Valley Watch

Incorporated

[redacted]

2464

[redacted]

15th April

2024

The General Manager
Clarence Valley Council
GRAFTON NSW

120 Carrs Drive Yamba. DA 2023/0241
216 Dwelling Manufactured Home Estate and Communal Facilities

Valley Watch Inc is a local Not- For- Profit association which has been operating in the
Lower Clarence for the past 30 years. Our mission is to advocate for a healthy and biologically diverse environment and to preserve the quality of life in the Clarence Valley.
We oppose this Development as it further diminishes the available storage area for floodwaters on the WYURA floodplain.
Further fill (up to 3.2 metres) along the western side of Carrs Road effectively extends what is a massive levy bank trapping the flow of water.
As the water is trapped it is pushed back to the east and north impacting existing homes in Yamba town.
CVC is well aware of its obligations pursuant to 5.21 LEP and State Disaster Mitigation Plan 2024-2026 in limiting the exposure to people's homes.
There is to be 8 hectares of vegetation (existing habitat) removed. It is assumed in MDE Report that the predeveloped site is 100% pervious having been previously used as grazing land. However, there is no evidence of this.
If this DA is to be determined as a "stand alone "development the overall impact of the fill upon Yamba's existing residential structures will be overlooked.
As there is no Masterplan or Storm Water Study to refer to in deciding what impacts there will be, we submit this Development Application should be not allowed to proceed.

Regards
Helen Granleese
President
Valley Watch Inc.

15/4/2024

Craigh McNeill

[redacted]

Submission for DA2023-0241 – 120 Carrs Drive, Yamba

I objected to the development for the following reasons;

The proposed development is on a flood storage area

The proposed development is on a floodway

There is no assessment of flood storage

There is no assessment of the floodway

The devolvement does not comply with State Environmental Planning Policy Amendment (Flood Planning) 2021" under the Environmental Planning and Assessment Act 1979

Evacuation can not be performed as described

The flood model underpinning the Statement of Environmental Effects is flawed.

The Statement of Environmental Effects is flawed

The flood model underpinning the Flood Impact Assessment Report is flawed

The Flood Risk Impact and or Management is flawed

The flood model underpinning the Flood Risk Assessment and Flood Emergency Response Plan is flawed

The Flood Risk Impact and or Management is flawed

There are inadequate services available for further residents

The Amendment of the Clarence Valley Local Environmental Plan 2011 has not followed legislative procedure

I will supply further details to these issues raised.

I wish to apply for an extension for submission as I have been unable to assess due to the complexity of the Development Applications related to this area and the errors with the Flood Model.

[redacted]

Craigh McNeill

15/4/2024

Craigh McNeill

[redacted]

Submission for DA2023-0241 – 120 Carrs Drive, Yamba

1) A Pre-requisite for Assessing the West Yamba Development Application

Deficiencies in the Council's Flood Model

The Development Application in question is predicated upon the findings of a Flood Impact Assessment, which itself is contingent upon the Flood Model adopted by the Council. I contend that the Flood Model is deficient in several key aspects, undermining the reliability of the Flood Impact Assessment and, by extension, the foundation of the Development Application.

It is evident that the issues with the flood model, specifically its application in the West Yamba Urban Release Area (WYURA) and the reliance on the Lower Clarence Flood Model 2022 (LCFM 2022), demand comprehensive examination and rectification.

In response to these critical issues, a Government Information (Public Access) Act 2009 (GIPA) request was initiated, aiming to secure detailed information from the Clarence Valley Council. The GIPA request is designed to clarify the flood model's underlying assumptions and methodologies, scrutinise the council's adherence to flood risk management guidelines, and evaluate the transparency and inclusivity of community and stakeholder engagement in flood risk planning and mitigation strategies.

The request encompasses a broad range of inquiries critical to flood risk management that the current flood model seems to overlook, including:

The notable omission of assessments for flood storage, floodways, and flood fringe areas within WYURA.
The need for detailed flood modeling data that accurately reflects changes in flood levels due to proposed developments and their potential impact on flood risks.

The necessity for public consultation and expert review processes to address the effects of documented surge events and the cumulative impact of landscape modifications on flood risks.

The primary objective of this detailed inquiry and the subsequent analysis of the flood model is to ensure that flood risk management in WYURA is grounded in accurate, comprehensive, and reliable data. Such a foundational approach is imperative for ensuring community safety, preserving environmental integrity, and supporting sustainable development within flood-prone areas of the Clarence Valley Council's jurisdiction.

Addressing the deficiencies within the Lower Clarence Flood Model 2022

Addressing the deficiencies within the Lower Clarence Flood Model 2022 prior to the assessment of the Development Application for the West Yamba Urban Release Area (WYURA) is imperative due to several critical considerations rooted in legal, safety, and sustainability frameworks:

Accuracy and Reliability of Flood Impact Assessments: Fundamental to the Environmental Planning and Assessment Act 1979 (EP&A Act), accurate flood impact assessments ensure that development proposals are evaluated with a thorough understanding of flood risks. The LCFM 2022's shortcomings in considering floodways, flood storage, and flood fringe areas could lead to unreliable risk predictions, undermining the development assessment process's integrity.

Community Safety and Environmental Protection: The safety of the community and the protection of the environment are paramount, as underscored by the EP&A Act and the State Environmental Planning Policy (SEPP) on Natural Resource Management (2005). A deficient flood model poses risks to these priorities by potentially underestimating flood impacts, necessitating rectification to uphold public safety and environmental conservation.

Regulatory Compliance and Best Practice: Ensuring the flood model's compliance with the Floodplain Development Manual (NSW Government, 2005) and the Flood Risk Management Guide (NSW Government, 2019) is critical. Addressing model deficiencies aligns with these guidelines, fostering best practices in flood risk management and safeguarding against potential non-compliance with regulatory mandates.

Public Trust and Transparency: Engaging with the community and stakeholders transparently is central to fostering trust in the development process, as encouraged by the Government Information (Public Access) Act 2009 (GIPA Act). Rectifying the flood model's deficiencies transparently can enhance public confidence in the development's adherence to safety and environmental standards.

Long-term Sustainability and Resilience: Climate Change Adaptation and Resilience measures, as outlined in the NSW Climate Change Policy Framework (2016), emphasise the need for resilient and sustainable development planning. Correcting the flood model ensures that the development within WYURA is prepared for future climatic changes, ensuring its sustainability and resilience.

Infrastructure and Economic Considerations: Adequate flood risk management protects critical infrastructure and supports economic stability, in line with the Local Government Act 1993 (NSW), which emphasises the sustainable management of public assets. Ensuring that the flood model accurately reflects flood risks safeguards investments and supports the economic viability of the area.

Addressing the identified deficiencies in the LCFM 2022 prior to progressing with the Development Application for WYURA is not only a matter of regulatory compliance and adherence to best practices but also a critical step towards ensuring the safety, sustainability, and economic resilience of the development. This approach supports the foundational goal of development planning: to achieve outcomes that are beneficial and sustainable for the community, the environment, and the economy.

2) Assessment of Climate Change impacts

Clarence Valley Local Environmental Plan 2011 [NSW]

5.21 Flood planning

(1) The objectives of this clause are as follows—

(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**,

(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**

Department of Planning and Environment

Flood Impact and Risk Assessment Flood Risk Management Guide LU01:

2.3 General considerations in a flood impact and risk assessment

For most developments a minimum level of information is required to ensure local flood constraints (see Table 3) can be effectively considered. In addition, for a FIRA to meet the aims outlined in Section 1.1 it requires an understanding of:

- the full range of flood risk. To achieve this, flood behaviour would be examined for a range of events. Typical events examined may include the 10%, 5%, 1%, 0.5% or 0.2% AEP and probable maximum flood (PMF)

For most developments a minimum level of information is required to ensure local flood constraints (see Table 3) can be effectively considered. In addition, for a FIRA to meet theaims outlined in Section 1.1 it requires an understanding of:

- the full range of flood risk. To achieve this, flood behaviour would be examined for a range of events. Typical events examined may include the 10%, 5%, 1%, 0.5% or 0.2%AEP and probable maximum flood (PMF)
- the potential for coincidence with downstream tailwater levels or ocean inundation levelswhere the area is influenced by backwater flooding from downstream waterways or the ocean
- the constraints that flood places on the land (floodways, flood storage, flood hazard and emergency response issues) determined for a number of events, typically 5%, 1%, 0.2%or 0.5% AEP and PMF
- the appropriateness of the development or development types for the location based onthe flood constraints on the land
- the adequacy of management measures and controls to:
    - effectively address these constraints to ensure the flood risks to the proposeddevelopment and its users are acceptable
    - manage flood and associated emergency management (EM) impacts to the existing community due to the development
- the choice of Australian Rainfall and Runoff (ARR) version to use. This is discussed inSection 2.4.1
- climate change impacts. Both existing and post development flood behaviour needs to consider climate change impacts on flood behaviour so the robustness of decisions overtime can be understood. This is discussed in Section 2.4.2.

2.4.2Considering climate change

For developments with a life exceeding 20 years the implications of climate change should be assessed considering the requirements of the consent authority. This may include consideration of:

- sea level rise where the waterway in the vicinity of the study area is within the tidal limits

- increased intensity of flood producing rainfall events. Modelling could assess sensitivity of flood behaviour to changes by using either the 0.5% and/or 0.2% AEP event as an indicator of sensitivity to change in the 1% AEP flood event.

Integrating Climate Change into Flood Risk Management - NSW Government

The guideline from the NSW Government on flood risk management provides a clear directive that climate change impacts, including sea level rise and changes in rainfall intensity, should be considered in all stages of flood modelling and risk assessment. This comprehensive approach ensures that the assessments are forward-looking and account for potential future changes in climate patterns. Notably, the guideline emphasises the inclusion of climate change considerations in both the planning and implementation stages of flood risk management (FRM) plans, underscoring the importance of incorporating these factors into the development of flood studies, FRM studies, and FRM plans.

Moreover, practical examples of using the Floodplain Risk Management Guide highlight specific case studies where climate change considerations play a crucial role in assessing catchment flooding and oceanic inundation. For instance, the case studies discuss the need to model ocean (downstream) boundary conditions for design events, taking into account sea level rise projections. This includes adjusting downstream boundary conditions and initial water levels for tidal waterways in the model, thereby ensuring that projected design flood levels reflect potential future scenarios influenced by climate change.

In summary, both the flood risk management guidelines and the practical examples underline the necessity of including climate change impacts, particularly sea level rise, in all flood modelling scenarios. This approach is critical for developing accurate and resilient flood risk management strategies that are capable of addressing the challenges posed by a changing climate.

Inadequate assessment of Climate Change Impacts

The FIRA states "*The assessment was also carried out for future climate conditions by considering the 1% AEP 2100 Climate Change Scenario 1*."

Upon review of the Flood Impact Risk Assessment (FIRA) conducted for the proposed development at 120 Carrs Drive, Yamba, it has become apparent that the assessment does not fully align with the current guidelines and expectations set forth by the NSW Government on flood risk management, specifically concerning the inclusion of climate change impacts.

- The assessment has only considered ONE climate change in scenario

Aligning with Legislative Intent and Best Practices for Coastal Resilience

The NSW Government's flood risk management guideline provides a clear directive that climate change impacts, including sea level rise and changes in rainfall intensity, should be considered in all stages of flood modelling and risk assessment. This comprehensive approach is fundamental to ensuring that the assessments are forward-looking and account for potential future changes in climate patterns. Moreover, practical examples highlighted within the Floodplain Risk Management Guide stress the importance of including climate change considerations, such as sea level rise and increased rainfall intensity, in both the planning and implementation stages of flood risk management plans.

The concern lies in the apparent omission of a detailed climate change impact assessment within the FIRA for the development. The significance of such considerations cannot be understated, as they are crucial for developing accurate and resilient flood risk management strategies capable of addressing the challenges posed by a changing climate. The inclusion of climate change impacts is not only a guideline but a necessity for ensuring the long-term safety and sustainability of developments in flood-prone areas.

Given the importance of these factors, I am compelled to question the completeness and integrity of the flood impact assessment process conducted for this project. While I recognise the expertise and effort that goes into such assessments, it is essential that all relevant factors, including climate change impacts, are thoroughly considered to provide a comprehensive understanding of the potential flood risks associated with the development.

3) Deficient assessment of floodway, flood storage or flood fringe

Non – compliance with State Environmental Planning Policy Amendment (Flood Planning) 2021
The omission of assessments for flood storage as stipulated by Flood Risk Management Guideline FB02 demonstrates non-compliance with the State Environmental Planning Policy Amendment (Flood Planning) 2021, under the Environmental Planning and Assessment Act 1979.

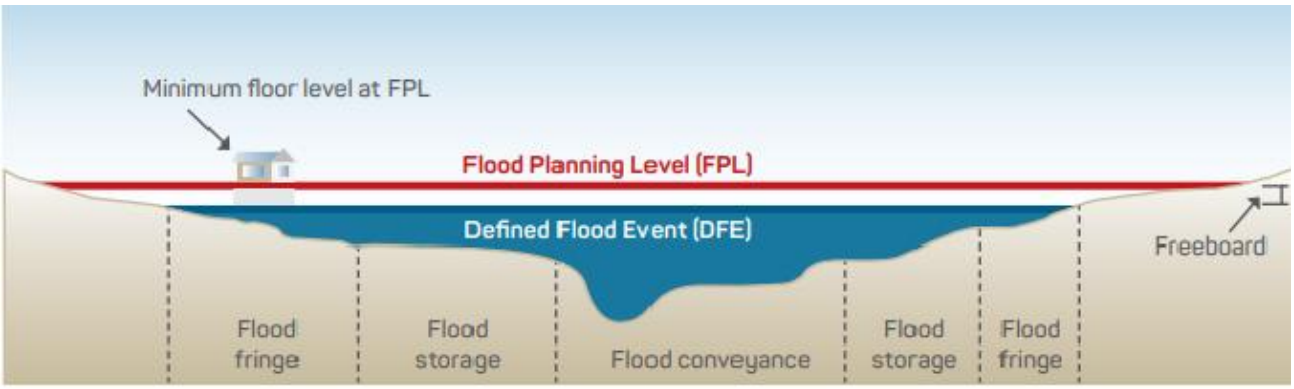
Assessment of Flood Storage

Floodplains have the natural hydraulic functions of conveying and storing water. The flood function categories of floodway areas, flood storage areas and flood fringe are defined in the Flood risk management manual: the policy and manual for the management of flood liable land (the manual; DPE 2023) as follows:

- floodways are generally areas which convey a significant portion of water during floods and are particularly sensitive to changes that impact flow conveyance. They often align with naturally defined channels

- flood storage areas, which are areas outside of floodways, are generally areas that store a significant proportion of the volume of water and where flood behaviour is sensitive to changes that impact on the storage of water during a flood

- flood fringe areas are areas within the extent of flooding for the event but which are outside floodways and flood storage areas. Flood fringe areas are not sensitive to changes in either flow conveyance or storage



Note: flood conveyance, flood storage and flood fringe areas vary with the severity of the flood event

Image 1.

Identification of Flood Depths: Using hydraulic models and historical flood data, you can determine the depth of flooding at various points across the floodplain.
The starting point for the initial iterations may be a global set of depth criteria, such as 1 m for the transition from floodway to flood storage and 0.5 m for the transition from flood storage to flood fringe[1].

Flood Level Depth

The current flood model indicates flood depths of 2.9—to 3.0 meters for the required Climate Change 1 (CC1) scenario, these controls are required for all new residential developments to have a primary habitable floor level above the 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm.

The WYURA site

"The site is located within a region characterised by low lying sand flats with localised swampy areas in lower lying areas and depressions across the site. The provided survey indicates that site levels are generally between about RL1.0 to 1.4m (AHD) with lower lying depressions and drainage lines having elevations of between about 0.5 to 1.0m."[2]

- "The land has a general ground level of from 1 m to 2 mAHD and is therefore inundated frequently and by over 1 m deep in the 100 year ARI event"[3]
  The FIRA notes;

- "Existing ground elevations typically vary between 1 to 2 m AHD and due to its elevation, the land is generally flood prone."[4]

[1] flood-risk-management-flood-function-230230
[2] Exhibition copy Geotechnical report.pdf
[3] Yamba Floodplain Risk Management Plan - https://www.clarence.nsw.gov.au/files/assets/public/v/1/council/files/flood-plans/yambafrmplan-adoptedfeb_2009_1.pdf pg 11
[4] 120 Carrs Drive Yamba Flood Impact and Risk Assessment pg 7

Displaced floodwater from filled ground is confined to the Lake and West Yamba, as shown in Images 2 and 3, unable to spread across the whole floodplain until it overtops Yamba Road, this impact has not been assessed. This unaddressed impact prompts additional inquiry, as detailed in the GIPA Flood Request page 32 -Retained Floodwaters in West Yamba Elevate 'Peak Catchment Coincidence'

The West Yamba area, is bounded by;

a) Yamba Road to the north

Image 2. Westerly view of Yamba road.

b) filled ground to the east

Image 3. Easterly view of Golding st

c) The Oyster Channel to the West and Lake Wooloweyah to the south

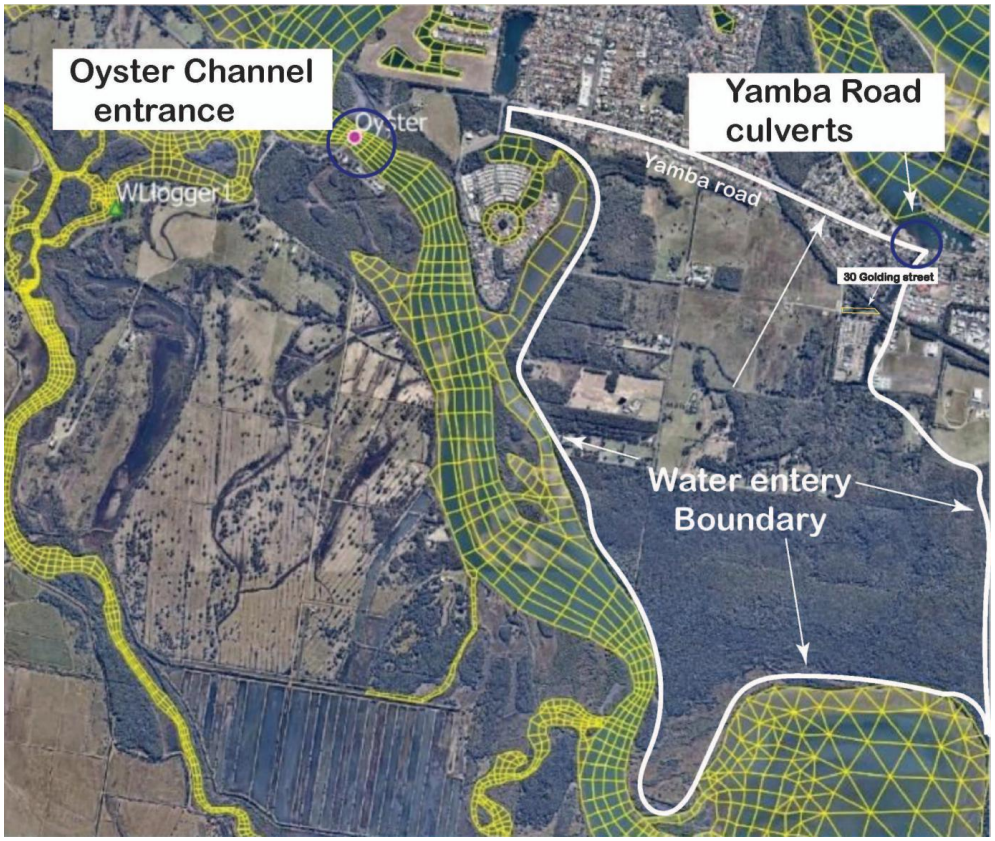


Image 4. Floodwater Flow Constraints

Alongside the Oyster Channel, the only other significant link from the Clarence River to the floodplain south of Yamba Road is the unnamed creek between Endeavour and Freeburn Streets. However, 'the capacity of this creek to convey significant flows across Yamba Road is severely restricted due to the small culvert capacity under Yamba Road.'[5] Floodwaters that do manage to enter from this culvert also contribute to the overflow and storage in West Yamba, further emphasising the critical hydrodynamic roles played by these two conduits in managing the area's water flow.

e) **The Oyster Channel is the major hydraulic connector between the Clarence River and Lake Wooloweyah, playing a pivotal role in the water flow dynamics entering the lake.**

The principal flow of flood waters into Lake Wooloweyah is channelled through the Oyster Channel, causing the lake to overflow into West Yamba and accumulate on the land. Based on the comprehensive analysis provided in "Knowledge for Productivity: Phase I - Lake Wooloweyah," a clear indication of the significance of the Oyster Channel's flow into Lake Wooloweyah is evident. The document highlights the calibration and validation of a detailed hydrodynamic model[6] that incorporates flow measurements and water level data to accurately depict the tidal dynamics within the estuary system. Specifically, it states:

"Another important feature of the tides inside the lake is that experiences significant spring tidal pumping, characterised by an increase in the mean water level of a tidal basin during larger tidal forcing during spring tides"

"This increase in the mean water level also occurs during elevated water levels in the Clarence River during floods"

