wet weather).

Evacuating 'Parkside' on the basis of a Severe Weather Warning for very heavy rain that may or may not lead to flooding could be conservative but may be appropriate for some households.

There would be more confidence in evacuating upon issuance of a Flood Watch, since a Flood Watch is more often than not followed by flooding.

The issuance of a Flood Warning for moderate or major flooding at Maclean, or predicted heights of 2.1m or higher at Maclean, should be the latest evacuation trigger for people needing to evacuate from Yamba to Maclean. The height of 2.1m at Maclean has been identified by the NSW SES as the level likely to close Yamba Road (see Attachment A). In the February/March 2022 flood, Yamba Road actually closed when the water level reached 2.26m on the Maclean gauge, but this is not taken as reason to adjust the 2.1m trigger that has been based on a long history of floods, and may incorporate a small buffer.

¹ http://www.bom.gov.au/weather-services/severe-weather-knowledge-centre/WarningsInformation_SW_SWWW.shtml

² <http://www.bom.gov.au/water/floods/floodWarningServices.shtml>

The fourth possible evacuation trigger – based on actual river levels at Maclean or Palmers Island being reached in a rising flood, allowing potentially just 1 hour before the road is cut – is a fall-back option in the unlikely event that Flood Warnings for Maclean lag the actual rise of the Clarence River there. It is not recommended as a primary trigger, since there is a risk that the river could rise and the road could close sooner than expected. A key risk to avoid at all costs is attempting to drive through floodwater, which contributes to most flood fatalities in Australia.

The river level triggers adopted for this Flood Emergency Plan are preliminary and would benefit from analysis of the variability in historical and modelled rates of rise, including the influence of ocean conditions. Assuming residents are fully packed and ready to evacuate, it is suggested that a minimum of 1 hour be allowed for the journey to Maclean via Yamba Road and the Pacific Highway (Attachment D – a journey that in good conditions might take 20 minutes). Taking the NSW SES proposed road closure level of 2.1m on the Maclean gauge, and applying the maximum rate-of-rise in the February/March 2022 flood of 0.13m/hr, rounded to 0.2m/hr as a safety margin, a water level trigger of 1.9m at Maclean could be an appropriate trigger. Similarly for the Palmers Island Bridge gauge – which is located proximate to the location where Yamba Road tends to close first during floods³ – taking the February/March 2022 observed road closure height of 1.83m on the Palmers Island Bridge gauge, and applying the maximum rate-of-rise in the February/March 2022 flood of 0.15m/hr, rounded to 0.2m/hr as a safety margin, a water level trigger of 1.63m (say 1.6m) at Palmers Island Bridge could be an appropriate trigger.

During rising floods, this analysis yields water level evacuation triggers – whichever happens the sooner – of:

- 1.9m at Maclean gauge (more conservative)
- 1.6m at Palmers Island Bridge gauge (less conservative).

For ocean-dominated flooding, triggers are more limited:

- a. Severe Weather Warning for abnormally high tides/waves expected to exceed highest astronomical tide for an area including Yamba is issued
- b. Local observation of tides.

Any residents who required guaranteed 24/7 access to the hospital in Maclean, or who otherwise could not tolerate even short-term isolation during the higher part of the tidal cycle, might need to evacuate upon issuance of a Severe Weather Warning for abnormally high tides/waves that includes Yamba.

A more realistic trigger that is expected to be suitable for most people (among the small vulnerable category) would be to observe a high tide that threatens to inundate, or inundates, Park Avenue/Shores Drive, prepare to evacuate, then evacuate on the next low tide, approximately 6 hours later (provided roads are open). In this way, isolation would be minimised.

- 2) Most residents could remain at 'Parkside' during flood emergencies. The risks of doing so are mitigated by:
 - a. habitable floor levels 0.5m above the 1 in 100 chance per year flood level
 - b. the Clubhouse designed with a floor level at the extreme flood level, an independent power supply, and a water tank with 7 day's capacity to serve as a refuge in the event of the extreme (very rare) flood. In such an event, residents from the south side of the complex should access the Clubhouse using the western ring road rather than following the shortest route – this would reduce any floodwater needing to be traversed to shallow depths.

Residents would need to be 'stocked up' with food, pet food, medications and other essentials for up to about 7 days.

³ Clarence Valley Council has a link to a flood monitoring camera at this location: <https://www.clarence.nsw.gov.au/Emergency-management/Preparing-for-an-emergency/Flood-monitoring-stations> (see Palmers Channel camera)

Provided residents are well-prepared, there is no obvious need to evacuate to Yamba's nominated Assembly Area/Evacuation Centre at Yamba Bowlo Sports and Leisure.

Residual risks for the isolated community include the risk of medical emergencies, which might need to be serviced by boat, and fire emergencies, which would need to be contained using local hoses.

Could early evacuation have been achieved in the Feb/Mar 2022 flood?