[5] Exhibition copy Flood Risk Impact and or Management Plan A12497. pg 15

[6] Knowledge for Productivity Phase I - Lake Wooloweyah.pdf pg 11

"The calibration of the model against flow measurements in Oyster Channel shows that the model reproduces the tidal flows and therefore volumes in and out of Lake Wooloweyah with a high level of accuracy."[7]

This statement underscores the substantial role that the Oyster Channel plays in influencing the hydrodynamics and ecological health of Lake Wooloweyah, as demonstrated through rigorous hydrodynamic modelling. The validation efforts, particularly the alignment of model outputs with empirical flow data collected in the Oyster Channel, further cement the channel's prominence in water flow in and out of Lake Wooloweyah.

f) As a result, Lake Wooloweyah's floodwaters are unable to exit even on an ebbing tide during elevated flooding, such as the 2022 flood event where water levels rose for 27.5 hours, following the peak at the ocean boundary, as illustrated in Figure 1

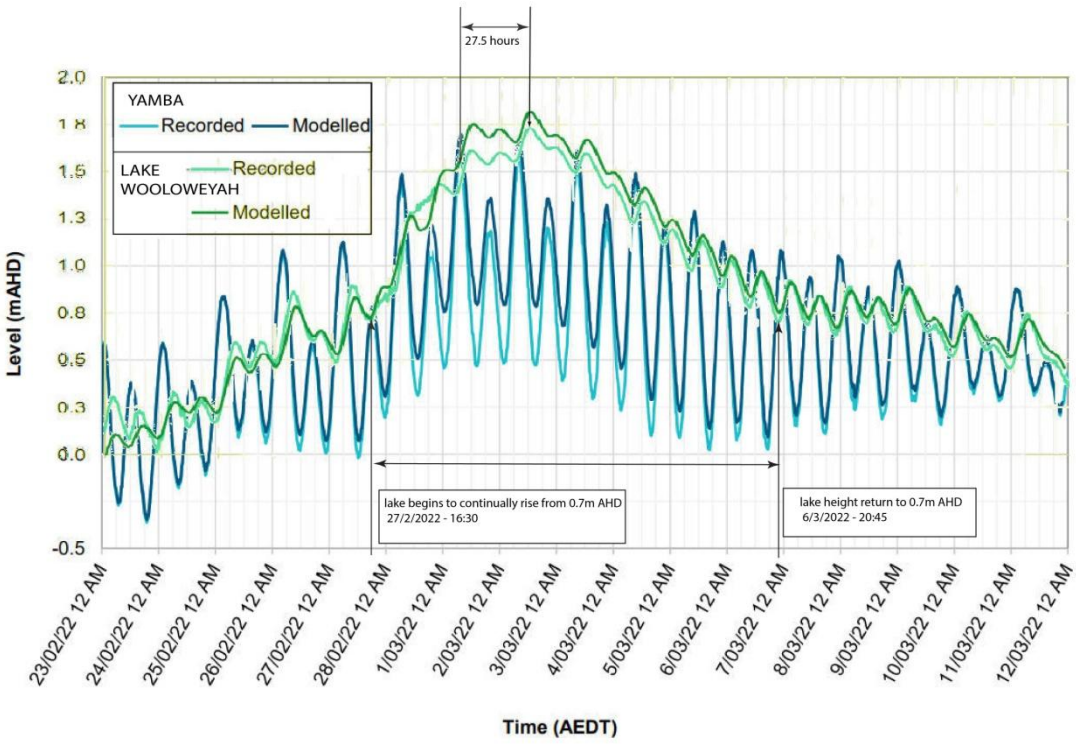


Figure 1. Lower Clarence Flood Model 2022

This phenomenon prompts additional inquiries, as outlined in the GIPA Flood Request page 28 - Oyster Channel: The Critical Regulator of Lake Wooloweyah's Flood Waters.

[7] Department of Primary Industries -Knowledge for Productivity: Phase I - Lake Wooloweyah

Storage of floodwater

g) Flood waters from Lake Wooloweyah and the Oyster Channel overflow into West Yamba and accumulate on the land

Image 5. Southerly view of Carrs Drive

h) **Limited storage**

The Flood Impact Assessment identifies heights along Yamba Road ranging from 1.6 to 1.9 mAHD image 6, and in the WYURA Flood Storage area the elevation of the land, can be determined from a survey conducted by Clarence Valley Council for stormwater image 7, the height ranges between 0.7 to 1.6 meters above the Australian Height Datum (mAHD).

Other than the Oyster Chanel and the Yamba road culverts, flood water cannot flow into or out of West Yamba until water levels surpass the surrounding ground levels of Yamba Road as depicted in Image 10.

Until Yamba Road is overtopped, the flow and storage of floodwaters are constrained by the limited capacity of the Oyster Channel and the culvert under Yamba Road as depicted in image 8. Consequently, floodwater cannot return to the Clarence River until river levels recede, requiring any excess or displaced floodwater to be contained solely within West Yamba.

This limitation underscores the critical role of flow restrictions in shaping floodwater distribution and storage dynamics in the area; this has not been addressed in the Flood Risk Assessment.

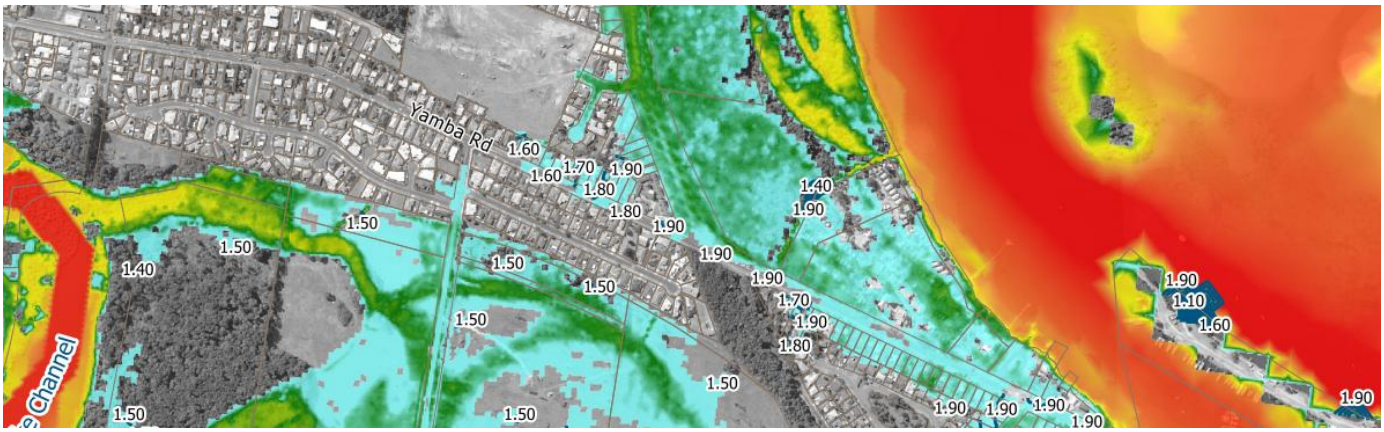


Image 6. Extract - Peak Flood Depth and Level Contours - 5% AEP Event

Image 7. Extract from Clarence Valley Council_stormwater_WestYamba - 19 Oct 11

i) Riverine Catchment Peak

Floodwaters store on WYURA until the river levels recede. The peak of the riverine catchment is independent to stored floodwaters.

The Riverine peak flows on top of the any stored water as shown in the GIPA Flood Request page 13 -Riverine Peak Flooding from Lake Wooloweyah March 2022.

In the March 2022 flood event, the riverine peak's arrival at Lake Wooloweyah coincided with a near low tide at the Ocean Boundary. Fortunately for West Yamba residents, the river had peaked 27.5 hours earlier. By the time the riverine peak reached West Yamba, the river level at the ocean boundary was 1.134 meters lower than in West Yamba, with draining water swirling around the street drains, as shown in the GIPA Flood Request images 10-13.

Had the peak of the riverine catchment coincided with a peak storm tide, the impact could have been significantly hazardous.

j) Peak Catchment Coincidence

The Peak Catchment Coincidence is when the riverine catchment peak coincides with the storm tide peak. The SES notes: Inundation can occur from 1.50 mAHD (2.4 m on the Yamba river gauge) dependant on the tides. Streets affected include the Halyard, Telopea Street, Melalueca Drive, Wooli Street, Carrs Drive, Yamba Plaza, Endeavour Street, Deering Street, Golding Street, Cook Street and Shores Drive.

The potential for catastrophic flooding increases when the riverine catchment peak coincides with storm tide peaks. The 2022 flood event demonstrated a critical period where floodwaters remained above 1.5 mAHD for 54 hours, underscoring the heightened risk of Peak Catchment Coincidence flooding within West Yamba compared to other areas in the Clarence Valley.

Riverine Catchment Peak Independence: Stored floodwaters in WYURA await river level recession, with the riverine peak independently contributing to the flood risk as highlighted on page 13 of the GIPA Flood Request. During the 2022 flood event flood waters held above 1.5mAHD for 54 hours

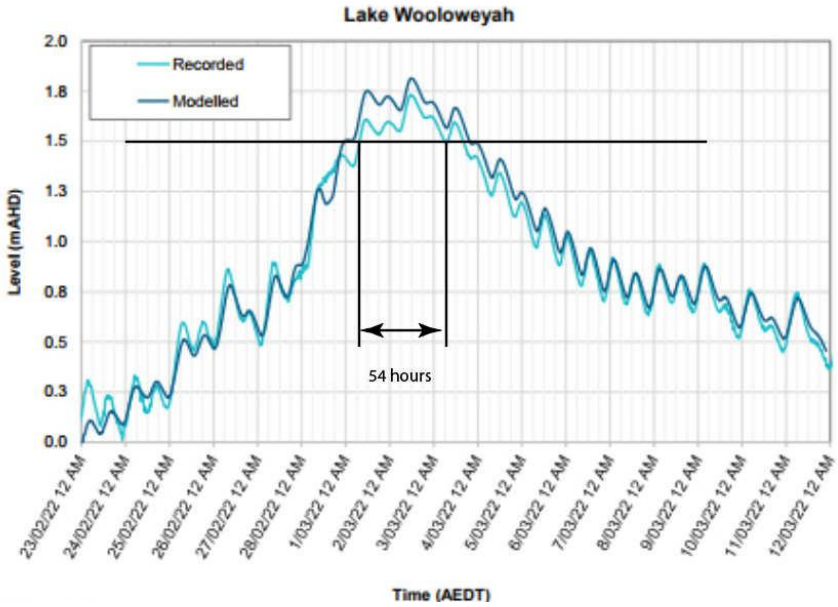


Figure 2.

The accumulation of floodwaters in West Yamba elevates the risk of Peak Catchment Coincidence flooding, higher than in any other area within the Clarence Valley.

k) <u>Storage capabilities of the WYURA</u>

The WYURA stores flood waters, above 1.0 meter and those flood waters are limited as described in the GIPA Flood Request page 27. Flood water flows from the lake or the river, store on WYURA, then recedes when Clarence river levels drops, unless the river is rising, as shown in Figure 1.

This issue is further elaborated upon in the GIPA Flood Request on page 32, under 'Floodways and Flood Storage'

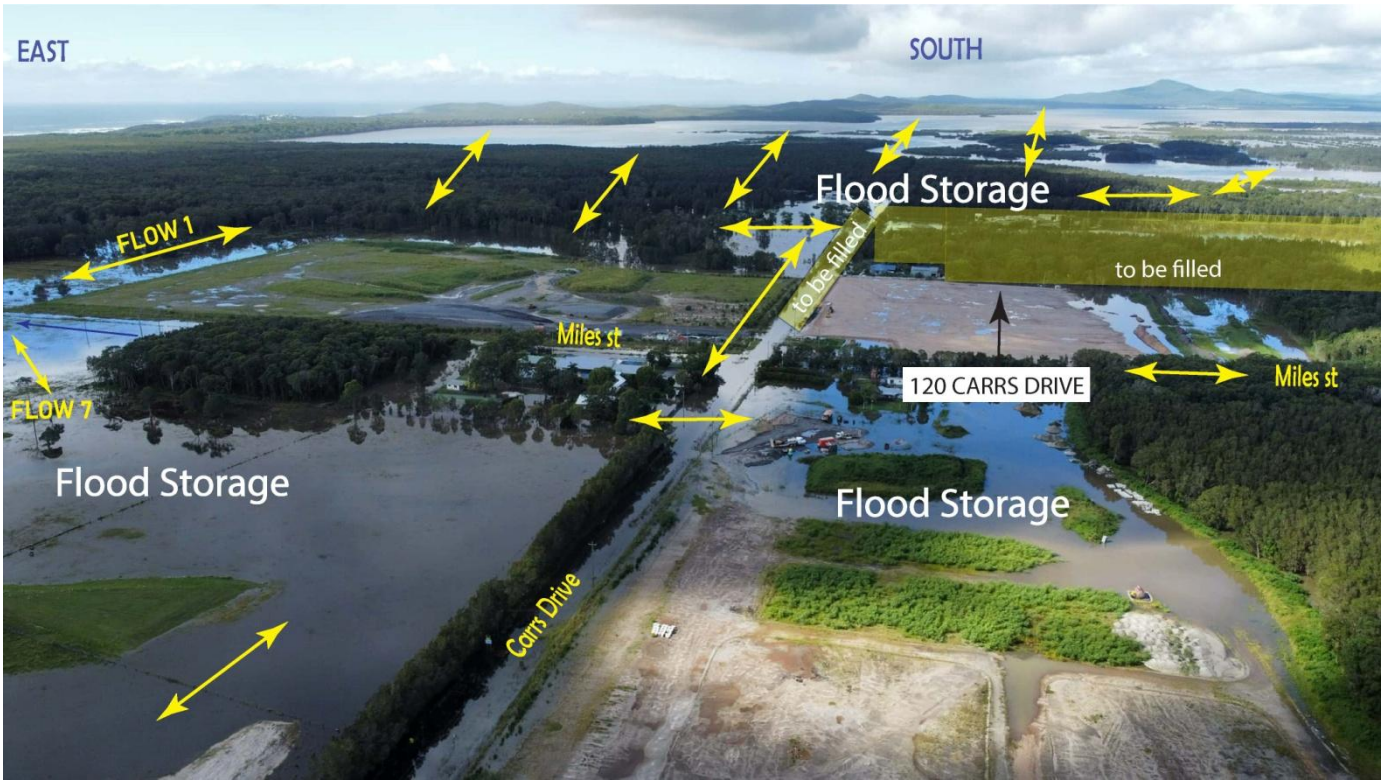


Image 8. Flood Storage - southern view - Carrs drive

l) The capacity for flood storage is illustrated in the "Bulk Earthworks" plan, the plan indicates that the site can accommodate approximately 1.8 vertical meters of flood water before reaching the 1% Annual Exceedance Probability (AEP) threshold

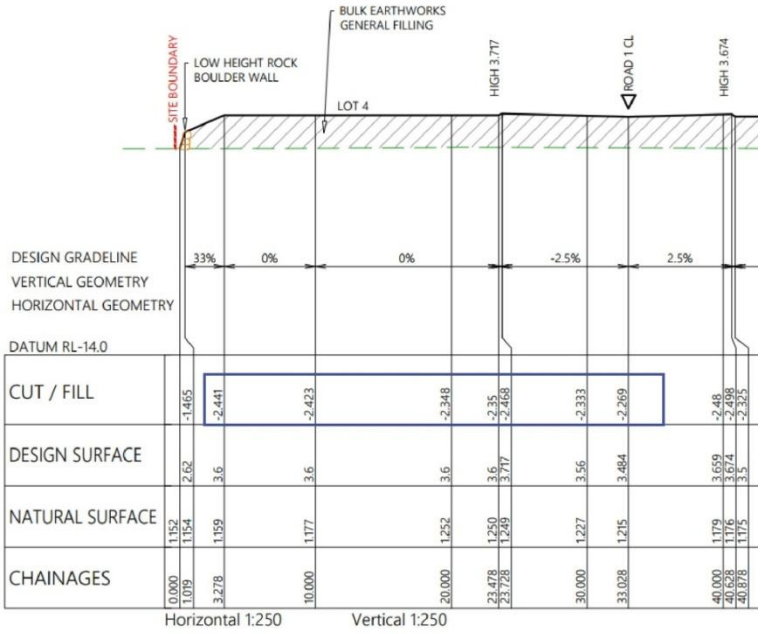


Figure 3. BULK EARTHWORKS SECTION - A

m) Obstruction of Floodwater Drainage

Flood waters are stored on WYURA minimising flood impacts on existing dwellings.
For Lake Wooloweyah and West Yamba, the 5% AEP CC1 flood level height is 2.08mAHD[8]
Dwellings situated south of Yamba road have some protection from flooding, for floods below the 1% AEP flood level, by the storage of flood water on WYURA.

The filling of the WYURA flood storage not only displaces flood water but also prevents the drainage of floodwater from natural surface levels at 1.25mAHD to the flood level of 2.08mAHD (for a 5% AEP event) from flowing freely back to the Oyster Channel.
Given that elevated lake floodwater levels persist for days, the blockage of drainage further increases the chance of Peak Catchment Coincidence flooding.
This has not been assessed.

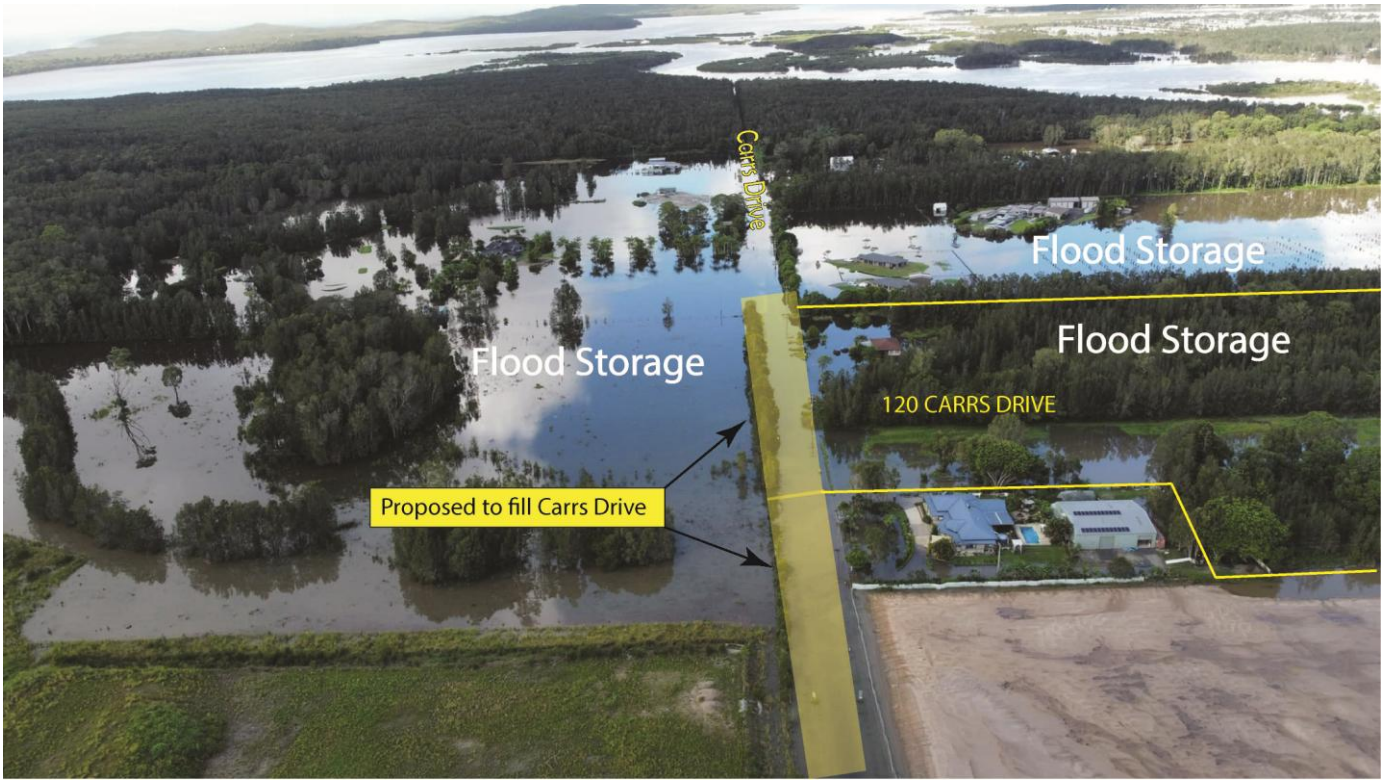


Image 9. Flood Storage - southern view - Carrs drive

Filling of 120 Carrs Drive, Yamba is compatible with the flood function and behaviour on the land and will adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties.

[8] based on Clarence Flood Model Update 2022-Table 6.4 Peak Design Flood Levels at Gauges (mAHD)

4) Diversion of Flood water

Currently, floodwaters are being diverted at 52 – 54 Miles Street, images from the March 2022 flood event show;

Image 10

1. accumulation of floodwater at the southern side of fill on Lot 46 & 47 DP 751395 (1) from Lake Wooloweyah (2) in the south

2. floodwater from the Oyster Channel in the South West (3) "water breaking the banks of Oyster Channel and Lake Channel to the west" as noted in Regional Flood Impact Assessment[9]

3. floodwaters flow northward towards WYURA, where "floodways within Yamba that take floodwaters from the south through middle Yamba to the Clarence River" Flood risk management Plan[10]

4. the flow of floodwaters is obstructed by filling at 52-54 Miles Street (4) and Lot 1 Carrs Drive (5) "movement of water from north to south is restricted by fill to the south"[11]

5. floodwater is restricted into Carrs Drive (6) the Engineering Drawings[12] exhibit Carrs Drive filled however there are no height or fill details.

6. floodwater is diverted to Golding st in the east (7)

7. the diverted floodwater flows towards residences in and around Golding st, in the North (8)

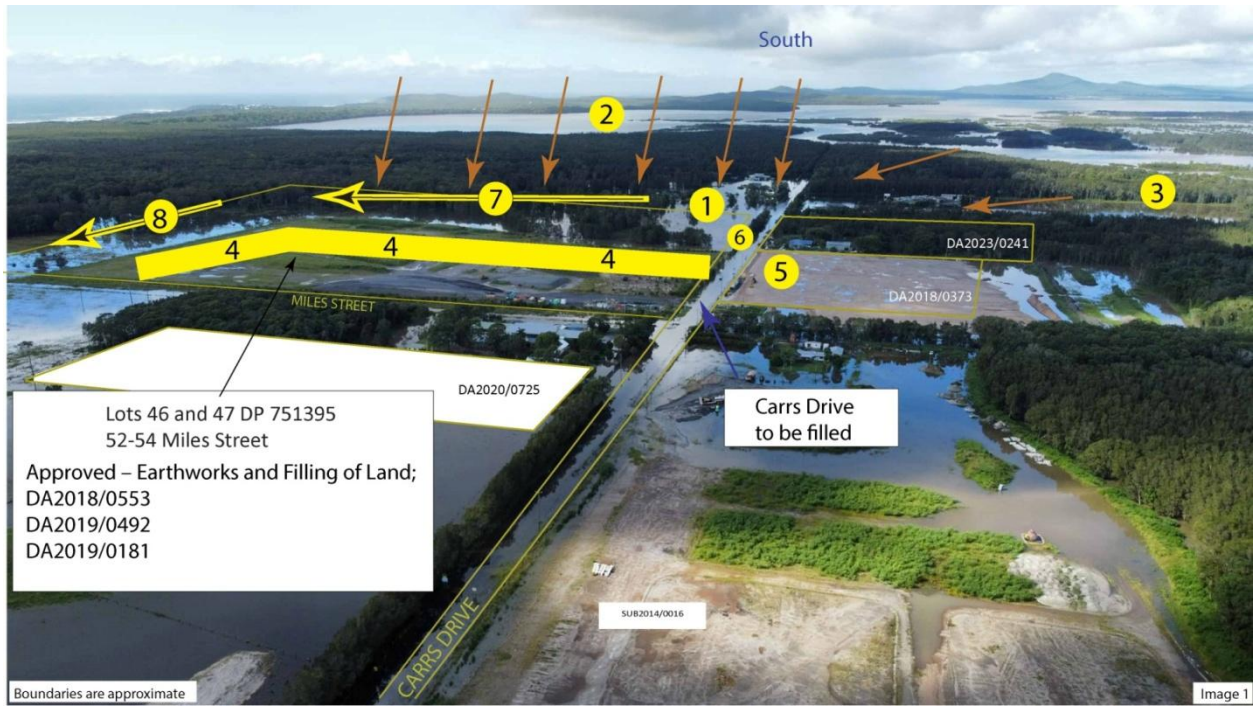


Image 10. Ariel view of Carrs Drive looking south

[9] 181Carrs Drive, Yamba, Regional Flood Impact Assessment – Final Report.pdf pg 15
[10] Yamba Floodplain Risk Management Plan 2009 pg 4
[11] 2021 WYURA Flood Impact Assessment.pdf Pg 23
[12] Exhibition copy Preliminary Engineering Drawings.pdf

Image 11

1. the diverted floodwater flows down Golding st (8) (9)
2. the diverted floodwater flows to residences (10)

Image 11. Ariel view of Carrs Drive looking east

5) Redirection of floodwater flow by elevating Carrs Drive with fill

Proposals to fill sections of Carrs Drive, as shown in Figure 4, will divert further floodwaters to the Golding st area and into homes. Redirection of floodwater to homes does not comply with FRM Guidelines.

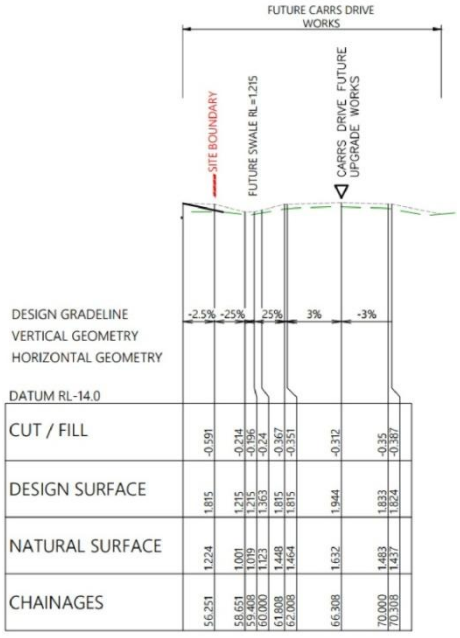


Figure 4. Extract from ROAD LONGITUDINAL SECTIONS - SHEET 1[13]

[13] Exhibition copy Tab 06 Civil Plans - Rev 1.pdf pg 6

6) Removal of DCP Designated Floodway Areas from the Regional Flood Impact Assessment

a) Sections of the floodways, as shown on the Residential Zones DCP,[14] have been excluded from all FRIA's produced by BMT. Project No's 000745, A12497, 003044, A12367

The Residential Zones Development Control Plan (DCP) 2011 includes a map titled "West Yamba Urban Release Stormwater." This map is a key component of the plan, detailing the specific regulations and guidelines for development within designated urban release areas. It outlines spatial arrangements and controls aimed at managing urban growth and ensuring sustainable development practices are followed according to the DCP's objectives.

The map in the DCP is a crucial visual tool in the Development Control Plan (DCP), illustrating the layout and planned management of stormwater systems within a specific Urban Release Area (URA). This integration is a direct reflection of the EPA Act's mandates, which require the incorporation of environmental considerations early in the planning stages to ensure sustainable urban development. Specifically, the map would detail areas designated for stormwater management, showing how these are integrated with urban layouts to mitigate flood risks, reduce pollution, and manage the environmental impacts of urban expansion. By depicting the arrangement and technical specifics of stormwater infrastructure—such as retention basins, drainage paths, and green infrastructure—the map supports the DCP's objectives of aligning local development plans with broader environmental management practices prescribed under the EPA Act. This alignment ensures that developments are not only compliant with immediate functional needs but also contribute to long-term sustainability goals, accommodating factors like climate change and urban density increases.

In the review and comparison between the Development Control Plan (DCP) for the West Yamba Urban Release Area (WYURA) dated 2011, and the Flood Impact and Risk Assessment– 000745 dated 20 February 2024, significant modifications have been identified concerning floodway designations within the specified areas.

The DCP 2011 explicitly outlined floodway zones critical for managing flood risks within the URA, as detailed in Section 4.3 "Floodway Designations and Land Use Restrictions" and visually represented in Appendix A "Maps of Designated Floodway Areas as of 2011". These areas were designated based on comprehensive studies to ensure proper floodplain management and to restrict certain types of development that could exacerbate flood risks.

However, upon examination of the "Cumulative Post – Development Topography of Site and Surrounds" map, notably referred to in the 2023 Regional Flood Impact Assessment's Appendix B, discrepancies have been noted. Several areas previously marked as floodways in the 2011 DCP have been omitted in the latest flood impact assessment's conceptual stormwater network plan for the URA. This adjustment suggests a re-evaluation of flood risks based on updated topographical and hydrological data, which may have influenced the decision to revise floodway boundaries.

[14] https://www.clarence.nsw.gov.au/files/assets/public/v/1/building-and-development/files/development-control-plans/residential-dcp_29_july_2022.pdf

Cumulative Post – development Topography of Site and Surrounds

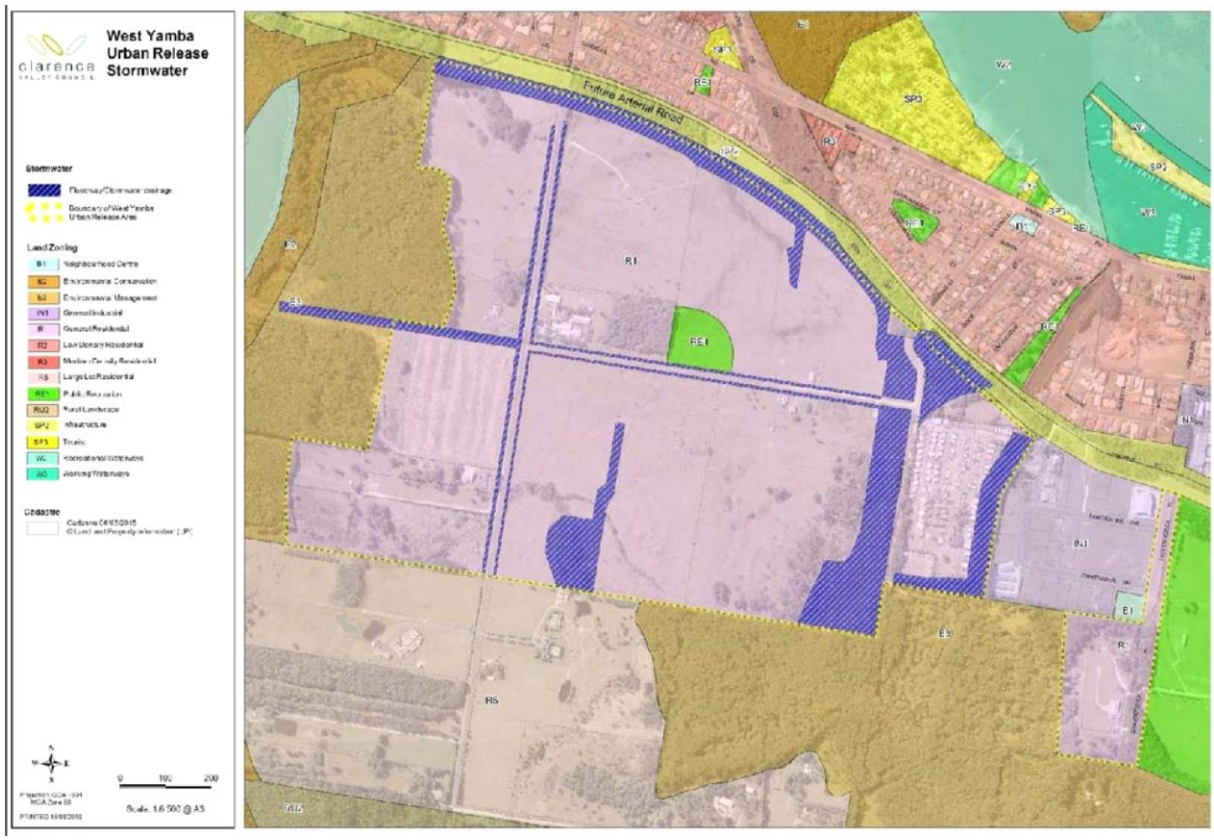


Image 12. A conceptual Stormwater Network Plan has been developed for the URA as shown in Figure X1.3.

b) Exclusion of Floodways from Flood Impact and Risk Assessment

Areas of the designated Floodway stormwater drainage, as shown in the DCP Image 12, have been removed.

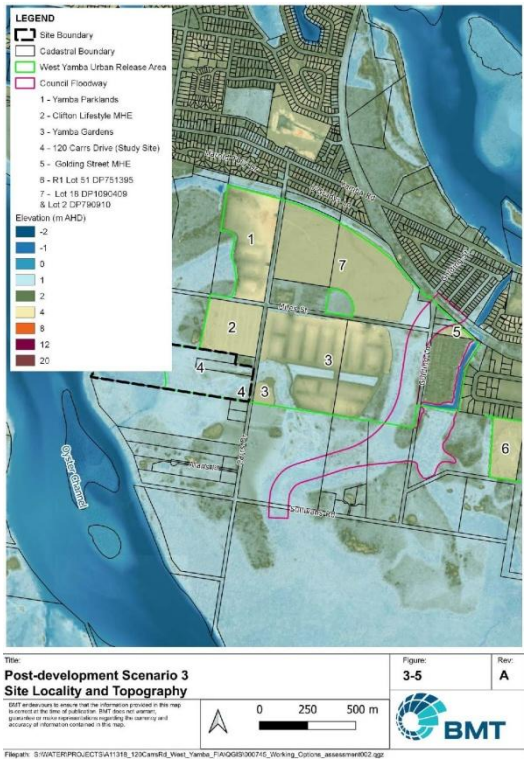


Image 13. Post-development Scenario 3

c) Excluded floodway

Floodways from CVC DCP have been overlayed on the FIRA Post-development Scenario 3 Site image. The excluded floodway is shown in Image 14;

(1) North side of WYURA
(2) Eastern side of WYURA
(3) North and south of Miles street
(4) East and west of Cars Drive
(5) 52-54 Miles street

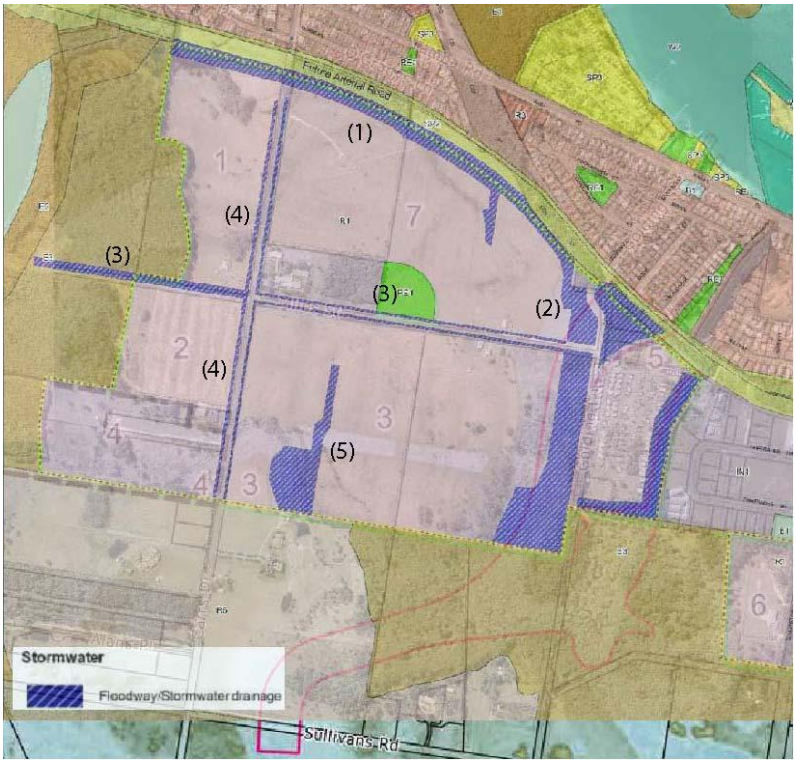


Image 14. Floodways overlayed on Post-development Scenario 3 Site

Aligning Development Control Plans with the NSW EPA Act

This change necessitates an immediate and thorough review to understand the implications of these alterations on flood risk management, urban planning, and public safety. Adjustments in floodway designations directly impact local zoning laws, building regulations, and infrastructure development strategies. As per Section 8.4 "Recommendations for Future Development in Previously Designated Floodways" of the 2023 assessment, these modifications should be aligned with current environmental management and urban development standards to ensure they adequately reflect updated flood risk assessments.

It is essential that all stakeholders, including local authorities, developers, and the community, are informed of these changes through updated public communication strategies, as underscored in Section 7.2 "Planning Policies for Flood-prone Areas" of the DCP 2011. Ensuring that these updates are integrated into local regulatory frameworks is crucial for maintaining resilience against flood risks and for supporting sustainable development within the region.

7) <u>Non-Compliance with Floodplain Management Legislation and Guidelines</u>

Flood Storage and Floodways are being blocked by fill from developments

Floodways are shown as flow paths in the Clarence Valley council 2023 drainage investigation map

Image 15. CVC drainage map

8) The identified flow paths have been blocked by fill. The filled area of WYURA is overlayed on the CVC map.

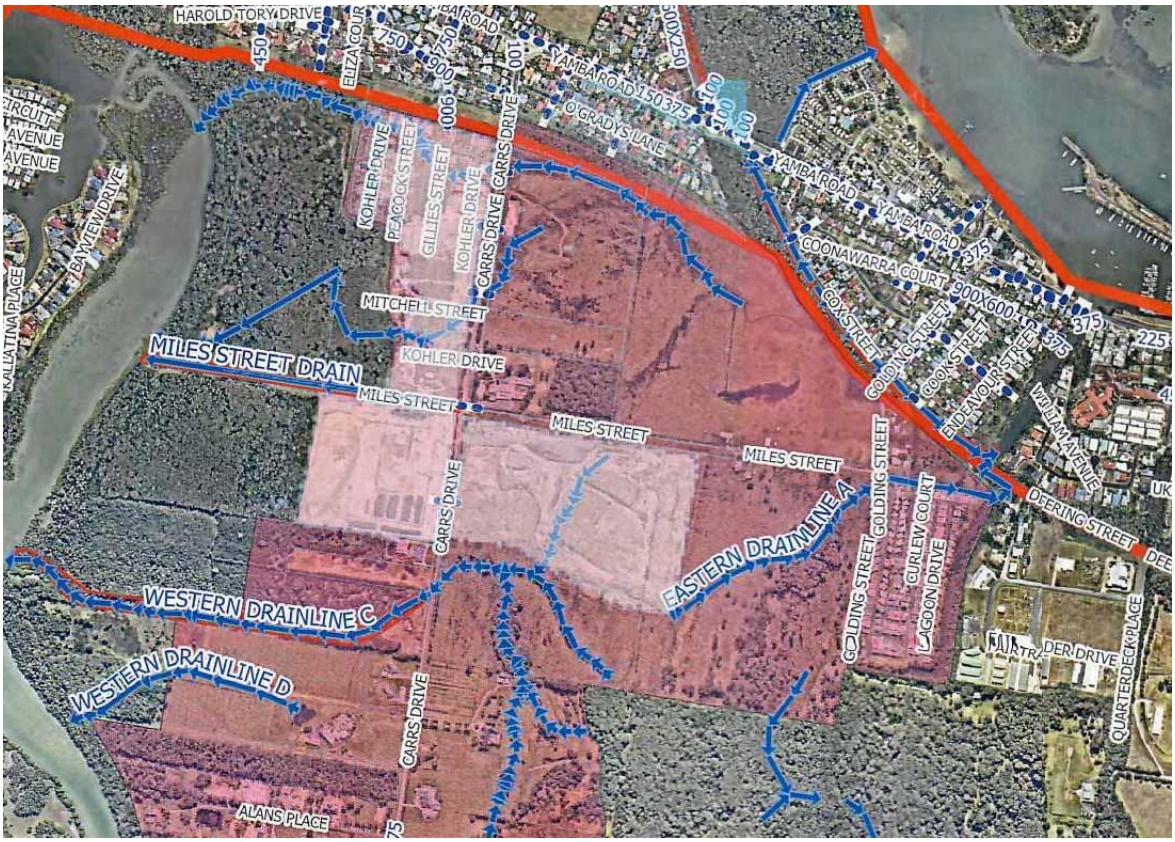


Image 16. Filled area overlayed on the CVC drainage map

9) **Flood Modelling Discrepancies - observed variation in flood heights** - GIPA Flood Request –page 82

There is a significant discrepancy observed in the Flood Impact Assessments (FIRA) pertaining to the peak flood depths for the 5% Annual Exceedance Probability (AEP) events as they relate to the proposed development at 120 Carrs Drive, Image 17 and the Flood Impact Assessment – Final Report (A12497) Image 18.

Upon review of the flood maps provided in the FIAs for both areas, it has been observed that:

The FIRA for A12497- 30 Golding Street displays a river height of 1.99 meters and a lake height of 1.55 meters for the 5% AEP Peak Flood Depth.
Conversely, the 120 Carrs Drive FIRA reports significantly lower heights, with a river height of 1.45 meters and a lake height of 1.35 meters for the same 5% AEP Peak Flood Depth event.

This discrepancy raises concerns regarding the consistency and reliability of flood modelling data used in assessing the flood risk for the proposed development, as well as the collective impact of development within the WYURA. Accurate and consistent flood risk data are crucial for ensuring that development plans are appropriately informed and that mitigation measures are effectively designed to manage flood risk, safeguarding property and lives.
The observed variation in flood heights between the two FIRAs suggests potential issues in the modelling approach, data used, or assumptions made during the assessment processes. Such differences could have significant implications for the perceived flood risk and the resulting planning and development decisions, including the design of flood mitigation and resilience measures.

Given the importance of these assessments in guiding development and planning decisions, it is imperative that a thorough review of the methodologies, data sources, and assumptions underpinning these FIRAs be conducted.