Timeline of warnings

Date/time	Warning/event	Water level at time of issuance	
		Maclean	Palmer's Island Bridge
Wed 23 Feb 11am	Severe Weather Warning for heavy rainfall and possible flash flooding including Yamba (BoM)	0.05m	0.08m
Thu 24 Feb 10:37am	Flood Watch for possible minor flooding of the Clarence River (BoM)	0.31m	0.18m
Fri 25 Feb 10:21am	Minor flooding at Maclean (1.6m) likely overnight Friday into Saturday (BoM)	1.24m	0.95m
Sat 26 Feb 5:16am	Severe Weather Warning for heavy rainfall and possible flash flooding including Yamba (BoM)	1.70m	1.45m
Sat 26 Feb 1:02pm	Flood Watch for possible moderate to major flooding in the Clarence River from Sunday (BoM)	1.65m	1.27m
Sat 26 Feb 2:18pm	Moderate flooding at Maclean (2.2m) possible from Sunday (BoM)	1.62m	1.23m
Sun 27 Feb 5:11am	Moderate flooding at Maclean possible on Monday (BoM)	1.57m	1.31m
Sun 27 Feb 12:10pm	Yamba Road may close around high tide 6:57pm (CVC)	1.70m	1.34m
Sun 27 Feb 6:57pm	-	1.85m	1.51m
Sun 27 Feb 8:15pm	-	1.90m*	1.55m
Sun 27 Feb 9:59pm	Major flooding at Maclean (2.5m) may be reached during Tuesday (BoM)	1.94m	1.58m
Mon 28 Feb 12:15am	-	2.00m	1.60m*
Mon 28 Feb 2:15am	-	2.10m	1.67m
Mon 28 Feb 4:36am	Major flooding at Maclean may be reached Monday morning with the high tide (BoM)	2.25m	1.82m
Mon 28 Feb 4:45am	Yamba Road closed at intersection of Palmer's Channel South Bank Road (CVC – see Attachment B)	2.26m	1.83m

* Proposed water level evacuation triggers

If any residents needing to evacuate to Maclean left upon issuance of the Severe Weather Warnings of 23 February or 26 February, or upon issuance of the Flood Watch for moderate to major flooding in the Clarence River on 26 February, or upon issuance of the first warning on 26 February of possible moderate flooding at Maclean, or when Council indicated on 27 February that Yamba Road could close that evening, they would have been able to do so.

If they waited until the water level at the Maclean gauge reached 1.9m, or when Palmer's Island gauge reached 1.6m – noting there is sometimes a lag between when the river height is reached and when it is reported on websites* – they should still have been able to evacuate, albeit a night-time evacuation.

This points to the need for ongoing education of future residents about the flood constraints and protocols of living in Yamba.

* The MHL website appears to report water levels in near real time, with a slightly longer lag for the Bureau of Meteorology website.

PART C – FLOOD ACTION PLAN FOR ‘PARKSIDE’ MANAGER

PHASE	TRIGGER	CONSEQUENCE	MONITORING / LIAISON	ACTIONS
PREPARE	All the time	n/a	<ul style="list-style-type: none"> • Install weather app such as BOM Weather and routinely monitor weather warnings • Monitor tides https://mhl.nsw.gov.au/Station-204454 (Yamba) • Follow Clarence Valley Council disaster dashboard ¹, and Council and NSW SES Yamba Unit social media channels (see Part A) 	<ul style="list-style-type: none"> • Maintain database of owners with up-to-date contact details, their capabilities during floods (independent or requiring assistance), and their intentions during floods (stay or go) • Establish means of mass communication (e.g. SMS) for emergencies • Prepare flood information pack for residents to inform them of the flood and isolation risks, and procedures during flood emergencies – including need for early evacuation to Maclean for those unable to tolerate isolation, the need to prepare for extended isolation, and the route to the Clubhouse during extreme floods. The pack should include a copy of the Yamba Community FloodSafe guide ² • Issue flood information pack to new residents, and to all residents every 2 years • Invite NSW SES Yamba Unit members to annual events (e.g. BBQs) to help residents understand and prepare for flood and isolation risks, and to recruit new volunteers • Display this Flood Action Plan in Clubhouse • Identify residents at ‘Parkside’ who could serve as flood wardens that may be required (e.g. for communications with and transport of residents) in the event of a significant flood • Assemble an emergency kit • Consider taking out flood insurance for ‘Parkside’
OCEAN FLOODING				
RESPOND A	Severe Weather Warning for abnormally high tides/ waves expected to exceed highest astronomical tide issued for area incl. Yamba	Potential for road closures around Yamba especially at high tides	<ul style="list-style-type: none"> • Closely monitor tides https://mhl.nsw.gov.au/Station-204454 (Yamba) • Monitor water levels in Park Avenue and Shores Drive • Monitor road closures (see Part A) • Monitor flood camera at Palmers Channel (road low point) https://www.clarence.nsw.gov.au/Emergency-management/Preparing-for-an-emergency/Flood-monitoring-stations 	<p>If roads open:</p> <ul style="list-style-type: none"> • Advise any residents requiring guaranteed 24/7 access to hospital, or who otherwise cannot tolerate even short-term isolation, to evacuate to Maclean • Advise all remaining residents to prepare for potential short-term isolation of ‘Parkside’
RESPOND B	Flooding observed at high tide in Park Avenue and/or Shores Drive	‘Parkside’ temporarily isolated from Yamba at high tides	<ul style="list-style-type: none"> • As for Respond A phase • Liaise with NSW SES Yamba Unit and Council re status of route to Maclean 	<ul style="list-style-type: none"> • Erect ‘road closed’ sign at exit to ‘Parkside’ when route to Yamba Road flooded; remove when route clear • Advise any residents requiring access to Maclean, and who didn’t evacuate earlier, to prepare to evacuate at low tide, and if roads open, to evacuate then