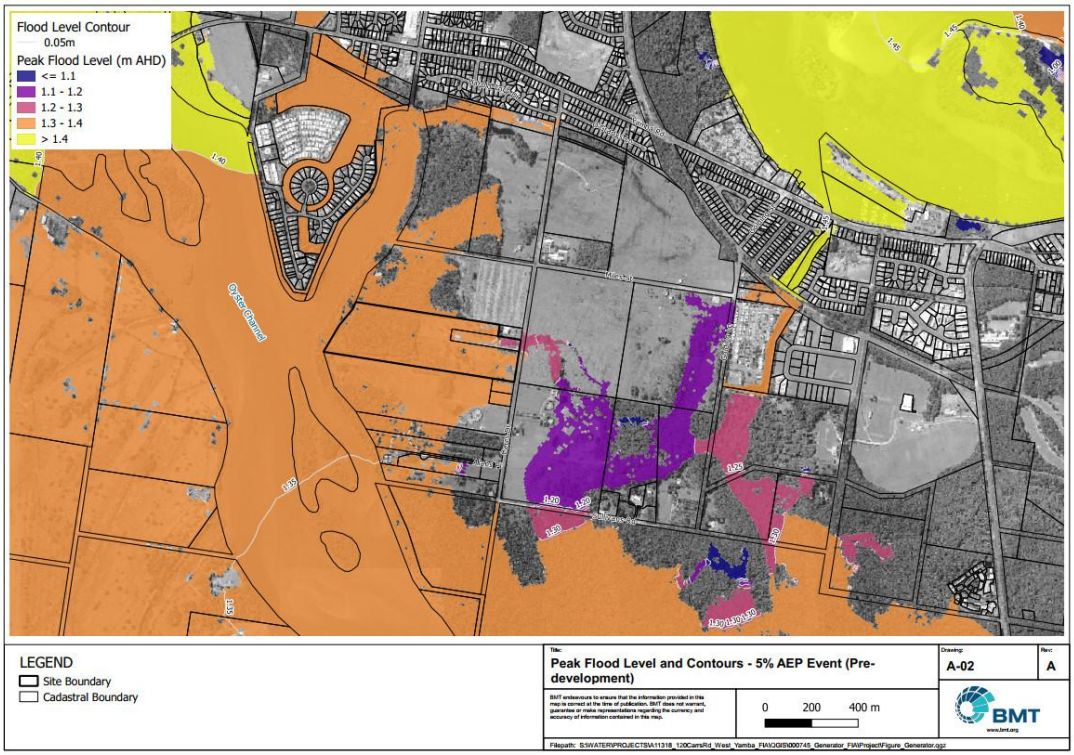


Image 17. Flood Impact and Risk Assessment- 5% AEP Peak Flood Level and Contours

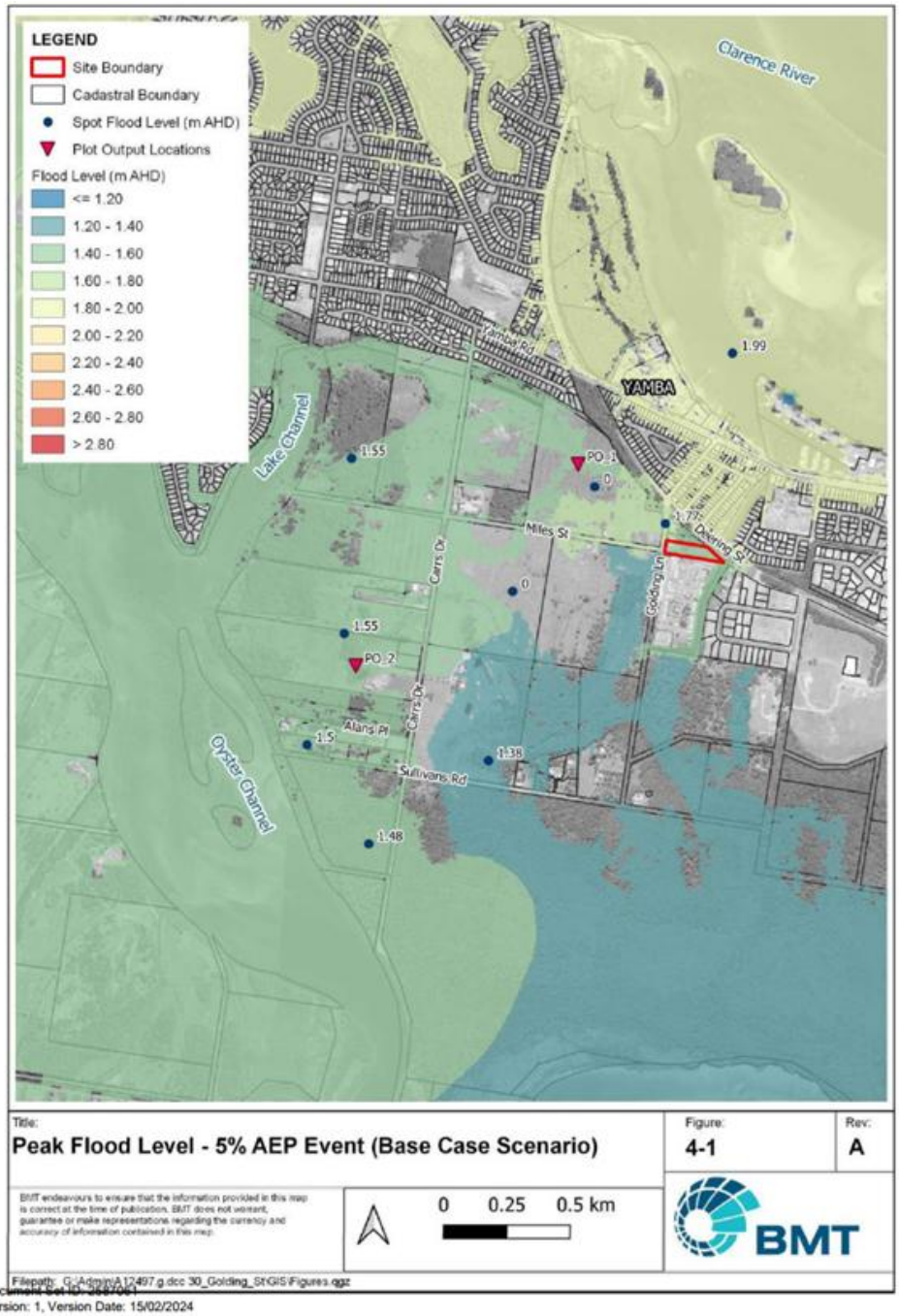


Image 18. Flood Impact Assessment– Final Report (A12497)

10) Flood Modelling Discrepancies - observed variation in flood heights - GIPA Flood Request –page 82

There is a significant c for the proposed development at 120 Carrs Drive, Image 15 and the assessment for 30 Golding Street, Yamba Image 16.

Both assessments purportedly utilise the same foundational flood model: the Clarence Valley Council's (CVC) adopted flood model for the Golding Street FIA and the CVC's 2022 Lower Clarence Flood Model for the 120 Carrs Drive FIRA. Despite this shared basis, the reported outcomes, specifically regarding flood velocities and heights for the 5% Annual Exceedance Probability (AEP) event, diverge notably.

The discrepancy is clearly observed in the provided flood maps where:

Both FIRA's show different quantities and flood velocities, further complicating the matter and raising questions about the uniformity in the application or interpretation of the model's outputs.
This divergence is perplexing and concerning for several reasons:

Consistency and Reliability: The use of the same model should, in theory, yield consistent results when assessing flood risks within proximately located areas unless justified by substantial changes in topography, land use, or other mitigating factors that were accounted for differently in each assessment.
Impact on Development and Mitigation Strategies: Accurate flood risk assessment is crucial for informed planning and development, particularly in flood-prone areas. Discrepancies such as these may lead to the under or overestimation of flood risk, affecting the design and implementation of necessary flood mitigation and resilience measures.
Transparency and Accountability: It is vital for stakeholders, including local residents, developers, and planners, to have confidence in the flood risk assessments conducted by or for the Council. Inconsistencies undermine this trust and necessitate clear explanations and transparency in the modelling process and its application.

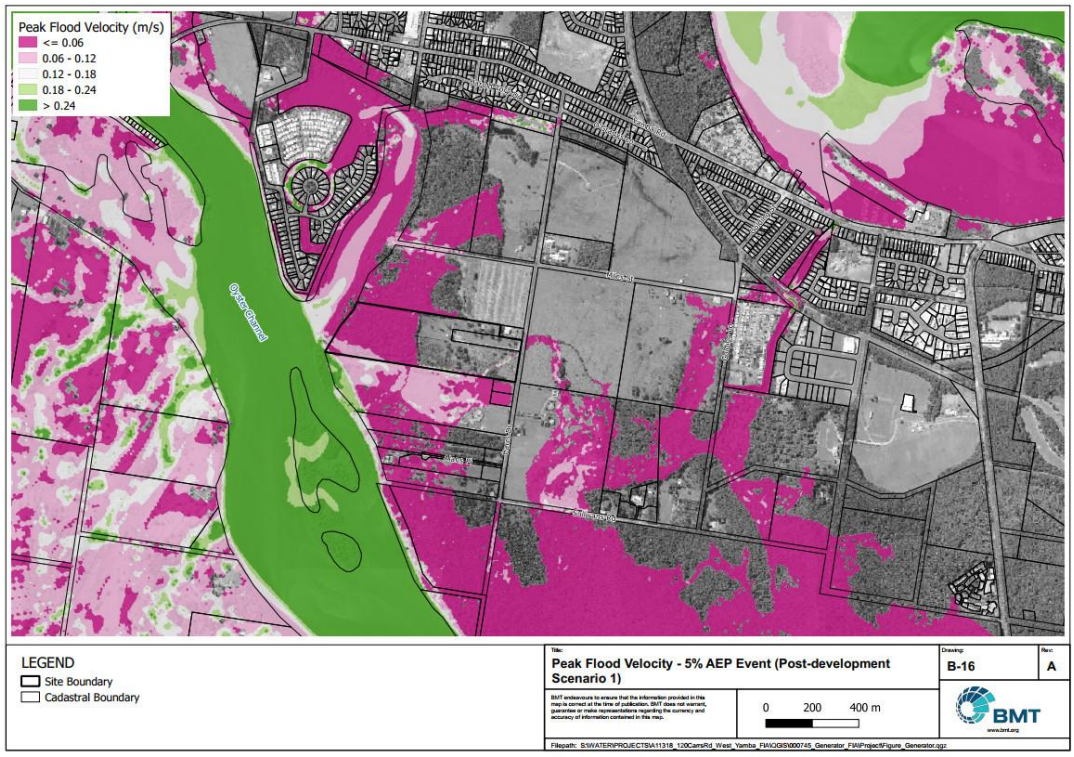


Image 19. Peak 5% AEP Peak Flow Velocity Post-Development Scenario

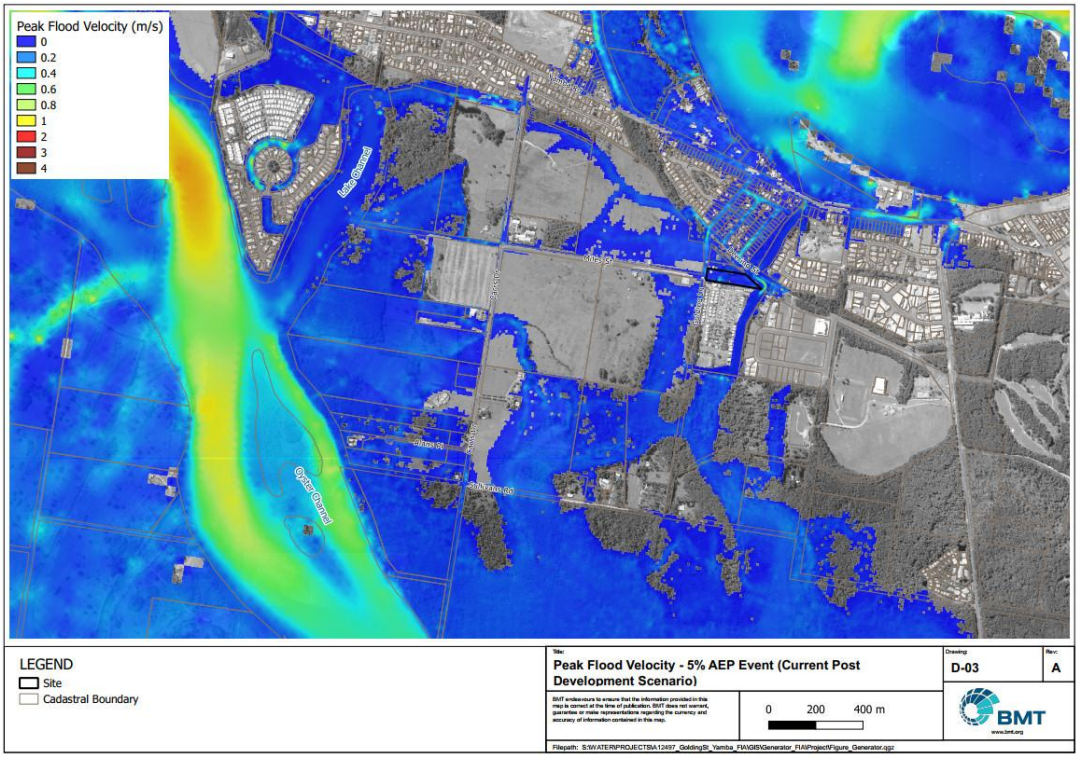


Image 20. Peak Flood Velocity – 5% AEP Event (Current Post Development Scenario)

The development will adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other properties

11) <u>Integrity</u>

Scale for residents

The FIRA states "the proposed development results in an increase in flood levels between 10 and 20 mm on the southern adjoining lots and a decrease of 10 to 20 mm in an area to the northeast of the Site"

While the model has a range of 20 cm at the ocean boundary, when the "peak 1% AEP storm tide of 1.62mAHD has been applied in this study" and "The peak is at the ocean boundary at the end of the breakwalls. There is minor attenuation due to the breakwalls; the flood model indicates a 1% flood level at the Yamba tide gauge location of between 1.6-1.8m AHD"

The FIRA has an accuracy of 10mm, while the maps presented to residents are in colours.

12) BMT Transparency

The Martens & Associates Pty Ltd's Flood Risk Assessment and Flood Emergency Response Plan states;
"There is an approximately 935 m long drainage channel that runs westwards from the centre of the site's eastern boundary, along its southern boundary to Oyster Channel."[15]

This floodway has not been acknowledged in any of the four WYURA Flood Impact Risk Assessments conducted by BMT and it continues to be unrecognised by BMT (Project No's 000745, A12497, 003044, A12367)

13) Inaccurate Modelling - simultaneous occurrence of riverine flood peak and storm tide peak - page 32 in the GIPA Flood Request.

BMT- 'The model assumed a simultaneous occurrence of riverine flood peak and storm tide peak'[16]

BMT – 'The updated model has been calibrated to the flood events of January 2013, March 2021 and February/March 2022 and a good match to recorded flood levels has been achieved for all events'[17]

In the March 2022 flood event, the ocean peaked 27 hours before the riverine flood peak arrived.
The Yamba River gauge did not align with riverine peaks at Lake Wooloweyah, Oyster Channel and Palmers Island gauges.
How is it possible "a good match to recorded flood levels has been achieved"?

14) Issues in Flood Risk Assessment and Flood Emergency Response Planning (FRA & FEP)

a) 'The site may become isolated for up to approximately 8 days in very rare extreme flood events'
In the March 2022 event, which was lower than a 2% AEP event, access was

"Based on Rhelm observations of the post flood conditions after the Northern Rivers event of February/March 2022, a dwelling may not be habitable for some months after being inundated in a flood event.

b) Shelter in place (SIP) as a strategy in fast responding catchments

15) Multiple Floodwater Flow Directions

The (FRA & FEP) states;

"In summary, when assessing the Site individually and as part of the wider WYURA, an increase in flood levels ranging from 10 mm to 20 mm was identified on adjacent lots to the north and south during the 10% AEP event. However, these increases, occurring in areas already subject to inundation, do not extend the overall flood extent, nor within the residential area, therefore having limited significance on the adjoining lots."

- The report presents flood impacts from one direction, with an accuracy of millimetres, however the floodwaters can come from three different directions or in combination.

- an undisclosed area 'nor within the residential area' - no location details of the assessed residential area

[15] Exhibition copy Tab 14 Flood Risk Assessment and Flood Emergency Response Plan.pdf pg 9
[16] 120 Carrs Drive Yamba Flood Impact and Risk Assessment page37
[17] Clarence Flood Model Update 2022 page 3

<u>Directions of floodwater flow</u>

River flood waters can't enter West Yamba until the river height exceeds Yamba Road 1.5 – 1.9 MAHD

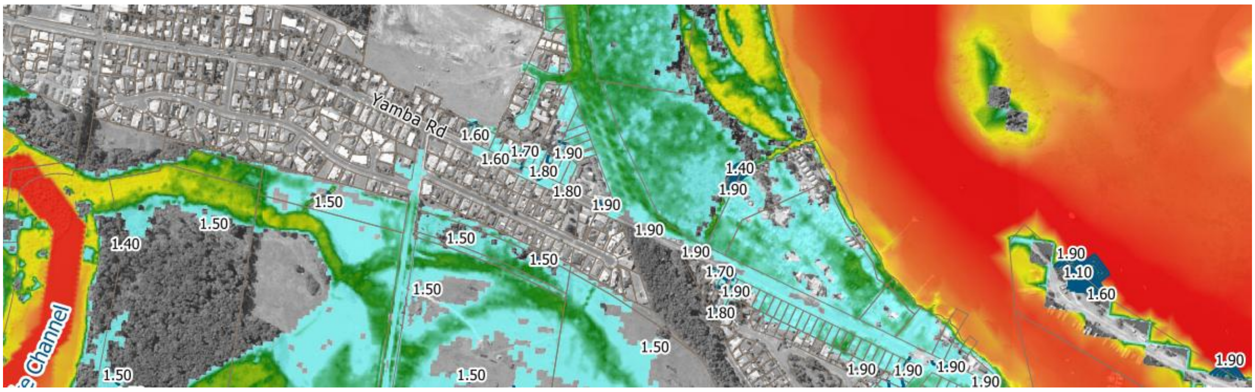


Image 21. Extract - Peak Flood Depth and Level Contours - 5% AEP Event

1. <u>Flooding from the south</u>

   The 2% AEP Flooding animation represents flooding from the south, Lake wooloweyah and the Oyster Channel with restricted flooding from the Clarence river under Yamba road culverts

Image 22.

2. Flooding from the south followed by flooding from the north

The 1% AEP CC1 Flood Event represents INITIAL flooding from the south, Lake Wooloweyah and the Oyster Channel, restricted flooding from the north under Yamba road culverts, followed by flooding from the river when the river overtops Yamba Road

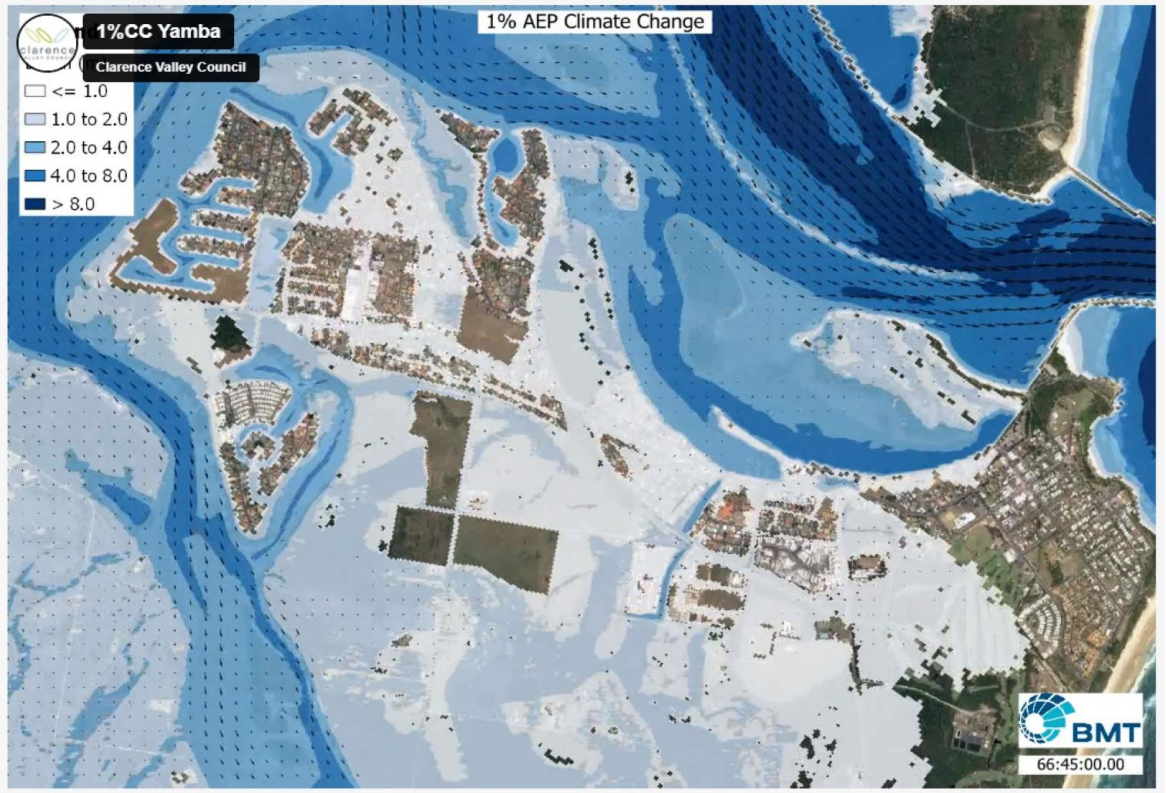


Image 23

3. Flooding from the south west

The Extreme Flood Event animation represents flooding from the south west, over land, as shown in PMF Peak Flood Level Pre-Development Scenario

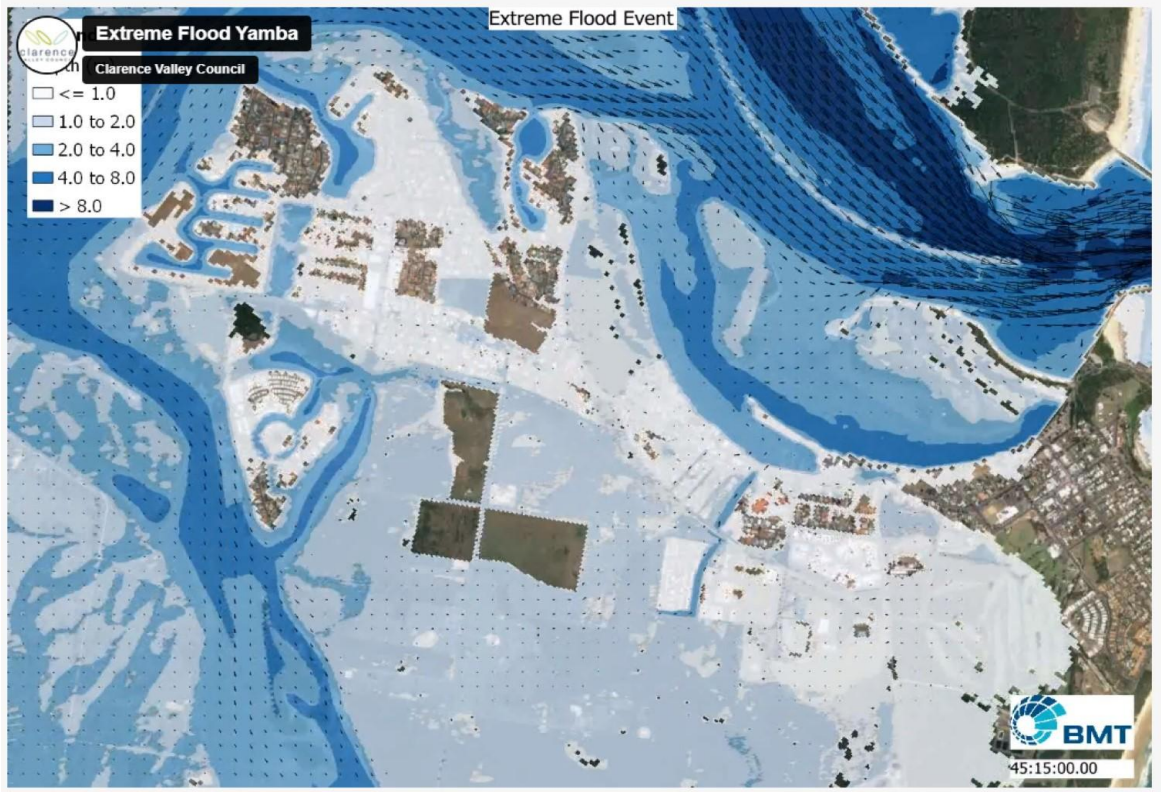


Image 24

3. Flooding from the south west

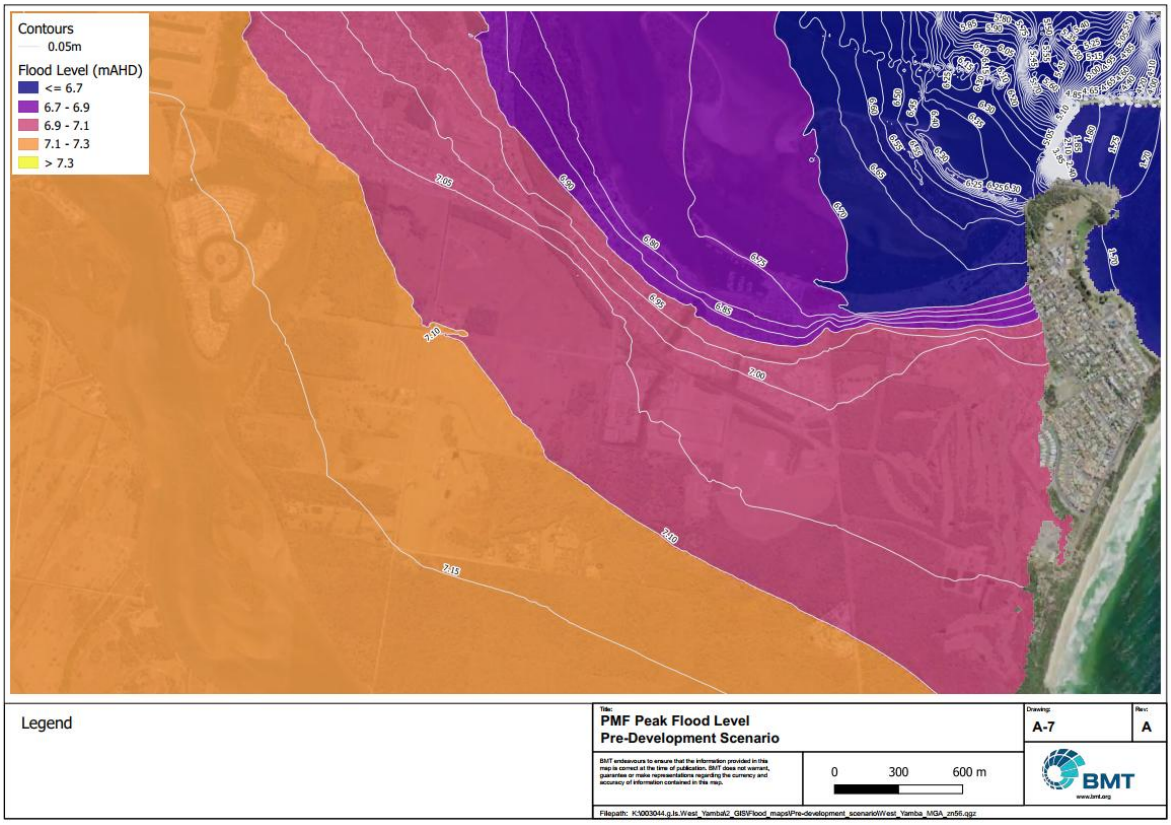


Image 25. PMF Peak Flood Level Pre-Development Scenario

Flood animations can be viewed at;
https://www.clarence.nsw.gov.au/Council/Our-performance/Plans-and-strategies/Floodplain-Management-plans-flood-studies-and-animations

Evacuation

16) The development will adversely affect the safe occupation and efficient evacuation of people

The report states;

" The site may become isolated for up to approximately 8 days in very rare extreme flood events. However, there will be sufficient warning time for all flood events, ensuring complete evacuation of the site either towards Maclean/M1 or to the Yamba Bowling Club, considering the minimum warning times of approximately 6 hours and 22 hours."

(A) Evacuation to Maclean or M1 (Site Managed):

Triggered by: BoM or SES issuing a flood alert indicating moderate flooding expected for the Clarence River, and/or river levels at Maclean expected to exceed 2.2 mAHD.

Action: Site managed evacuation to Maclean or M1. This includes monitoring Maclean gauge levels every hour and issuing warnings and advice via the site PA system, SMS, and door knocking.

Issues: While the system aims to provide sufficient warning times for evacuations, several potential issues impair its effectiveness.

"*sufficient warning time for all flood events*"

Potential Issues Related to Warning Times for Flood Events in New South Wales

Recent evaluations by the Select Committee on the Response to Major Flooding across New South Wales in 2022, as highlighted in sections of the '*Response to major flooding across New South Wales in 2022'*, have identified critical deficiencies in our flood warning systems.

Despite the FERP report's assurance (Section 3.1) that there will be sufficient warning times for all flood events, allowing for complete evacuations either towards Maclean/M1 or to the Yamba Bowling Club, with minimum warning times projected at approximately 6 hours and 22 hours, several potential issues could undermine the effectiveness of these warnings. This draft outlines the primary concerns that need to be addressed to enhance the reliability and efficacy of our flood warning systems.

1. Timeliness of Warnings (Referenced in Legislative Council Findings, Section 7.2)[18]:

One of the most significant challenges is the actual timeliness of the warnings. Historical data and recent experiences suggest that warnings have not always been issued with enough lead time to ensure safe and orderly evacuations. Delays in detecting flood threats or in the decision-making chain can critically shorten the effective response time available to the community.

2. Accuracy and Reliability of Flood Predictions (Referenced in Recommendations, Section 6.3):

Warnings are only as good as the data and predictions they are based on. There have been instances where flood predictions were not only late but also inaccurate. Inaccuracies in flood modelling can arise from outdated data, insufficient local hydrological and meteorological inputs, and inadequate consideration of changing climatic conditions. (as detailed in the GIPA Flood Request) Such inaccuracies can lead to either over-preparation (causing unnecessary alarm and resource expenditure) or under-preparation (leading to potential casualties and property damage).

3. Communication Breakdowns (Referenced in Findings, Section 8.4):

The effectiveness of a warning is contingent upon unimpeded communication channels. Loss of telecommunications, which often occurs during severe weather events, can prevent the timely dissemination of

[18] Report No 1 - Response to major flooding across New South Wales in 2022.pdf

warnings. Dependency on electronic communication channels increases vulnerability, highlighting the need for robust, multi-channel communication strategies that include redundancy to ensure message delivery.

4. Utilisation of Local Knowledge (Referenced in Recommendations, Section 9.1):

Local knowledge is invaluable, particularly in regions with complex geographical and hydrological characteristics. The centralisation of warning systems has often led to a disconnect between local observations and official warnings. Greater integration of local knowledge into the flood prediction and warning process could enhance the accuracy and relevance of the information provided to the community.

5. Public Awareness and Response to Warnings (Referenced in Findings, Section 10.5):

The effectiveness of warnings is also dependent on public response, which in turn is influenced by public awareness and trust in the warning system. There is a need for ongoing community education and engagement to ensure that when warnings are issued, the public understands the risks and responds appropriately. This includes understanding evacuation routes, safe practices, and the significance of different warning levels.

Evacuation routes

(B) Evacuation to Yamba Bowling Club (Site Managed):

Triggered by: BoM or SES issuing a flood alert indicating Clarence River levels at the Maclean gauge are expected to exceed 3.3 mAHD.
Action: Site managed evacuation to Yamba Bowling Club. This involves continuous monitoring of warnings, media alerts, Oyster Channel and Clarence River levels, and issuing necessary instructions for evacuation.
Issues: Evacuation route flooded
The route from 120 Carrs Drive, Yamba, to the Yamba Bowling Club, as described in the Flood Risk Assessment and Emergency Response Plan, *involves travelling north from the site along Carrs Drive*

Image 26. Carrs Drive has low elevations and is the last road in Yamba to drain

then turning east onto Yamba Road;

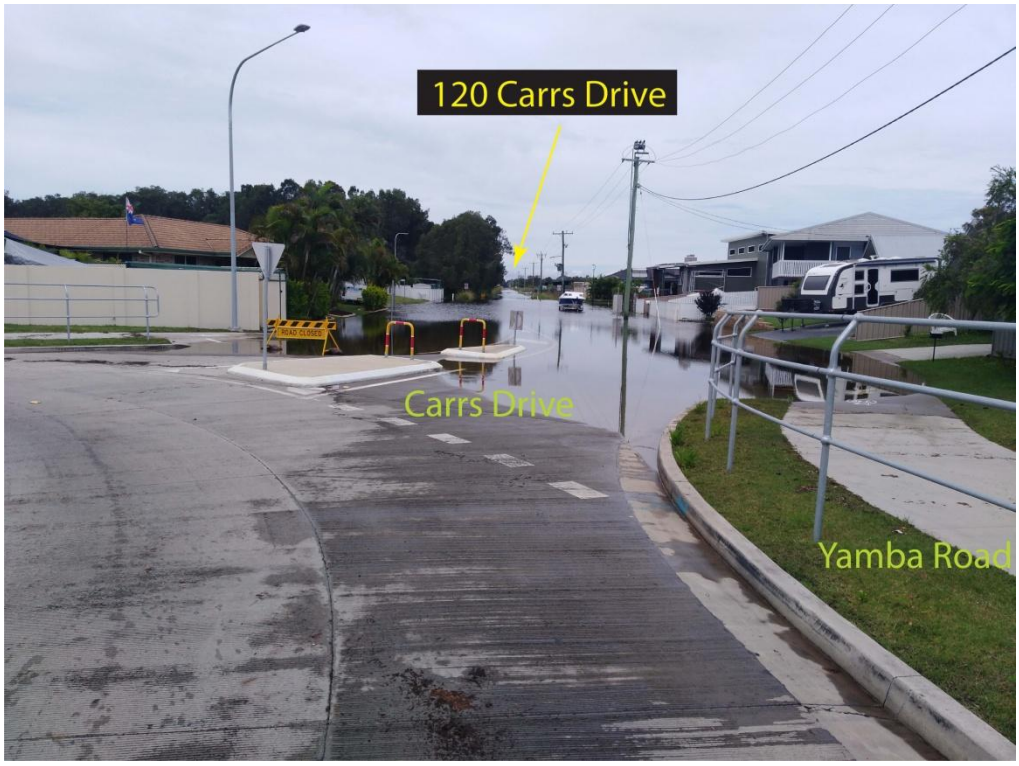


Image 27. Carrs Drive: to evacuate residents must cross the floodway to leave

This image was captured two days after Yamba recorded its 'peak'

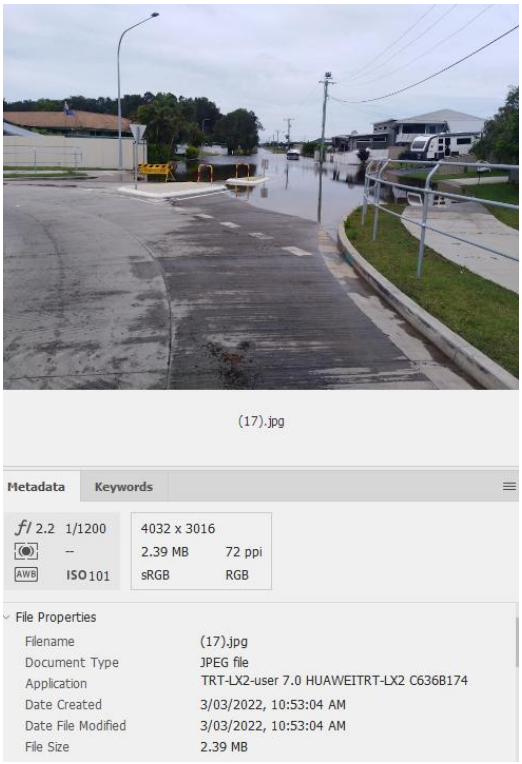


Image 28 Metadata

The road has a low point of approximately 1.5mAHD, floodways flow across Carrs Drive

Image 28 The corner of Yamba Road and Carrs Drive.

From Yamba Road, the route continues east leading directly to the Yamba Bowling Club

Yamba Road closes to floodwaters when the river rises above 1.5mAHD, the Yamba Bowling Club is no longer accessible.

(C) Maclean or M1

Evacuation to Maclean or M1 (Site Managed):

Triggered by: BoM or SES issuing a flood alert indicating moderate flooding expected for the Clarence River, and/or river levels at Maclean expected to exceed 2.2 mAHD.

Action: Site managed evacuation to Maclean or M1. This includes monitoring Maclean gauge levels every hour and issuing warnings and advice via the site PA system, SMS, and door knocking.

Issues: Evacuation route flooded and timing

Evacuation route as per images 26-28 followed by;

Evacuation Route Closures;

- will be dependent on local rainfall and tidal conditions
- Yamba Road closes at (2.1m Maclean gauge 204410)
- Pacific Highway closes (2.1m Maclean gauge) at the
- "Cloverleaf" (Southern approach to Harwood Bridge 5km north of Maclean).
- Pacific Highway closed at Ferry Park, Maclean (2.5m Maclean gauge)

Weather

Local rainfall and tidal conditions can rapidly change flood levels and timing, creating unpredictability and uncertainty in flood evacuation forecasting.

Timing

The duration is uncertain; it is unknown how much time you have from the 'alert' until;

- Yamba Road closes
- Pacific Highway closes
- "Cloverleaf" closes
- Pacific Highway closes

There is no specified time frame between the issuance of an alert and the potential closure of roads. If evacuees attempt to leave after an alert and floodwaters rise rapidly, they risk becoming trapped.

Those planning to leave would need to know the time the gauge was read, the type of AEP event ie: 5% or 10% and whether the roads to the North or South of Maclean are open or closed and have somewhere to stay.

(D) Evacuation (Emergency Services Managed):

Triggered by: SES issuing an evacuation order that includes the site.

Action: Follow emergency service-managed evacuation procedures. The site operator coordinates with emergency services to manage the evacuation process.

Shelter in Place (Site Wide and Community Refuge Building):

Triggered by: Flood levels indicating the site is likely to be isolated by floodwaters, or when FLI's indicate site flood levels are approaching hazardous levels.

Action: Implement shelter-in-place procedures if evacuation routes are cut off. This involves relocating to a community refuge building designed to be above the 2013 PMF level.

Issues: The highest flood levels occur when the catchment runoff peak coincides with the storm tide peak. This occurs twice within a 24-hour period, often with one high tide happening during the night.
Add to this the Impact from local rainfall and tidal conditions that alter flood levels and timing.

17) This development will affect the safe occupation and efficient evacuation of people in the event of a flood

Shelter-in-Place Assessment

From the flood emergency response plan (FERP);
5.1 Overview
Proposed dwelling FFLs are above the flood planning level at 3.5 mAHD (equivalent to approximately a 0.07% AEP (1500 year ARI) flood level), enabling site occupants to SIP in their homes as a flood emergency response for any people on site who were not evacuated prior to evacuation route inundation for flood events.
The proposed community refuge building (CRB) will be above the 2013 PMF level (3.9 mAHD) at 4.1 mAHD (equivalent to approximately a 0.03% AEP (3,000 year ARI) flood level) allowing any occupants on site to relocated from their residents and evacuate to the CRB where they can continue to SIP.

a) "In the PMF event, the site and its surrounding areas would be inundated by high hazard floodwaters with a peak flood level of 7.2 mAHD, and flood depths could reach up between 3.2 m and 4.0 m across the developed portion of the site."

b) "A community refuge building, situated above the Probable Maximum Flood (PMF) level documented in 2013, will be equipped with adequate resources to facilitate 'shelter in place' for any occupants who were unable to leave the site before or during a flood event."

c) In the PMF event, the site may become isolated for up to approximately 8 days.

After the Oyster Channel level reaches 1.5 mAHD and the Evacuation Route 2, to Yamba Bowling Club is cut off there is no escape for residents should the flood water exceed the 1% AEP CC1 flood level.

Flooding could last up to 8 days, there is no refuge above the current PMF and the property is aimed at older adults. Emargcy Services

Evacuation Destination

Evacuation Route 2 (refer to Figure 3) is designated for site occupants to evacuate to the Yamba Bowling and Recreation Club located in the east part of Yamba on the southern headland, this is the main area of flood-free land above the 2013 PMF for the site. It serves as the primary evacuation centre as outlined in the Clarence Valley Local Flood Plan (SES, 2017).

The Clarence Valley Flood Emergency Sub Plan has not been updated to the latest data; accordingly the plan does not provide accurate information.

The plan notes the population as 6074 including the areas of Yamba, Angourie, Wooloweyah and Palmers Island. There are potentially over 5000 people west of Angourie road that will need to evacuate.
The plan nominates the Bowling Club as the refuge; the Bowling Club does not have adequate space or amenities for the current population.

This and related issues are detailed further in the GIPA Flood page 108, 'Request Identification, analysis and evaluation of risks'.

The operational capacity of emergency response facilities and critical infrastructure during flood events is already overburdened; putting more residents into hazardous location exacerbates the crisis.

The design flood levels in the evacuation plan are derived from the BMT's 2022 flood model. Given that this model has been shown to be deficient, accurate and comprehensive flood information must be provided to enable a proper assessment of DA2023-0241 .

This development adversely affects the safe occupation and efficient evacuation of people.