PHASE	TRIGGER	CONSEQUENCE	MONITORING / LIAISON	ACTIONS
RIVER FLOODING				
RESPOND 1	Flood Watch for moderate or major flooding of the Clarence River issued	Potential for Yamba to be isolated from Maclean	<ul style="list-style-type: none"> Monitor weather warnings: www.bom.gov.au/nsw/warnings/ Monitor river heights: www.bom.gov.au/nsw/flood/northcoast.shtml ¹ https://mhl.nsw.gov.au/Station-204410 (Maclean) https://mhl.nsw.gov.au/Station-204426 (Palmer's Island Bridge) https://mhl.nsw.gov.au/Station-204451 (Oyster Channel) https://mhl.nsw.gov.au/Station-204454 (Yamba) Monitor tides especially higher than normal low and high tides indicating a rising flood Monitor road closures (see Part A) Monitor flood camera at Palmer's Channel (road low point) https://www.clarence.nsw.gov.au/Emergency-management/Preparing-for-an-emergency/Flood-monitoring-stations 	<ul style="list-style-type: none"> Advise any residents requiring 24/7 access to hospital, or who otherwise cannot tolerate isolation, to <u>prepare to evacuate</u> (or evacuate, as their situation requires) to Maclean Advise all remaining residents to prepare for potential isolation of Yamba e.g. ensure they have sufficient non-perishable food, drinking water, pet food, medications, other essentials for up to 7 days Activate flood wardens
RESPOND 2	Flood Warning for moderate flooding or $\geq 2.1\text{m}$ at Maclean issued	Yamba likely to be isolated from Maclean soon	<ul style="list-style-type: none"> As for Respond 1 phase Liaise with NSW SES Yamba Unit and Council re status of route to Maclean 	<ul style="list-style-type: none"> Advise any residents requiring 24/7 access to hospital, or who otherwise cannot tolerate isolation, to <u>evacuate urgently</u> to Maclean (without driving through floodwater) Advise all remaining residents to prepare for isolation of Yamba
RESPOND 3	Maclean gauge 1.9m and rising, <u>or</u> Palmer's Island Bridge gauge 1.6m and rising, whichever happens sooner	Yamba likely to be isolated from Maclean in as little as 1 hour	<ul style="list-style-type: none"> As for Respond 1 phase Liaise with NSW SES Yamba Unit and Council re status of route to Maclean 	<ul style="list-style-type: none"> Advise any residents requiring 24/7 access to hospital, or who otherwise cannot tolerate isolation, to <u>evacuate immediately</u> to Maclean (without driving through floodwater) Advise all remaining residents to prepare for isolation of Yamba
RESPOND 4	Maclean gauge $>2.1\text{m}$, <u>or</u> Palmer's Island Bridge gauge $>1.8\text{m}$, <u>or</u> SES / Council / Police advise Yamba Road closed	Yamba isolated from Maclean	<ul style="list-style-type: none"> As for Respond 1 phase Liaise with NSW SES Yamba Unit and Council re status of local roads 	<ul style="list-style-type: none"> Advise all remaining residents that route from Yamba to Maclean is closed and to prepare for imminent isolation of 'Parkside' Call on pre-arranged additional personnel to come to 'Parkside' to assist isolated community
RESPOND 5	Floodwater observed along Park Avenue or Shores Drive	'Parkside' isolated from rest of Yamba	<ul style="list-style-type: none"> As for Respond 1 phase Liaise with NSW SES Yamba Unit re any urgent essential deliveries 	<ul style="list-style-type: none"> Erect 'road closed' sign at exit to 'Parkside' Advise all remaining residents that 'Parkside' is isolated from Yamba If floodwater continues to rise, advise residents to secure items within the lower parts of the site including any boats.
RESPOND 6	Floodwater observed entering 'Parkside'	Danger from direct flooding	<ul style="list-style-type: none"> As for Respond 1 phase Liaise with NSW SES Yamba Unit re any urgent essential deliveries 	<ul style="list-style-type: none"> Advise all remaining residents to evacuate to Clubhouse, taking food, medications, important papers, pets and valuables, and turning off electricity and gas at the mains as they depart Secure loose items e.g. garbage bins

PHASE	TRIGGER	CONSEQUENCE	MONITORING / LIAISON	ACTIONS
RESPOND 7	Floodwater wholly inundates 'Parkside'	Danger from direct flooding	<ul style="list-style-type: none"> • As for Respond 1 phase • Liaise with NSW SES Yamba Unit re any urgent essential deliveries 	<ul style="list-style-type: none"> • Advise all remaining residents to remain in Clubhouse
'ALL CLEAR' 1	Floodwater receded from 'Parkside' and unlikely to rise again with tides	Danger from direct flooding passed	<ul style="list-style-type: none"> • Liaise with NSW SES Yamba Unit and Council re status of roads 	<ul style="list-style-type: none"> • Undertake WH&S risk assessment • Clean up in accordance with WH&S procedures • Have any flooded dwellings, and electric and gas fixtures checked by professionals
'ALL CLEAR' 2	Floodwater receded, final Flood Warning issued, roads opened	Flooding threat over		<ul style="list-style-type: none"> • Schedule a Parkside Community debrief to consider improvements to flood procedures at the park • Review and update this flood emergency management plan after every significant flood

¹ Note than on the Bureau's website and on Council's Disaster Dashboard, Yamba levels are not to AHD. These need to be adjusted downwards by 0.895m to compare with flood levels in AHD (or instead use the MHL link).

² See <https://www.ses.nsw.gov.au/flood-awareness-nsw/northern-rivers/clarence-valley-lga/>

Note. A particular flood may behave unexpectedly and differently from past events. Take initiative to assess the flood threat and act appropriately to safeguard life.

AVOID DRIVING, RIDING, WALKING OR PLAYING IN FLOODWATERS – THESE ARE THE MAIN CAUSES OF DEATH DURING FLOODS

Attachment A

SUMMARY OF REPORTS

Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory (Bureau of Meteorology, version 3.13, Mar 2020)

Bureau number	AWRC number	Forecast location	Station owner	Gauge type	Gauge datum	Flood classification (m)			Prediction type	Target warning lead time		70% of forecasts within	Priority
						Minor	Moderate	Major		Time (hrs)	Trigger height (m)		
558022	204410	Maclean	NSW OEH	Auto	AHD	1.6	2.2	2.5	Quantitative	6 hrs 24 hrs	>2.2m >3.3m	+/- 0.3m	High

Clarence Valley Local Flood Plan (NSW SES, 2017)

- Vol 1 p.38 – Yamba Bowling & Recreation Club is identified as a suitable flood evacuation centre
- Vol 2 p.14 - Between Palmers Island and the river's mouth there is an increasing influence of ocean storm tide conditions and peak flood levels at Yamba are dictated almost entirely by ocean storm tides.
- Vol 2 p.64 – Yamba is classified as a high flood island; Yamba streets may be inundated from 2.4m on the Yamba gauge; evacuation from Yamba needs to occur before the road is cut at the Pacific Highway at Clover Leaf/Harwood Bridge (2.1m on the Maclean gauge); Yamba is completely isolated at 2.4m on the Maclean gauge; except in very serious floods, isolation tends to be up to 5 days and most people in the area are self-sufficient for this period of isolation
- Vol 2 p.83 – Maclean-Yamba Road cut at Harwood Bridge, Palmers Island Bridge and Oyster Channel
- Vol 2 p.84 – Yamba Sector (3000 properties) typically isolated 3-5 days
- Vol 3 Ch 2 p.43 – General strategy for Yamba Sector is evacuation of at-risk population, self-evacuation to family/friends outside of impact area, establishment of assembly area/evacuation centre at Yamba Bowling Club Wooli Street Yamba
- Vol 3 Ch 2 p.44 – Evacuation trigger for Yamba Sector is prediction for Maclean gauge to reach and/or exceed 2.1m
- Vol 3 Ch 2 p.45 – Residents wishing to leave Yamba need to do so before a height of 2.1m is reached on the Maclean gauge
- Vol 3 Ch 2 p.46 – Helicopter landing zones are designated
- Vol 3 Ch 2 p.47 – Pacific Hwy closes at Cloverleaf Harwood Bridge at 2.1m on Maclean gauge; Yamba Road closes in various locations at 3.04m on Maclean gauge

Yamba and Palmers Island FloodSafe guide (NSW SES, undated)

- At 2.1m on Maclean gauge, Pacific Highway may become closed at the southern approach to Harwood Bridge 'Cloverleaf' preventing travel to and from the Yamba area. Yamba and Palmers Island may become isolated at several locations on Yamba Road.