18) Flood Risk Management Challenges in West Yamba: Insights from the GIPA Flood Request Analysis

In the intricate analysis provided within the GIPA Flood Request, the hydrodynamic complexities of flood

management in West Yamba, especially in the wake of the March 2022 flood event, are brought to light, illustrating several key concerns:

Inadequately Assessed Floodwater Impacts from Landfill: The introduction of fill in West Yamba has altered the natural floodplain dynamics, confining floodwaters to Lake Wooloweyah and West Yamba until such a point that they overtop Yamba Road. This significant modification and its effects have not been thoroughly examined, indicating a gap in the flood risk assessment process and prompting further investigation as detailed on page 32 of the GIPA Flood Request regarding 'Retained Floodwaters in West Yamba Elevate "Peak Catchment Coincidence"'.

Geographical and infrastructural elements further delineate the area's flood management challenges:
a) Northern Boundary - Yamba Road: Acts as a crucial elevation barrier, influencing flood spread and containment within West Yamba.
b) Eastern Limitation - Filled Ground: Modifies the landscape, affecting floodwater flow and storage capabilities.
c) Western and Southern Barriers - Oyster Channel and Lake Wooloweyah: Essential for the management of hydrodynamic flows, these natural features play pivotal roles in floodwater ingress and egress.

d) **Critical Hydrodynamic Roles:** The Oyster Channel, serving as the principal pathway for floodwaters into Lake Wooloweyah, underscores the need for a refined understanding of its capacity and the implications of its limitations, as underscored in the GIPA Flood Request and substantiated by the "Knowledge for Productivity: Phase I - Lake Wooloweyah" study.

e) **Constrained Storage Capacity:** Highlighted by elevations along Yamba Road (1.6 to 1.9 mAHD) and the surveyed elevations in the WYURA Flood Storage area (0.7 to 1.6 mAHD), the constrained floodwater flow and storage underline the criticality of addressing these limitations within flood risk assessments.

f) **Riverine Catchment Peak Independence:** The distinct behaviour of riverine peak flow over any stored water in West Yamba accentuates the need for comprehensive flood management strategies that consider both stored and incoming floodwaters to mitigate potential risks effectively.

g) **Peak Catchment Coincidence Risk:** The specific condition when riverine catchment peaks coincide with storm tide peaks represents a significant flood risk, particularly noted in the SES's observations of inundation thresholds. The 2022 event, which saw floodwaters held above 1.5mAHD for an extended duration, exemplifies the heightened risk of Peak Catchment Coincidence flooding in West Yamba, surpassing that of other areas within the Clarence Valley.

This detailed examination within the GIPA Flood Request articulates the multifaceted challenges of flood risk management in West Yamba, driven by both natural and anthropogenic factors. Addressing these concerns is imperative to developing comprehensive and effective flood mitigation strategies that safeguard the community and align with sustainable land use planning principles.

Craigh McNeill

1/4/2024

Craigh McNeill

[redacted]

Request for Detailed Information on Flood Risk Management under GIPA Act

Introduction to GIPA Request:

This request under the Government Information (Public Access) Act 2009 (GIPA) seeks detailed information from the Clarence Valley Council on flood risk management and related areas. Due to the complexity of flood risk management and its broad implications for community safety and sustainable development, this request is presented with extensive descriptions and images. These are included to ensure clarity and precision in the information sought, bridging technical complexities with accessible communication.

The aim is to facilitate a clear understanding of the council's strategies, policies, and practices in managing flood risks, enhancing transparency and public engagement. By providing detailed insights into these critical areas, I seek to foster a collaborative dialogue for the betterment of community safety and environmental management in the Clarence Valley.

I appreciate the council's cooperation in addressing these queries and look forward to constructive feedback.

Enhancing Flood Risk Management through Transparency and Public Engagement

Accurate flood classifications are critical to keep our communities safe - Australian Institute for Disaster Resilience

Pursuant to the Government Information (Public Access) Act 2009, I am requesting detailed information in relation to the adopted Lower Clarence Flood Model 2022 (LCFM 2022) and its subsequent application in Flood Impact Risk Assessments in development applications within the West Yamba Urban Release Area (WYURA).
The Clarence Valley Council's (CVC) 2022 Lower Clarence Flood model (LFFM) was used as the basis of the present WYURA Flood Impact and Risk Assessment.

The Local Government Act 1993 emphasises the principles of transparency, accountability, and community engagement in council activities, including land use planning and environmental management. It mandates public access to information and participation in decision-making processes, particularly regarding changes to local environmental plans and flood management strategies. This act supports the notion that amending the Clarence Valley Local Environmental Plan 2011 to update the Flood Planning Map and flood model information should be communicated to the public. Doing so aligns with the principles of ensuring that the community is well-informed about decisions affecting local flood risk management, thereby enabling better preparedness and response to flood events. It underscores the importance of community input and access to information for sustainable environmental planning and management.

The Flood Risk Management Manual (2023) emphasises in Principle 4: "Make flood information available," the necessity of providing flood model information to the public. This principle underlines that making such information accessible is crucial for enabling government stakeholders, the community, and individuals to make informed decisions regarding managing flood risk, responding to flood threats, and investing in infrastructure on the floodplain. It ensures that knowledge about flood risks is not only available but also updated and improved as necessary, based on new studies and previous flood events. This approach is designed to empower residents and property owners in flood-prone areas to better understand flood risks, prepare for potential flooding events, and take appropriate actions, such as obtaining suitable insurance coverage

The Government Information (Public Access) Act 2009 (GIPA Act) underscores the public's right to access government information. Specifically, Section 6 advocates for the mandatory proactive release of certain government information, asserting it should be made publicly available unless there's an overriding public interest against disclosure. Furthermore, this information should be accessible free of charge whenever possible, reinforcing the principle that transparency and accessibility of information underpin an open and accountable government. This framework supports the notion that flood model information, particularly when related to amendments in the Clarence Valley Local Environmental Plan 2011 for updating the Flood Planning Map, should be freely available to the public. This transparency ensures that the community is informed about flood risks and management strategies, facilitating informed decision-making and public engagement in flood risk management processes.

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Compliance with Flood Risk Management Guidelines

Request for Information on Flood Model Irregularities and Compliance with Flood Risk Management Guidelines

I am requesting information on the status and response to three submissions I submitted to your council, concerning irregularities in our area's flood risk management model. Given the critical nature of accurate flood modelling for effective flood risk management, emergency planning, and community safety, I am keen to understand the steps that have been taken by the council in response to these submissions.

As outlined in the "Flood Risk Management Guide" as well as the detailed processes described in the "Floodplain Development Manual 2005" and the "Flood Risk Management Manual 2023," there are specific expectations for how councils should address concerns related to flood risk management.

Specifically:

The "Flood Risk Management Guide" outlines several principles that underscore why councils should consider and respond to submissions regarding flood risk management. These principles highlight the importance of a consultative approach, making informed decisions, and continuous improvement in managing flood risks. While specific section numbers are not provided in the provided text, the principles mentioned offer a clear rationale for council actions in response to community submissions:

Be Consultative (Principle 3): This principle emphasises the importance of consultation with government agencies, stakeholder groups, and the community as a critical element of understanding and managing flood risk. It supports the development of FRM plans that are realistic, practical, and have broad community support, indicating that councils should actively engage with and consider submissions from the community to facilitate inclusive decisions and effective solutions.

Make Flood Information Available (Principle 4): By making flood information readily accessible, councils empower the community to make informed decisions regarding flood risks. This principle supports the notion

that councils should respond to submissions by providing clear, accurate, and updated flood risk information to address community concerns and enhance overall flood awareness.

Understand Flood Behaviour and Constraints (Principle 5): Effective flood risk management relies on a thorough understanding of flood behaviour and its constraints. Councils should consider submissions that may provide additional insights into flood behaviour, constraints, or impacts, thereby using this information to inform and potentially update flood risk management strategies.

Manage Flood Risk Effectively (Principle 9): This principle advocates for a merit-based approach to decision-making that considers social, economic, ecological, and cultural factors along with community aspirations. Councils are encouraged to engage with and respond to submissions as part of their efforts to manage flood risks sustainably and effectively.

Continually Improve the Management of Flood Risk (Principle 10): Acknowledging the evolving nature of flood risk management, this principle suggests that councils should view FRM plans as "living documents" that require regular review and updates based on new information, technologies, and community feedback. Submissions from the community can trigger reviews or updates of existing plans, highlighting the importance of considering and responding to such inputs.

These principles collectively underscore the council's responsibility to actively engage with community submissions, considering them as valuable contributions to the ongoing process of flood risk management. This engagement is crucial for developing effective, informed, and broadly supported flood risk management strategies that align with community needs and expectations.

As outlined in the Australian Disaster Resilience Handbook Collection, specifically the "Community Engagement for Disaster Resilience" handbook, there are several reasons why councils should consider and respond to submissions regarding flood models or any other concerns related to disaster risk management:

Community Engagement as a Foundation for Disaster Resilience (Chapter 1.1): Recognising community engagement as essential for building disaster resilience implies that councils should actively involve and respond to the community's concerns and inputs. This foundational principle underscores the importance of listening to and incorporating community feedback, such as submissions on flood model irregularities, into disaster risk management strategies.

Principles of Community Engagement for Disaster Resilience (Chapter 2): The handbook outlines key principles for community engagement, including placing the community at the centre of engagement efforts and working in partnership with the community. These principles suggest that councils should not only consider but also act upon submissions made by community members as a part of a collaborative approach to enhancing disaster resilience.

Approaches to Community Engagement (Chapter 3): This chapter describes various approaches to community engagement, including information sharing, consultation, participation, and community-led initiatives. The emphasis on diverse forms of engagement highlights the council's role in acknowledging and responding to community submissions, as these inputs can contribute valuable perspectives and information to the disaster risk management process.

Monitoring, Review, and Evaluation (Chapter 4): The handbook stresses the importance of reviewing and evaluating community engagement processes. Responding to community submissions fits within this framework, as it allows councils to assess the effectiveness of their engagement strategies, address any identified issues or gaps, and continuously improve their disaster resilience efforts.

Community Engagement Process (Chapter 3.2): The handbook details a community engagement process that includes understanding the community, establishing relationships, planning and preparing, implementing and

monitoring progress, and reviewing and evaluating. Councils should consider submissions within this process, particularly in the phases of understanding community concerns, planning responsive actions, and evaluating the outcomes of those actions.

Given the principles and processes outlined in these key documents, I kindly request information on the following:

1) Submission 'Deficient WYURA Flood Impact Assessment' and 'Flood Surge 2nd March 2022' submitted to Council on the 30/04/2023;
   a) The current status of the review of the submissions I lodged regarding the flood model irregularities.
   b) Any consultations undertaken with relevant state agencies or experts in response to the submissions.
   c) Actions taken or planned to address the concerns raised, including any updates or revisions to the flood models.

2) Submission 'Flood model update 2022 concerns' submitted to Council on the 26/06/2023
   a) The current status of the review of the submissions I lodged regarding the flood model irregularities.
   b) Any consultations undertaken with relevant state agencies or experts in response to the submissions.
   c) Actions taken or planned to address the concerns raised, including any updates or revisions to the flood models.

3) Submission 'Challenges in Accurate Flood Modelling' submitted to Council on the 1/02/2024
   a) The current status of the review of the submissions I lodged regarding the flood model irregularities.
   b) Any consultations undertaken with relevant state agencies or experts in response to the submissions.
   c) Actions taken or planned to address the concerns raised, including any updates or revisions to the flood models.

Applying the principles of the Flood Risk Management Manual 2023 (FRM Manual) to retrospectively evaluate Development Applications

The FRM Manual identifies its primary objective as being "to reduce the impacts of flooding and flood liability on communities and individual owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods, utilising ecologically positive methods wherever possible".

Applying the principles of the Flood Risk Management Manual 2023 (FRM Manual) to retrospectively evaluate Development Applications (DAs), such as "Earthworks and Filling of Land," aligns with legislation, notably the Local Government Act 1993 (LG Act), as amended by the Local Government Amendment Act 2021. The FRM Manual, gazetted in June 2023, serves as the contemporary framework for managing flood-liable land, effectively replacing the Floodplain Development Manual (FDM) from April 2005. This transition signifies a pivotal update in addressing flood-prone areas, especially with the Environmental Planning and Assessment Regulation 2021 and amendments to the Standard Instrument Local Environmental Plan, which reference the FRM Manual for critical definitions, including the flood planning area and probable maximum flood.

Initially established for managing flood-liable land under section 733 of the LG Act and integral to modern flood planning provisions, the FRM Manual's introduction underscores a significant evolution in flood risk management strategies. This includes utilising ecologically positive methods to reduce flooding impacts and liability on communities. The introduction of the FRM Manual and its associated Toolkit aims to enhance flood-prone land management, ensuring development practices align with contemporary flood risk management strategies.

Specifically, planning certificates issued under section 10.7 of the Environmental Planning and Assessment Act 1979 now require specifications based on the FRM Manual's definitions. This requirement underscores the necessity for developments to consider flood planning areas and related controls, illustrating the legislative intent to integrate modern flood risk management practices into local planning and development processes. Consequently, the retrospective application of the FRM Manual 2023's principles is not only compliant but essential for adhering to the legislative framework established by the LG Act and associated regulatory instruments. This approach ensures that development applications, past, present, and future, are evaluated and managed in a manner that reflects the most current understanding of flood risk, promoting the resilience and safety of flood-prone communities in line with legislative and regulatory expectations.

Diverted Flood water

Images captured during the March 2022 flood event

The captured images exhibit;

Image 1

1. accumulation of floodwater at the southern side of fill on Lot 46 & 47 DP 751395 (1) from Lake Wooloweyah (2) in the south

2. floodwater from the Oyster Channel in the South West (3) “water breaking the banks of Oyster Channel and Lake Channel to the west” as noted in Regional Flood Impact Assessment[1]

3. floodwaters flow northward towards WYURA, where “floodways within Yamba that take floodwaters from the south through middle Yamba to the Clarence River” Flood risk management Plan[2]

4. the flow of floodwaters is obstructed by filling at 52-54 Miles Street (4) and Lot 1 Carrs Drive (5) “movement of water from north to south is restricted by fill to the south”[3]

5. floodwater is restricted into Carrs Drive (6) the Engineering Drawings[4] exhibit Carrs Drive filled however there are no height or fill details.

[1] 181Carrs Drive, Yamba, Regional Flood Impact Assessment – Final Report.pdf pg 15
[2] Yamba Floodplain Risk Management Plan 2009 pg 4
[3] 2021 WYURA Flood Impact Assessment.pdf Pg 23

6. floodwater is diverted to Golding st in the east (7)

7. the diverted floodwater flows towards residences in and around Golding st, in the North (8)

Image 2

8. the diverted floodwater flows down Golding st (8) (9)

9. the diverted floodwater flows to residences

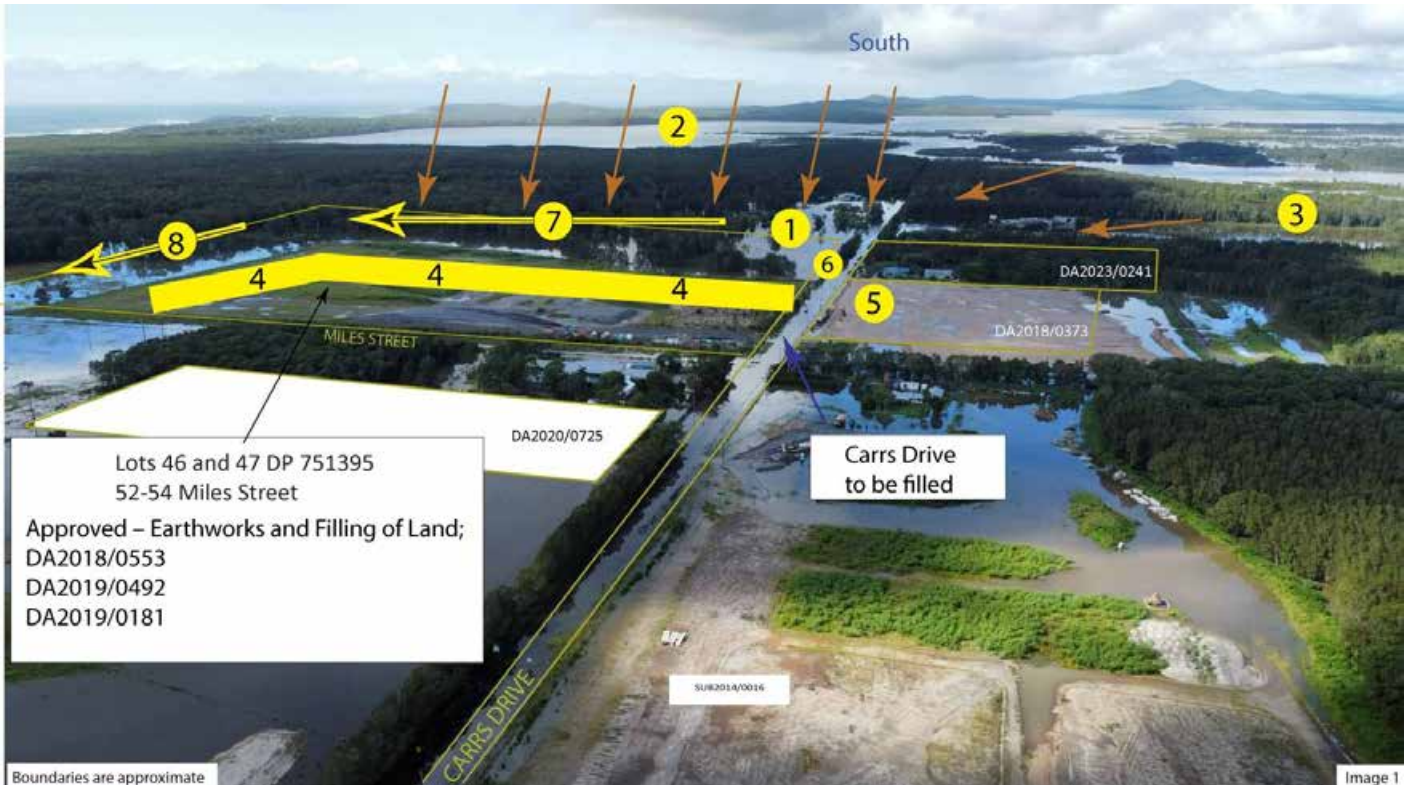


Image 1. Ariel view of Carrs Drive looking south

[4] Exhibition copy Preliminary Engineering Drawings.pdf

Image 2. Ariel view of Carrs Drive looking east

In relation to the actions exhibited in Images 1 to 13 and the 2021 WYURA FIA, noting “increases in flood level are apparent across much of the north-eastern portion of the WYURA as this portion is not filled and movement of water from north to south is restricted by fill to the south”[5] and in line with the strategic goals outlined in the "Flood Risk Management Manual 2023," I hereby request;

4) For DA2018/0553

a) Strategic Planning and Stakeholder Engagement: Evidence of inclusive planning for DA2018/0553 and subsequent applications, ensuring stakeholder and community perspectives were incorporated to mitigate flood risks effectively.

b) Flood Risk Assessment Reports: Copies of flood risk assessments for DA2018/0553, DA2019/0492, and DA2019/0181, with a focus on methodologies, outcomes, and mitigation strategies. Specific attention should be given to the integration of floodwater velocity and depth in assessing flood hazards.

c) Impact on Flood Storage and Floodways: Detailed analysis of how these developments affect flood storage capacities and the functionality of floodways. This is critical for maintaining the balance between development and flood risk management, ensuring that alterations do not compromise floodplain functionality.

d) Development Application Conditions: Conditions outlined in the approvals, emphasising flood risk

[5] 2021 WYURA Flood Impact Assessment.pdf pg 23

mitigation and compliance with Flood Risk Management guidelines, particularly regarding flood storage and the preservation of floodways.

e) Flood Modelling Data: Insights into flood modelling techniques used, especially the assessment of floodwaters from the southern lake. Understanding the impact of data gaps on flood risk predictions and the efficacy of management strategies is vital.

f) Commencement Date: The date the filling of the lot commenced.

5) For DA2019/0181

a) Strategic Planning and Stakeholder Engagement: Evidence of inclusive planning for DA2018/0553 and subsequent applications, ensuring stakeholder and community perspectives were incorporated to mitigate flood risks effectively.

b) Flood Risk Assessment Reports: Copies of flood risk assessments for DA2018/0553, DA2019/0492, and DA2019/0181, with a focus on methodologies, outcomes, and mitigation strategies. Specific attention should be given to the integration of floodwater velocity and depth in assessing flood hazards.

c) Impact on Flood Storage and Floodways: Detailed analysis of how these developments affect flood storage capacities and the functionality of floodways. This is critical for maintaining the balance between development and flood risk management, ensuring that alterations do not compromise floodplain functionality.

d) Development Application Conditions: Conditions outlined in the approvals, emphasising flood risk mitigation and compliance with Flood Risk Management guidelines, particularly regarding flood storage and the preservation of floodways.

e) Flood Modelling Data: Insights into flood modelling techniques used, especially the assessment of floodwaters from the southern lake. Understanding the impact of data gaps on flood risk predictions and the efficacy of management strategies is vital.

f) Commencement Date: The date that this filling commenced.