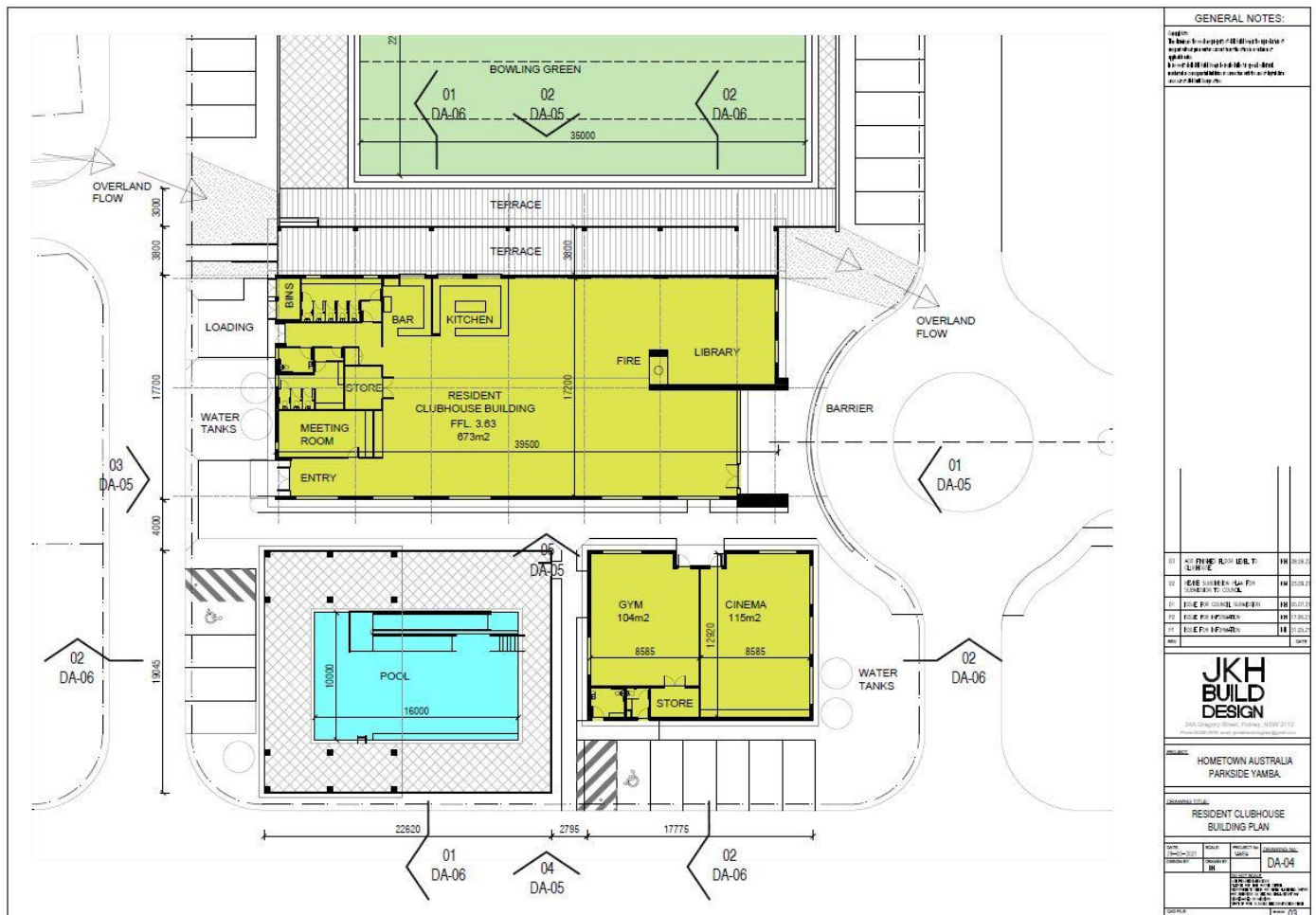
Attachment B

CLOSURE OF YAMBA ROAD – FEB/MAR 2022 FLOOD

Evacuation route	Route from 'Parkside' to Maclean via Yamba Road and Pacific Highway		Route from Parkside to Yamba Bowlo (Evacuation Centre)
Location	Yamba Rd at Palmers Channel South Bank Rd intersection	Yamba Rd at James Creek Rd intersection	Yamba Rd at Angourie Rd roundabout
Date/time			
Mon 28 Feb 4:44am	CLOSED		
Mon 28 Feb 2:52pm		CLOSED	
Tue 1 Mar 9:11am			CLOSED
Sun 6 Mar 11:30am – 12pm	OPEN	OPEN	OPEN

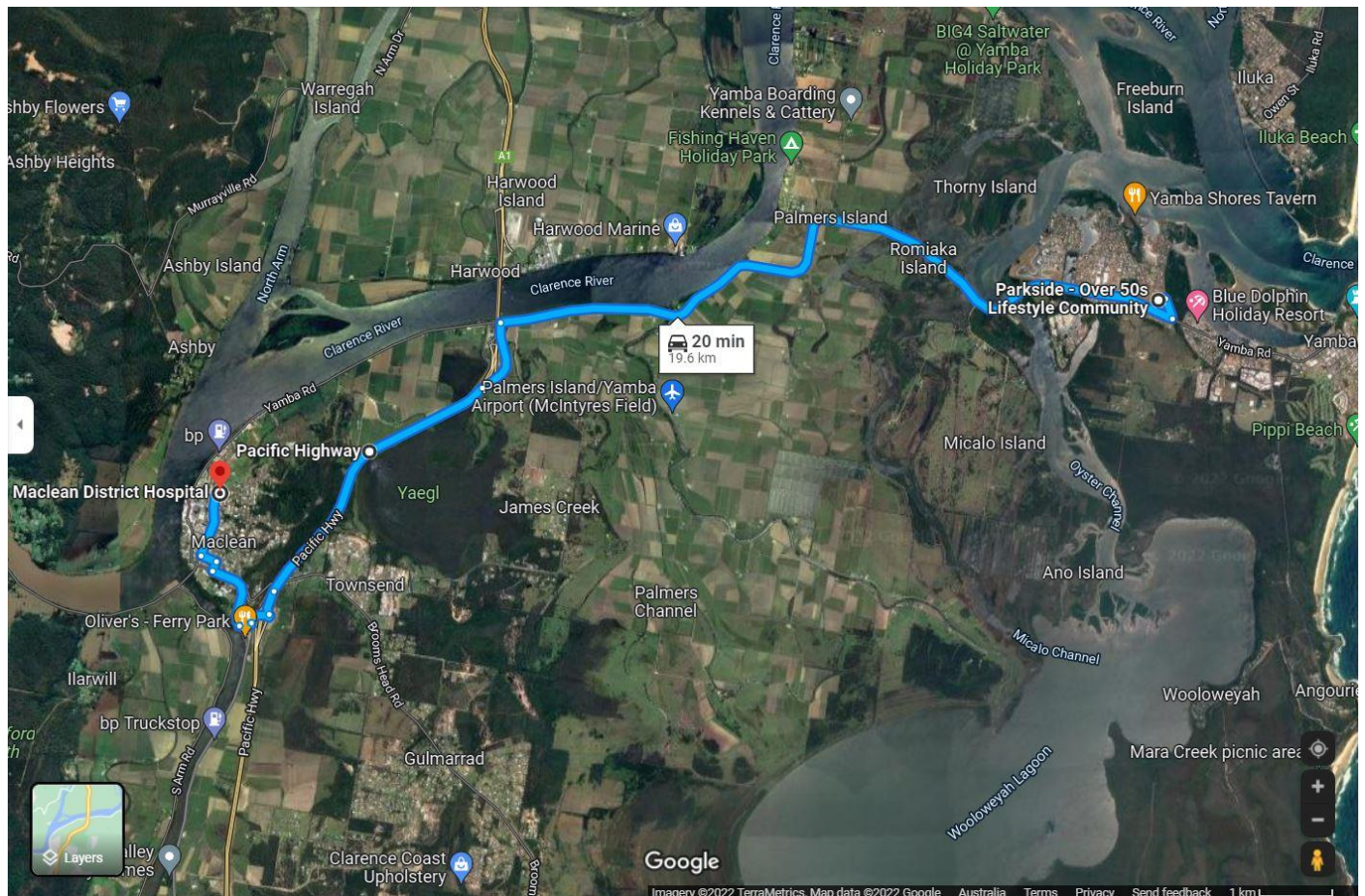
Data source: Clarence Valley Council

CLUBHOUSE PLANS



Attachment D

EVACUATION ROUTE, YAMBA TO MACLEAN



Source: Google Maps

APPENDIX B

COMPATIBILITY WITH LEP REQUIREMENTS

(References to the LEP are those in the
current version i.e. 22 April 2022 to date)

Although most of the site is above the 1 in 100 chance per year flood level, Clause 5.21 of Clarence Valley LEP 2013 applies because a small part of the site is mapped as within the flood planning area (Figure B1), defined as the area below the flood planning level, which is based on the 1 in 100 AEP flood level plus 0.5m freeboard (CVLEP 2011 Definitions).

Clause 7.4 applies to land between the flood planning area and the probable maximum flood (PMF) extent, and also to land surrounded by the flood planning area. However, the proposed development is for multi dwelling housing units and not for one of the sensitive uses listed in clause 7.4(3), so in this instance, the clause does not apply.

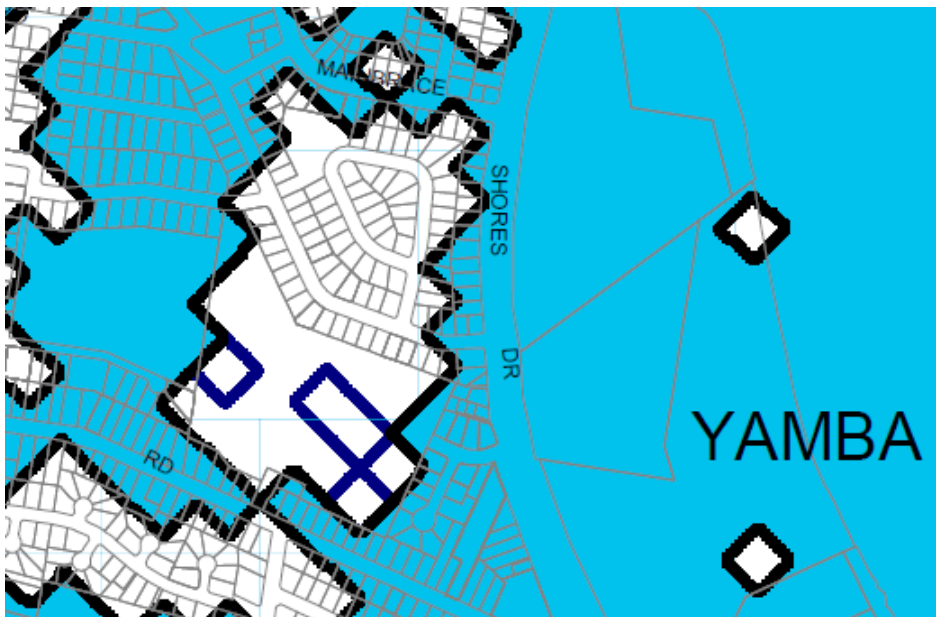


Figure B1 – Extract from Flood Planning Map Sheet CL1_0111
Note: blue = flood planning area