6) For DA2019/0492

a) Strategic Planning and Stakeholder Engagement: Evidence of inclusive planning for DA2018/0553 and subsequent applications, ensuring stakeholder and community perspectives were incorporated to mitigate flood risks effectively.

b) Flood Risk Assessment Reports: Copies of flood risk assessments for DA2018/0553, DA2019/0492, and DA2019/0181, with a focus on methodologies, outcomes, and mitigation strategies. Specific attention should be given to the integration of floodwater velocity and depth in assessing flood hazards.

c) Impact on Flood Storage and Floodways: Detailed analysis of how these developments affect flood storage capacities and the functionality of floodways. This is critical for maintaining the balance between development and flood risk management, ensuring that alterations do not compromise

floodplain functionality.

d) Development Application Conditions: Conditions outlined in the approvals, emphasising flood risk mitigation and compliance with Flood Risk Management guidelines, particularly regarding flood storage and the preservation of floodways.

e) Flood Modelling Data: Insights into flood modelling techniques used, especially the assessment of floodwaters from the southern lake. Understanding the impact of data gaps on flood risk predictions and the efficacy of management strategies is vital.

f) Commencement Date: The date filling commenced.

7) For DA2023/0241

Strategic Planning and Stakeholder Engagement: Evidence of inclusive planning for DA2018/0553 and subsequent applications, ensuring stakeholder and community perspectives were incorporated to mitigate flood risks effectively.

a) Flood Risk Assessment Reports: Copies of flood risk assessments for DA2018/0553, DA2019/0492, and DA2019/0181, with a focus on methodologies, outcomes, and mitigation strategies. Specific attention should be given to the integration of floodwater velocity and depth in assessing flood hazards.

b) Impact on Flood Storage and Floodways: Detailed analysis of how these developments affect flood storage capacities and the functionality of floodways. This is critical for maintaining the balance between development and flood risk management, ensuring that alterations do not compromise floodplain functionality.

c) Development Application Conditions: Conditions outlined in the approvals, emphasising flood risk mitigation and compliance with Flood Risk Management guidelines, particularly regarding flood storage and the preservation of floodways.

d) Flood Modelling Data: Insights into flood modelling techniques used, especially the assessment of floodwaters from the southern lake. Understanding the impact of data gaps on flood risk predictions and the efficacy of management strategies is vital.

8) For DA2018/0373

a) Strategic Planning and Stakeholder Engagement: Evidence of inclusive planning for DA2018/0553 and subsequent applications, ensuring stakeholder and community perspectives were incorporated to mitigate flood risks effectively.

b) Flood Risk Assessment Reports: Copies of flood risk assessments for DA2018/0553, DA2019/0492, and DA2019/0181, with a focus on methodologies, outcomes, and mitigation strategies. Specific attention should be given to the integration of floodwater velocity and depth in assessing flood hazards.

c) Impact on Flood Storage and Floodways: Detailed analysis of how these developments affect flood storage capacities and the functionality of floodways. This is critical for maintaining the balance between development and flood risk management, ensuring that alterations do not compromise floodplain functionality.

d) Development Application Conditions: Conditions outlined in the approvals, emphasising flood risk mitigation and compliance with Flood Risk Management guidelines, particularly regarding flood storage and the preservation of floodways.

e) **Flood Modelling Data:** Insights into flood modelling techniques used, especially the assessment of floodwaters from the southern lake. Understanding the impact of data gaps on flood risk predictions and the efficacy of management strategies is vital.

Riverine Peak Flooding from Lake Wooloweyah March 2022

"floodways within Yamba that take **floodwaters from the south through middle Yamba to the Clarence River**" [6] - as shown in Images 1 to 13

Image 3. Location of captured images 4 - 13

[6] Yamba Floodplain Risk Management Plan 2009 pg 4

Image 4. Facing towards the north

Image 5. Facing towards the south.

Image 6. Facing towards the north

Image 7. Water flowing towards the north

Image 8. Facing towards the south

Image 9. Facing towards the east

Image 10. Facing towards the east

Image 11. Facing towards the north

Video recording of riverine catchment peak flooding on the Corner of Golding st and Deering st 2nd March 2022-14:57

https://yambafloods.au/march2022flood/GoldingDeering1457pm020322.mp4

Image 12. Facing towards the north

Image 13. Facing towards the north

Video recording of riverine catchment peak flooding on the Golding st and Susan st 2nd March 2022
https://yambafloods.au/march2022flood/Susanstdrain1509pm020322.mp4

Request for Detailed Flood Modelling and Impact Assessment Data in WYURA Development Area

In accordance with the guidelines outlined in the "Flood Risk Management Flood Hazard" document, specifically Sections 2, 3, and 4, which emphasise the significance of incorporating both the velocity and depth of floodwaters in flood hazard assessments, I request detailed information regarding the anticipated changes in flood levels as a result of the proposed development in the WYURA area, from floodwaters originating from the southern lake. This inquiry also considers the insights from the "Flood Risk Management Flood Function" document, underpinning the critical role of understanding flood functions in managing flood risks effectively.
The inclusion of detailed velocity data of floodwaters originating from Lake Wooloweyah is crucial for our comprehensive flood hazard assessment efforts. As outlined, understanding both the dynamic and static characteristics of floodwaters is pivotal for accurately evaluating flood hazards, informing risk management strategies, emergency planning, and making informed, sustainable land-use decisions.

Specifically, I am seeking:

9) Updated Flood Modelling Data: As recommended, insights into updated flood modelling that factor in the proposed development in WYURA, highlighting changes in flood levels with an emphasis on the velocity and depth of floodwaters from Lake Wooloweyah, as per the latest updates (referencing "Flood Risk Management Flood Hazard", Sections 2-4).
Flood water level differences between floodwaters coming from the south and from the Riverine Peak to the north.

10) **Velocity Data of Floodwaters**: In alignment with the guidance, comprehensive velocity data of floodwaters, detailing any significant changes or impacts attributed to the proposed development, is essential for our assessment ("Flood Risk Management Flood Function").
Detailed data and findings on floodwater velocities from both the north (Clarence River) and south (Lake Wooloweyah, Oyster Channel).

11) **Impact Assessment and Mitigation Strategies:** An analysis and subsequent recommendations based on how the proposed development could alter flow dynamics, thereby affecting flood risk management strategies within the impacted areas. This request is in line with the strategic approach advocated for managing flood functions and hazards to mitigate risks to our community.

This request is grounded in the need to align our planning initiatives with the best practices in flood risk management, as outlined in the referenced documents. The integration of comprehensive flood data, including velocity information, into our hazard assessments will significantly enhance our flood risk management capabilities.

Flood Level Heights Surrounding the WYURA

Image 14. Extract from Preliminary Engineering Drawings No. 33801-PR2 page 44

Image 15. Image 14 superimposed on a satellite image

Image 16. Inundation from river, the street is dry in southern Golding st

Image 17. Golding street is dry

Distinguishing Inundation from Riverine Flooding

Flooding from Inundation

Image 18. Inundation from river and lake, the water is still

Image 19. The lake and the river connect at the Corner of Golding and Miles streets

Flooding from Riverine Peak

The riverine floodwaters, as depicted in Image 7, are distinguished from the still inundation waters seen in Image 18 by their dynamic flow and a noticeable difference in height. Specifically, during this event, the water level of Lake Wooloweyah was about 200 centimeters higher than the river's flooding levels, with the lake's height measured at 1.752 meters AHD and the river's at 1.55 meters AHD. Furthermore, as illustrated in Image 20, Golding Street was submerged, indicating a significant increase in water levels.

Riverine Flooding from Lake Wooloweyah March 2022

Image 20. Water flowing north at the velocity shown in Image 7
2/3/2022 -Spliced flood images –30 Golding st (south)
The image is captured at location 20 in Image 16, - Video recording available
cnr Golding st Miles 2:01 pm EST 2-3-22

Summary from Images 4-20;

Inundation Flooding

- Based on the level comparison from Images 14, the floodwaters shown in Image 18 are approximately 1.55 meters above the Australian Height Datum (AHD), which is marginally above 1.5 meters yet below 1.6 meters AHD, with 1.5mAHD[7] being the height that Yamba inundation can occur.
- South Golding Street is fairly dry, as shown Image 17, indicating that the inundation did not affect this area at that time.
- The inundation floodwaters are described as still, suggesting little to no current movement during the observation.

Riverine Flooding

- Floodwater levels exceed 1.6 meters above the Australian Height Datum (AHD) as depicted in Image 14
- South Golding Street is under water, as shown in Image 20
- The Riverine floodwaters are described flowing steadily

Comparing flood heights against physical reference point

A state survey mark, which is a precisely measured point above sea level, serves as an excellent benchmark for this purpose. These marks are established and maintained by governmental surveying departments and provide a standardised reference for elevation.

[7] Clarence-Valley-LFP-combined-Endorsed-July-2023.pdf pg 64

Image 21. State Permanent Survey Mark SS125393, which stands at 1.712 meters AHD.

Request for Comprehensive Analysis of the March 2nd, 2022 Surge Event Within West Yamba Flood Risk Management Framework

I request information related to the documented surge event on 2nd March 2022, which was detailed in the submission titled "Flood Surge 2nd March 2022." This event presents a unique opportunity to enhance our understanding and management of flood risks in the West Yamba area. Specifically, I seek detailed documentation and analysis regarding how this surge event has been considered within the existing flood risk management framework.

Request Details:

12) Detailed Methodology and Assumptions:
Pertaining to the "Flood Risk Management Impact Risk Assessment" document, I request information on the process and assumptions integrated into the flood modelling methodology. This includes how the surge event documented in "Flood Surge 2nd March 2022" has been incorporated into existing models.

13) Simulation of Coincidental Occurrence:
As outlined in the "Floodplain Risk Management Guide," the simulation of coincidental occurrence of surge events alongside high tide and riverine flood events is crucial. Information on approaches adopted to model these simultaneous occurrences, especially considering the surge event of 2nd March 2022, is requested (Refer to "Coastal Inundation/Catchment Flooding Guidance" and "Modelling the Interaction of Coincidence of Catchment Flooding and Oceanic Inundation in Coastal Waterways").

14) Public Consultation and Expert Review:
Documentation of any public consultation processes or expert panel reviews regarding the modelling and assessment of the surge event. This includes feedback, discussions on model assumptions and outputs, and any model adjustments following the inclusion of the documented surge event.

This request stems from the need to ensure that our flood risk assessments accurately reflect the potential impacts of such surge events on our community, infrastructure, and environment. Understanding how these events are integrated into our models and planning processes is crucial for effective flood risk management and for fostering community confidence in those processes.

Flood Risk Management Manual (2023) Compliance: Assessment of Documented Surge Event and Landscape Fill within WYURA

I seek detailed assessment records and considerations pertaining to the surge event recorded on 2nd March 2022, aiming to decipher the interactions between the constructed fill in the WYURA and its resultant hydrological consequences during surge phenomena. This inquiry roots itself in the intricacies highlighted within the "Flood Risk Management Impact Risk Assessment."

Request Specifications:

15) Detailed Methodology and Assumptions:
The "Flood Risk Management Impact Risk Assessment" illuminates on methodologies applied to account for southern fill restrictions impacting water movement within the WYURA. In adherence to the Act and the Manual's emphasis on transparent, informed flood risk management processes (Flood Risk Management Manual, 2023, Section 4.4.3), information elucidating how these methodological underpinnings facilitate accurate surge event simulations is sought.

16) Simulation of Coincidental Occurrence:
As per the Flood Risk Management Manual's directive on simulating coincidental occurrences of surge and tidal conditions to refine flood behaviour predictions (Flood Risk Management Manual, 2023, Section related to "Understanding flood behaviour and constraints"), clarification is requested on the inclusion and impact assessment of fill on hydrodynamic behaviours during the specified surge event. I seek documentation that explores the relationship between the fill and the surge event's impact, particularly how water movement restrictions due to the fill influence flood levels during such events. This includes how the fill might exacerbate flood levels when coinciding with surge events.

17) Public Consultation and Expert Review:
In alignment with the manual's principle of consultative management (Flood Risk Management Manual, 2023, Principle 3: "Be consultative"), documentation detailing public consultations or expert reviews that specifically address the interplay between fill and surge event dynamics within the WYURA is requested.
I am interested in records of consultations or expert reviews that address the community's concerns regarding the fill's impact on surge events and subsequent flood risk.

The insights from the "Flood Surge 2nd March 2022" submission are pivotal for advancing our comprehension of flood risks in West Yamba, particularly concerning landscape alterations such as fill. This inquiry, grounded in the legislative and manual frameworks, seeks to ensure these factors are integrally considered within our flood risk management strategies.

Documentation Provided:

I previously submitted a detailed observation document titled "Flood Surge 2nd March 2022," which offers firsthand data on the surge event. This submission should be considered integral to this inquiry.

Objective:

This request aims to ascertain whether the fill, as described in the Flood Risk Management Manual (2023), contributed to the severity of the surge event and if future flood risk management strategies will address the interplay between landscape modifications and surge event dynamics.

Increase in the 'Peak Catchment Coincident'

Accurately modelling the simultaneous occurrence of high river water and sea levels where the river meets the sea, 'Peak catchment coincident', is crucial for both preparing for and mitigating enhanced flood risks. This alignment is essential for meeting flood risk management regulations and standards, crucial for infrastructure design and planning aimed at mitigating the most severe flood risks

"Ocean inundation and high flows in the Clarence River can be produced from the same meteorological event. However in some events the ocean inundation occurs first, prior to the peak rainfall and thus peak Clarence River flood level while in other events it occurs later. Thus it is possible that flooding from ocean inundation may occur well before the peak of the Clarence River flooding occurs"[8]

Past

The 2008 flood study noted, "The duration of river flooding is of the order of one or two days. Ocean storm surge may last for a similar period but the peak period (on a high tide) is likely to last a few hours only"[9]

Present

The significant rise in the water level of Lake Wooloweyah in 2022, compared to previous floods, may be largely attributed to the combination of a larger volume of water entering the lake over a longer duration

[8] Yamba Floodplain Risk Management Study pg
[9] Lower Clarence River Flood Study (1988)

(Figure 6.1) combined with the restricted channel that limits the rate of outflow from the lake (a). This situation creates a scenario where the lake experiences a disproportionate increase in water level, reflecting the cumulative impact of prolonged high-volume inflow and restricted drainage capacity.

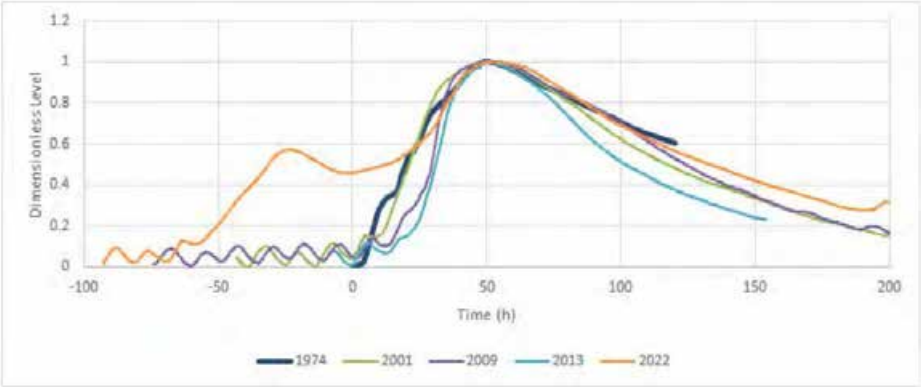


Figure 6.1 Historical Event Stage Hydrograph Shapes: Prince Street Gauge, Grafton

Figure 6.1 the 2022 event had more volume than the majority of the other hydrographs.

Retained Floodwaters in West Yamba Elevate 'Peak Catchment Coincidence'

“Peak Catchment Coincident" describes the simultaneous occurrence of the highest flood levels from upstream catchment areas with other flood-inducing conditions, exacerbating flood impacts.

Lake Wooloweyah behaves like a bathtub

The geographical and structural features surrounding Lake Wooloweyah contribute to its 'bathtub' behaviour during tidal fluctuations and flood events. The Oyster Channel to the west and the lake's extension to the south form natural boundaries that influence water flow into and out of the area. To the east, filled ground acts as a barrier that prevents water from easily dispersing, further contributing to the contained nature of the lake. Meanwhile, Yamba Road to the north serves as another man-made boundary that restricts water movement. These features together encase the lake in such a way that it acts like water in a bathtub.

“flood levels are lower than for areas elsewhere in Yamba where there is no overtopping constraint”[10]

Peak baseline design flood elevations across the WYURA are lower than the corresponding flood elevations in much of Yamba. Flooding to West Yamba from storm surge relies on overtopping of Yamba Road (with more minor flow passing through culverts under Yamba Road). Flow passing over Yamba Road and into West Yamba is limited to the duration of the peak of the tide and so resulting

Floodwater is Confined within West Yamba Due to Flow Constraints

[10] West Yamba Urban Release Area Flood Impact Assessment Reference: R.B22646.001.01.West Yamba FIA.docx Date: January 2018

The volume of floodwater entering the West Yamba area is confined by;

(a) Yamba road to the north

Image 22. Westerly view of Yamba Road

(b) Filled ground to the east

Image 23. Easterly view of 30 Golding st

(c) The Oyster Channel to the west and Lake Wooloweyah to the south

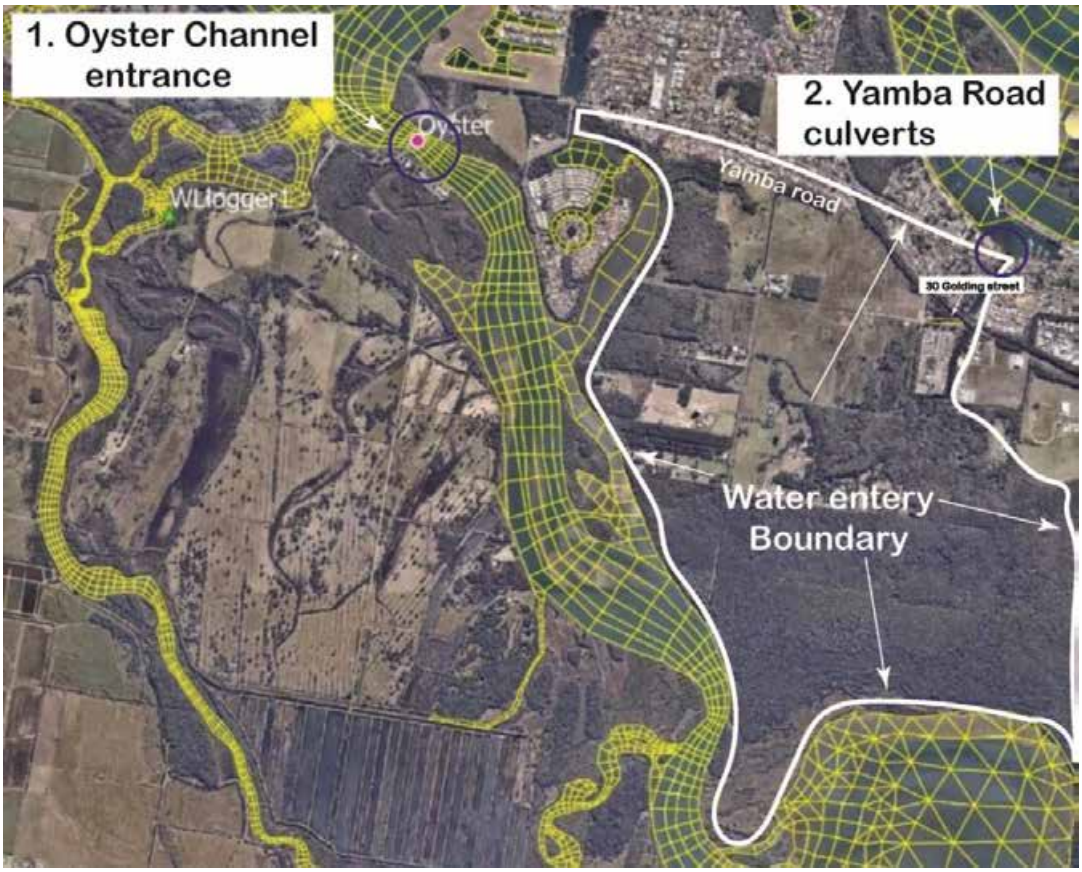


Image 24. Floodwater Exit Constraints

Constraints on Floodwater Discharge Influence Peak Flood Heights in West Yamba

1. In "Knowledge for Productivity: Phase I - Lake Wooloweyah," the Oyster Channel is identified as the primary conduit for water flow into and out of Lake Wooloweyah, as shown at 1 in Image 24, significantly influencing the lake's hydrodynamics. The document notes, "The calibration of the model against flow measurements in Oyster Channel...shows that the model reproduces the tidal flows and therefore volumes in and out of Lake Wooloweyah with a high level of accuracy," highlighting the channel's critical role in the lake's water dynamics.

2. The only major creek system linking the Clarence River to the floodplain south of Yamba Road is the unnamed creek between Endeavour and Freeburn Streets. However the capacity of this creek to convey significant flows across Yamba Road is severely restricted due to the small culvert capacity under Yamba Road, as shown at 2 in Image 24, the height of Yamba Road at this point (approximately 1.5 mAHD),[11]

The Oyster Channel: Main Inlet and Outlet for Lake Wooloweyah's Floodwaters

[11] 2008 yamba-floodplain-risk-management study.pdf

Based on the comprehensive analysis provided in "Knowledge for Productivity: Phase I - Lake Wooloweyah," a clear indication of the significance of the Oyster Channel's flow into Lake Wooloweyah is evident. The document highlights the calibration and validation of a detailed hydrodynamic model that incorporates flow measurements and water level data to accurately depict the tidal dynamics within the estuary system. Specifically, it states:

"The calibration of the model against flow measurements in Oyster Channel shows that the model reproduces the tidal flows and therefore volumes in and out of Lake Wooloweyah with a high level of accuracy."