LEP 2011 Clause 5.21 Flood Planning Requirements	Response
<p>5.21 Flood planning</p> <p>(1) The objectives of this clause are as follows—</p> <p>(a) to minimise the flood risk to life and property associated with the use of land,</p>	<p>See response to 5.21(2)(d) below</p>
<p>(b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,</p>	<p>The site has been filled and is surrounded by a flood storage area. It is not within an identified floodway. There are no flood flows passing across the site. Except for the entrance road immediately adjacent to the eastern boundary, the site is entirely above the level of the 1 in 100 chance per year flood, even with the projected rises in flood level due to climate change.</p>
<p>(c) to avoid adverse or cumulative impacts on flood behaviour and the environment,</p>	<p>As the vast majority of the site is already above the 1 in 100 chance per year flood level, development of the site does not have an adverse or cumulative impacts on flood behaviour or the environment. No filling of the floodplain is proposed. The filling which is proposed will take place on land that is already above the 1 in 100 flood level and therefore has no flood impacts.</p>
<p>(d) to enable the safe occupation and efficient evacuation of people in the event of a flood.</p>	<p>See response to 5.21(2)(c) below</p>
<p>(2) 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—</p> <p>(a) is compatible with the flood function and behaviour on the land, and</p>	<p>Because the site was extensively filled many years ago and the vast majority of the site area is not inundated in a 1 in 100 flood, development on this site is compatible with the flood function as there are no flood flows passing across the site. Refer response to 5.21(1)(c) above.</p>
<p>(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and</p>	<p>Because the site was extensively filled many years ago and the vast majority of the site area is not inundated in a 1 in 100 flood, development of this site cannot create adverse flood affectation on other properties. Refer response to 5.21(1)(c) above.</p>

LEP 2011 Clause 5.21 Flood Planning Requirements	Response
<p>(c) 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, and</p>	<p>The multi-unit dwellings in 'Parkside' will have floor levels at least 0.5m above the 1 in 100 chance per year flood level. These dwellings could be flooded to a maximum depth of about 0.6m above floor in the extreme flood. In the event of a flood rising above the 1 in 100 flood, the design of the development will allow residents to evacuate safely to the Clubhouse which has a floor level above the extreme flood level. Thus, <i>safe occupation</i> during flooding is not adversely affected.</p> <p>It is considered that most residents will choose to stay at 'Parkside' during floods, just as most residents of Yamba remain in the village during floods. There may however be some residents unable to tolerate isolation from hospital services or for some other reason, who will need to evacuate early to Maclean or elsewhere.</p> <p>The Bureau of Meteorology's Service Level Specifications include a targeted minimum 6 hours' lead time for moderate flooding (river heights of 2.2m and above) at Maclean. This is approximately the height at which Yamba Road closes. In the Feb/Mar 2022 flood, there was over 24 hours between the first warning of possible moderate flooding at Maclean, and the closure of Yamba Road.</p> <p>An assessment has been undertaken to determine whether this minimum time available for evacuation (i.e. 6 hours) is sufficient for 'Parkside'. This assessment was prepared using the NSW SES evacuation timeline methodology:</p> <ul style="list-style-type: none"> • <i>Warning Acceptance Factor</i> = 1 hr • <i>Warning Lag Factor</i> = 1 hr • <i>Travel Time</i> – function of number of evacuating vehicles and evacuation route capacity • <i>Traffic Safety Factor</i> – function of travel time <p>Based on the 2016 Census, there were about 3768 residential vehicles in Yamba, including an estimate of the number of vehicles for the 4.8% of occupied private dwellings who did not state the number of vehicles.</p> <p>As the NSW SES Yamba Unit has indicated, most residents of Yamba do not evacuate the village during floods. This is also the expectation for most residents of the Parkside development. Assuming that up to about 10% of Yamba's occupied private dwellings (377 vehicles), and up to about 10% of Parkside's residents (20 vehicles, assuming same number of vehicles per dwelling as for Yamba), then approximately 400 vehicles may seek to evacuate. When the standard evacuation route capacity for one lane of traffic (600 vehicles/hr) is applied, this yields a travel time of 0.7 hours, a traffic safety factor of 1 hour, and a total time required to evacuate of 3.7 hours. Consequently there would be an evacuation surplus of 2.3 hours:</p> <p><i>Surplus Time</i> = <i>Time Available</i> (6 hrs) - <i>Time Required</i> (3.7 hrs) = 2.3 hrs</p> <p>Thus there appears to be additional evacuation timeline capacity for the minority of Yamba residents (assumed to be 10%) who wish to evacuate to Maclean or beyond. Further it is noted that the actual warning time available in the Feb/Mar 2022 flood was more than 24 hours not 6 hours.</p>

LEP 2011 Clause 5.21 Flood Planning Requirements	Response
(d) incorporates appropriate measures to manage risk to life in the event of a flood, and	<p>Measures to manage risk to life include:</p> <ul style="list-style-type: none"> • all dwellings with floor levels at least 0.5m above the 1 in 100 chance per year flood level (and only about 0.6m below the extreme flood level) • the Clubhouse with a floor level at the extreme flood level, and with an independent power supply and 7 days' supply of drinking water, to function as a flood refuge in the event of a very severe flood • a Flood Emergency Management Plan (FEMP) including measures to prepare for, respond to and recover from flooding. A key will be routinely educating residents about the flood risks, procedures and safety in floods.
(e) 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 site does not adjoin any riparian vegetation or riverbank or watercourse and is not located within an identified coastal erosion area. Therefore, the development will not adversely affect the environment or cause avoidable erosion, siltation or destruction of these natural elements.
(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters— (a) the impact of the development on projected changes to flood behaviour as a result of climate change,	See response to 5.21(1)(b) above
(b) the intended design and scale of buildings resulting from the development,	As has been identified in the Addendum to Council's Assessment Report to the Panel, the design and scale of the buildings, i.e. small two bedroom moveable dwellings, are considered to be compatible with the flood function and behaviour of the land. Further, the dwellings will be located above the 1 in 100 chance per year flood level (plus 500mm freeboard) and are moveable structures. Therefore, the design and scale of buildings are considered to be suitable for the land on which they are located.
(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,	See responses to 5.21(2)(c) and 5.21(2)(d) above
(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.	The proposed dwellings are manufactured homes which means self-contained dwellings, being a dwelling that comprises one or more major sections. The major sections of each building are required to be designed to be relocatable and moveable which will allow for the potential relocation, modification or removal if the surrounding area is impacted by flooding or coastal erosion.

APPENDIX C

COMPATIBILITY WITH DCP REQUIREMENTS

Refer DCP Part D3.2,
Schedule D2 – multi dwelling housing (urban residential and associated uses),
Schedule D4 – Yamba floodplain, General Floodplain

Planning Consideration	Prescriptive Control	Assessment
Flood & Pad Levels	1. All floor levels to be no lower than the 5 year flood level plus freeboard	Satisfied. Site is already filled above 5 year flood level.
	2. Primary habitable floor levels to be no lower than the 100 year flood level plus freeboard.	Satisfied. Dwelling floor levels to be 3.01m AHD.
Building Components	1. All structures to have flood compatible building components below the design level of the primary habitable floor level.	Design of structures during CC stage will satisfy this requirement.
Structural Soundness	2. Applicant to demonstrate that the structure can withstand with forces of floodwater, debris and buoyancy up to and including a 100 year flood plus freeboard, or a PMF if required to satisfy evacuation criteria (see below). An engineer's report may be required.	Design of structures during CC stage will satisfy this requirement.
Flood Effects	2. The flood impact of the development to be considered to ensure that the development will not increase flood effects elsewhere, having regard to: (i) loss of flood storage; (ii) changes in flood levels and velocities caused by alterations to the flood conveyancing; and (iii) the cumulative impact of multiple potential developments in the floodplain. An engineer's report may be required.	The site has already been filled and will not alter flood effects on adjacent properties – refer response to LEP clause 5.21(1)(c) on page 26.

Planning Consideration	Prescriptive Control	Assessment
Evacuation	1. <i>Reliable access</i> * for pedestrians or vehicles required during a 100 year flood to a publicly accessible location above the PMF.	<p>Satisfied. 'Parkside' will not be flooded in the 100 year flood, precluding the need for evacuation apart from residents whose individual circumstances mean that they cannot tolerate isolation. These residents will need to evacuate before roads are cut, which the Site Flood Emergency Management Plan – including a case study of the Feb/Mar 2022 flood – makes clear is possible.</p> <p>In rarer floods, the designed terrain of 'Parkside' will make it possible for pedestrians to safely make their way to the publicly accessible Clubhouse. This community building will have a floor level above the extreme flood level, an independent power supply, and 7 days' supply of drinking water, making it suitable as a flood refuge in very rare floods.</p> <p>If this DCP control was interpreted to mean that rising road access from a development site to an official evacuation centre was required, most development in Yamba would be precluded. In our opinion, this is not the intent of the prescriptive control. Contrary to the NRPP's record of deferral, in our opinion the DCP does <i>not</i> apply a blanket rule of banning a 'shelter in place' strategy. In an area such as Yamba where the flood height range (i.e. the height between the 1 in 100 chance per year flood and extreme flood) is relatively modest, where sheltering in place is already wisely practised, and where an accessible refuge above the extreme flood level is proposed, sheltering in place is an acceptable approach to managing the risk to life. Further, for any residents needing to evacuate before flooding, early evacuation is possible both in terms of available warning triggers, and evacuation route capacity.</p>
	3. The development is to be consistent with any relevant flood evacuation strategy, Flood Plan adopted by Council or similar plan.	<p>Satisfied. The Site Flood Emergency Plan has been prepared with reference to the Clarence Valley Local Flood Plan. There is opportunity to evacuate to Maclean before flooding closes Yamba Road, using NSW SES triggers or alternatives. Discussions with NSW SES personnel indicate that sheltering above the maximum reach of floodwaters is regarded as an acceptable practice in Yamba.</p>
Management & Design	1. Applicant to demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this DCP.	Not applicable, since no subdivision is proposed.
	2. <i>Site Emergency Response Flood Plan</i> * required where floor levels are below the design floor level, (except for single dwelling-houses).	Not required, since floor levels meet design floor level. Nonetheless, a Site Flood Emergency Plan has been prepared that meets the requirements.

* Key Definitions (see DCP)

Reliable access during a flood means the ability for people to safely evacuate an area subject to flooding, having regard to the depth and velocity of flood waters and the suitability of the evacuation route, without a need to travel through areas where water depths increase.

Site Emergency Response Flood Plan (not being an SES Flood Plan) is a management plan that demonstrates the ability to safely evacuate persons and include a strategy to move goods above the flood level within the available warning time. This Plan must be consistent with any relevant flood evacuation strategy, flood plan or similar plan.