This statement underscores the substantial role that the Oyster Channel plays in influencing the hydrodynamics and ecological health of Lake Wooloweyah, as demonstrated through rigorous hydrodynamic modelling. The validation efforts, particularly the alignment of model outputs with empirical flow data collected in the Oyster Channel, further cement the channel's prominence in delivering water flow to Lake Wooloweyah. Such a detailed modelling and validation process, as depicted in Figure 7 of the document, offer a robust basis for concluding that the Oyster Channel serves as a major conduit for water flow into the lake, compared to other channels and inputs within the system.

Thus, the document's findings, supported by empirical data and advanced modelling techniques, clearly indicate the Oyster Channel's paramount importance in the hydrodynamic functioning of Lake Wooloweyah. This assertion is not only backed by the model's calibration against actual flow measurements but also by the comprehensive hydrodynamic analysis provided, making it a pivotal piece of evidence for understanding the water flow dynamics within this estuarine system.

Oyster Channel: The Critical Regulator of Lake Wooloweyah's Flood Waters

The principal flow of flood waters into Lake Wooloweyah is channelled through the Oyster Channel, causing the lake to overflow into West Yamba and subsequent water storage on the land. Both the ingress and egress of water are predominantly regulated by the capacity of the Oyster Channel. Similarly, floodwaters that manage to pass through the limited capacity culvert under Yamba Road, from the unnamed creek between Endeavour and Freeburn Streets, also contribute to the overflow and storage in West Yamba. This scenario further underscores the Oyster Channel's critical role, along with the creek's restricted contribution, in managing the hydrodynamics of the area.
As the flow of floodwaters is restricted by the Oyster Channel and the culvert's limited capacity under Yamba Road, so too is the volume of floodwater stored; since floodwater cannot flow back to the Clarence River, any excess or displaced floodwater storage must be accommodated solely within West Yamba.
This limitation underscores the critical role of flow restrictions in shaping floodwater distribution and storage dynamics in the area.

"The Lake Wooloweyah segment has a highly attenuated and complex tidal regime" "Another important feature of the tides inside the lake is that experiences significant spring tidal pumping, characterised by an increase in the mean water level of a tidal basin during larger tidal forcing during spring tides" "This increase in the mean water level also occurs during elevated water levels in the Clarence River during floods"[12]

Tidal pumping

The tidal dynamics of Lake Wooloweyah are influenced by variability in flows in the Clarence River as well as spring and neap tide cycles.[13]

[12] Knowledge for Productivity: Phase I - Lake Wooloweyah produced by the Department of Primary Industries
[13] Knowledge for Productivity: Phase I - Lake Wooloweyah produced by the Department of Primary Industries

Another important feature of the tides inside the lake is that experiences significant spring **tidal pumping, characterised by an increase in the mean water level** of a tidal basin during larger tidal forcing during spring tides (McLean and Hinwood, 2011).
"This increase in the mean water level also occurs during elevated water levels in the Clarence River during floods"[14]

This spring tidal pumping can be seen particularly well in Image 25.

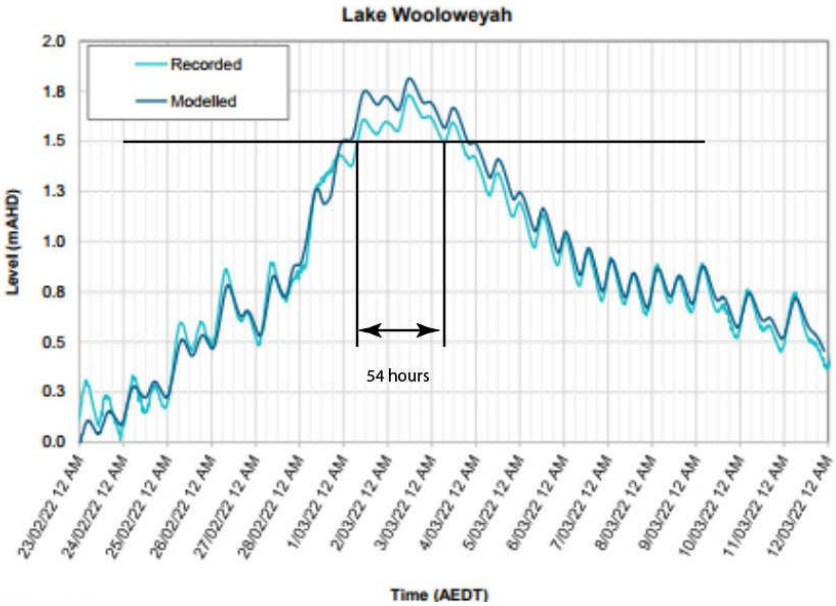


Image 25. Lower Clarence Flood Model 2022

Summary:
The major water flow into Lake Wooloweyah is predominantly dictated by the Oyster Channel, as evidenced by detailed hydrodynamic modelling and flow measurement calibrations within the Knowledge for Productivity study underscores the Oyster Channel as a major hydraulic connector between the Clarence River and Lake Wooloweyah, playing a pivotal role in the water flow dynamics entering the lake.

Inquiry into Flood Risk Management and the Impact of Extended Lake Water Elevation

I request comprehensive information on flood risk management strategies in the Clarence Valley Council LGA, focusing on the multifaceted challenges posed by extended lake water elevation levels, sea level rise, flood peak characterisations, and the specific context of the March 2022 flood event. This inquiry seeks to understand the integration of tidal pumping effects, sea level rise projections, and their combined impact on flood risk assessments, especially regarding Lake Wooloweyah and adjacent areas.

Comprehensive Information Requested:

18) Extended Lake Water Elevation Levels:

[14] Knowledge for Productivity Phase I - Lake Wooloweyah-Copy.pdf pg 34

a) Studies, reports, or models on extended lake water elevation levels, especially regarding tidal pumping and prolonged high-water events.
b) The impact of tidal pumping influences on flood risk planning and infrastructure design.
c) Implications for flood risk management strategies due to extended water elevation levels.

19) Sea Level Rise Consideration:

a) The latest data and projections on sea level rise used in flood risk planning and their effects on tidal barrier impacts.
b) Integration of sea level rise into hydrodynamic and flood models, and its impact on lake water elevation levels, identifying measurement details.

20) Flood Peak Characterisation Correction:

a) Clarification on flood peak characterisations, particularly regarding the potential for double flood peaks due to riverine and storm tide inundation.
b) Data or studies supporting or refuting this characterisation, with emphasis on the March 2022 flood event and tidal pumping effects.

21) Adaptation and Mitigation Strategies:

Stakeholder and community consultations on the impact of sea level rise and adaptation measures.

22) Cumulative Effect of Prolonged High Volume:

Documentation on the cumulative effect of prolonged high-volume inflow into Lake Wooloweyah, including impacts on water levels and risk management strategies.

23) Impact Assessments and Inundation Scenarios:

a) Reports or studies on the impacts of prolonged high water levels and inundation scenarios related to elevated flood levels, especially those maintaining Lake Wooloweyah's flood level above critical thresholds.
b) Impact of Restricted Channel and Reassessment of AEP Calculations:

Assessments of how restricted channel outflows affect lake water levels and discussions on the reassessment of AEP calculations based on recent events.

24) Future Flood Risk Management Plans:

Documentation on future plans or revisions to flood risk management strategies, especially in response to the unique challenges presented by Extended Lake Water Elevation Levels as observed in recent flood events.

This detailed inquiry aims to gather insights into Clarence Valley Council's comprehensive flood risk management approach, addressing the challenges of extended lake water elevations, sea level rise, and accurate flood peak characterisations. The information is crucial for enhancing community preparedness, informed decision-making, and effective mitigation strategies against future flood risks.

Floodwater Exit Constraints Shape West Yamba flood heights

Oyster Channel: The Critical Regulator of Lake Wooloweyah's Flood Waters

The Oyster Channel acts as the main conduit for the flow of floodwaters into Lake Wooloweyah, leading to significant overflow into West Yamba and subsequent water storage on the land. It is instrumental in both the ingress and egress of water, with its capacity fundamentally governing the regulation of water flow into and out of the lake. This channel's critical role ensures it not only channels floodwaters into the lake but also affects their storage and distribution on the surrounding land, highlighting its pivotal influence on the area's water dynamics

Floodwaters also pass through the culvert under Yamba Road, through the unnamed creek between Endeavour and Freeburn Streets, also contributing to the overflow and storage in West Yamba. However, this creek's ability to convey substantial flows is greatly limited by the small capacity of the, culvert under Yamba Road.

This scenario further underscores the Oyster Channel's critical role, along with the creek's restricted contribution, in managing the hydrodynamics of the area."
As the flow of floodwaters is restricted by the Oyster Channel and the culvert's limited capacity under Yamba Road, so too is the volume of floodwater stored; since floodwater cannot flow back to the Clarence River, any excess or displaced floodwater storage must be accommodated solely within West Yamba.
This limitation underscores the critical role of flow restrictions in shaping floodwater distribution and storage dynamics in the area

Summary:

- The Oyster Channel is crucial for directing floodwater into and out of Lake Wooloweyah, significantly affecting the lake's hydrodynamics. Model calibrations confirm its key role in managing water volumes with high accuracy.
- The unnamed creek under Yamba Road, linking the Clarence River to the south floodplain, has its flow capacity severely limited by a small culvert, impacting water conveyance.
- Floodways in Yamba channel south-originating floodwaters to the Clarence River
- West Yamba's flood risk is primarily influenced by the overflow from Lake Wooloweyah, with storm surge flooding dependent on Yamba Road overtopping.
- The area's floodwater management is constrained by geographical features and the capacity of existing pathways, particularly the Oyster Channel and Yamba Road culverts.

Consequently, floodwater exit limitations and the capacity of the Oyster Channel and culverts under Yamba Road are decisive factors in flood heights and water storage in West Yamba, underscoring the complex interplay of natural and built environments in local flood dynamics.

Request for Information on Flood Flow Restrictions and Impact Assessments in West Yamba

I am requesting information on the flood impact and risk assessment addressing the specific hydrodynamic challenges and flood management strategies for the West Yamba Urban Release Area (WYURA), with an emphasis on the roles of the Oyster Channel and other flood mitigation measures as outlined in "Knowledge for Productivity: Phase I - Lake Wooloweyah."

Specific Information Requested:

25) Details on the Oyster Channel's Role: Comprehensive analysis demonstrating the Oyster Channel as the principal conduit for floodwater flow into and out of Lake Wooloweyah, significantly influencing hydrodynamics. Specific reference to the model's calibration against flow measurements indicating "the model reproduces the tidal flows and therefore volumes in and out of Lake Wooloweyah with a high level of accuracy."

26) Studies on Hydrodynamic Impacts of Filling: Detailed studies, reports, or hydrodynamic models that investigate the effects of land filling on the natural flow of floodwaters from Lake Wooloweyah back over the floodplain. Emphasis on documents that assess the capacity of the Oyster Channel and the unnamed creek between Endeavour and Freeburn Streets post-filling.

27) Flood Risk Management Documentation: Copies of flood risk management strategies or planning documents that address the constraints imposed by filling on floodwater discharge capacity and the subsequent risk to West Yamba and surrounding regions. Information on how these constraints

influence flood modelling, risk assessment, and mitigation planning.

28) Assessment of Flood Conveyance Restrictions: Documentation regarding the unnamed creek between Endeavour and Freeburn Streets, its capacity to convey significant flows across Yamba Road, and the impact of these constraints on flood management strategies

29) Analysis of Floodways Within Yamba: Details on the floodways within Yamba that channel floodwaters from the south through middle Yamba to the Clarence River, as referenced in the document.

30) Flood Impact Considerations for West Yamba: Insights into the peak baseline design flood elevations across the WYURA compared to the broader Yamba area, specifically focusing on the storm surge impact and the overtopping of Yamba Road.

31) Council Deliberations and Planning Decisions: Records of council meetings, communications, and planning decision documents where the impact of filling on floodwater flow restrictions has been discussed. This includes deliberations on development approvals, infrastructure development, and zoning changes in flood-prone areas affected by altered hydrodynamics due to filling.

32) Cumulative Flood Impact Analysis: Results and conclusions from the comprehensive flood impact and risk assessments, including changes in flood extent, level, flow velocity, hazard category, and duration and frequency of inundation, emphasising the cumulative impact of development within WYURA.

Rationale for Request: Understanding the interplay between the Oyster Channel's dynamics, land filling, and other flood mitigation measures within WYURA is crucial for evaluating flood risk management strategies. This request aims to gather detailed insights into the specific hydrodynamic challenges and flood management strategies employed, ensuring informed decision-making for future development and planning within West Yamba

Floodways and Flood storage

"The 2008 Yamba Floodplain Risk Management Study determined that the majority of Yamba would be classified as floodstorage (those areas important for the temporary storage of floodwaters) with the Clarence River classified as floodway (those areas where a significant discharge of water occurs). However at a local level there will be floodways within Yamba that take floodwaters from the south through middle Yamba to the Clarence River."[15]

[15] Yamba FloodplainRiskManagementPlan 2009 -YambaFRMPlan-AdoptedFeb_2009.pdf pg 4

Image 26.

Flood water flowing north from the lake is prevented from flowing freely into the flood storage area. Flood water is restrained from flowing north and south.
"movement of water from north to south is restricted by fill to the south."[16]

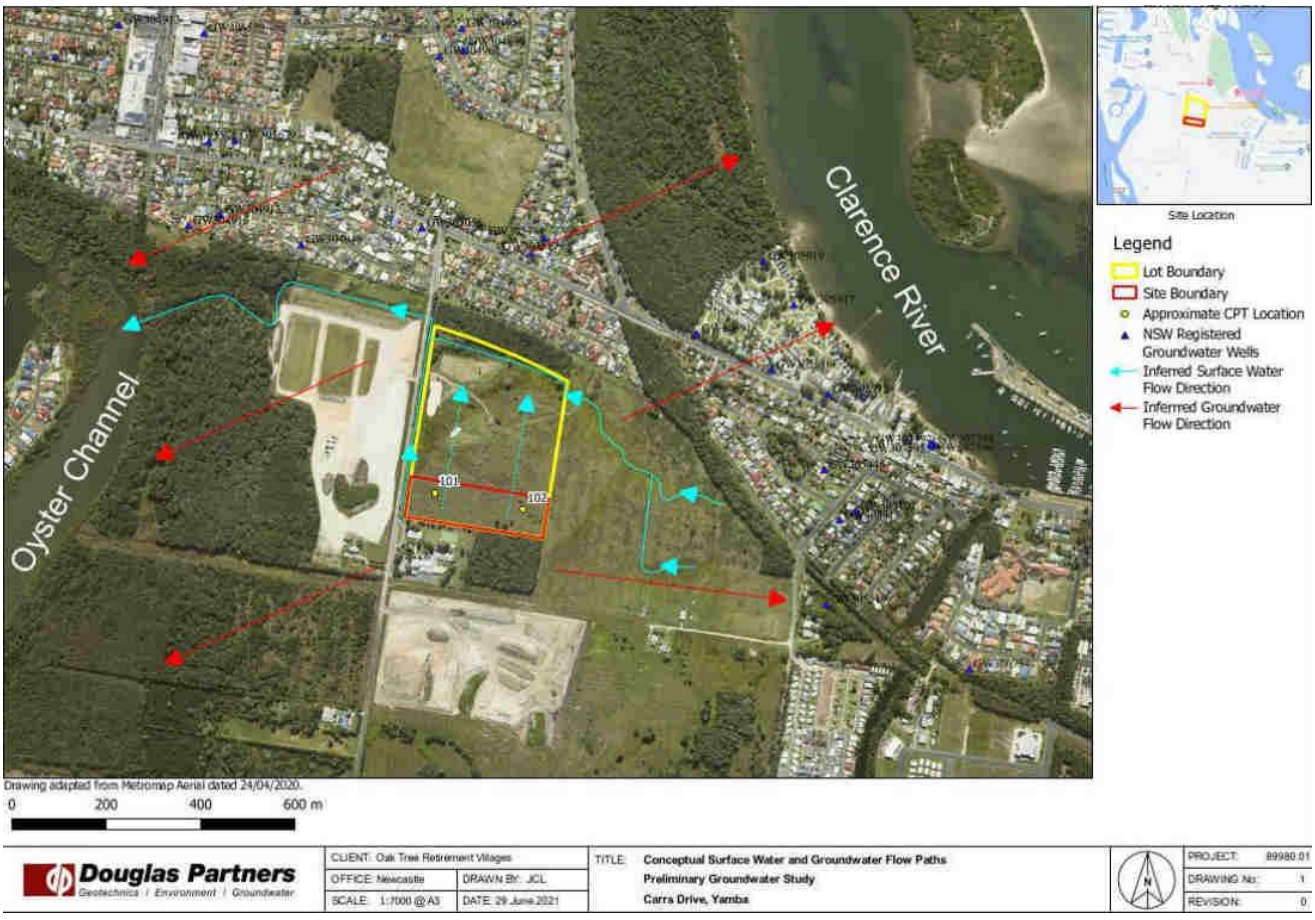


Image 27. Surface Water and Groundwater Flow paths

[16] 2021 WYURA Flood Impact Assessment.pdf pg 23

Image 28. Clarence Valley council 2023 drainage investigation map

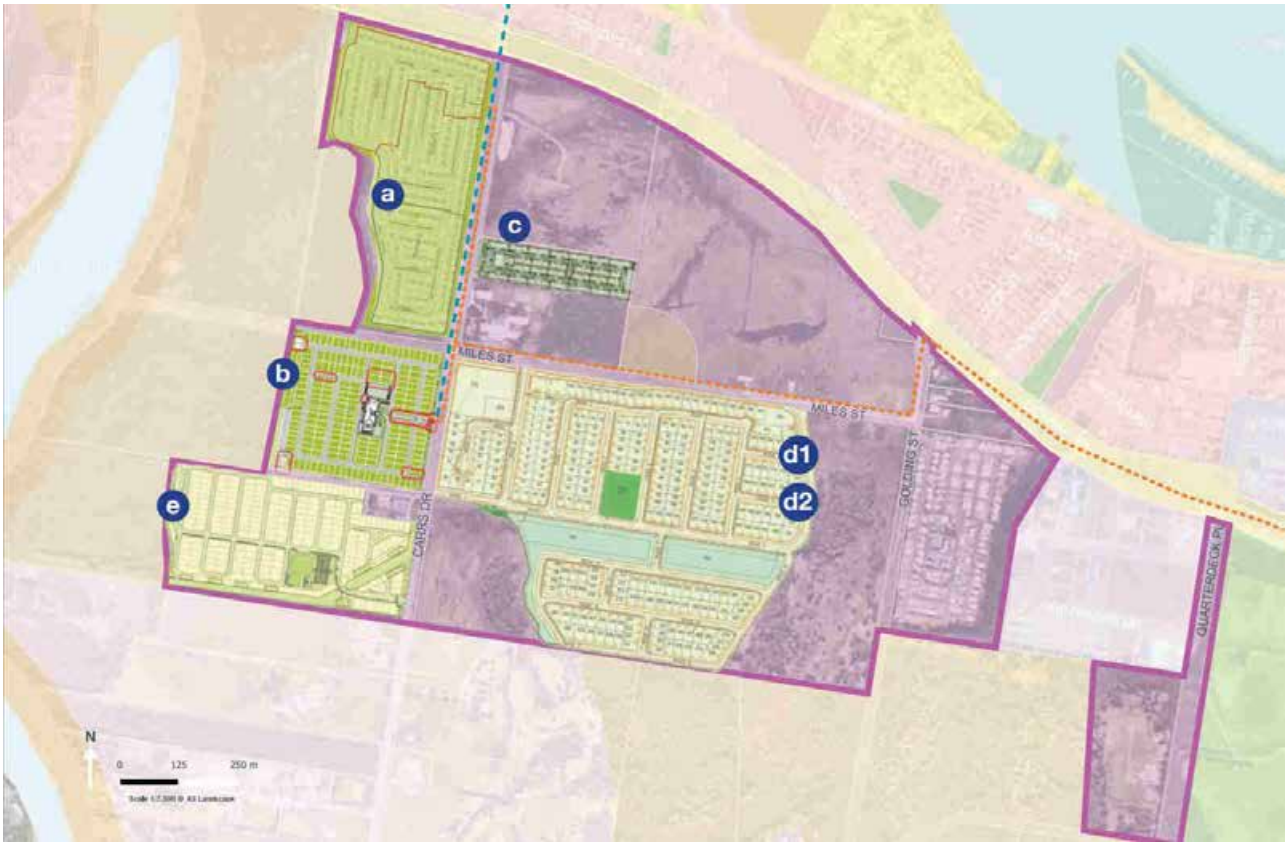


Image 29. West Yamba DA quarterly update September 2023
Exhibits the current Development Applications

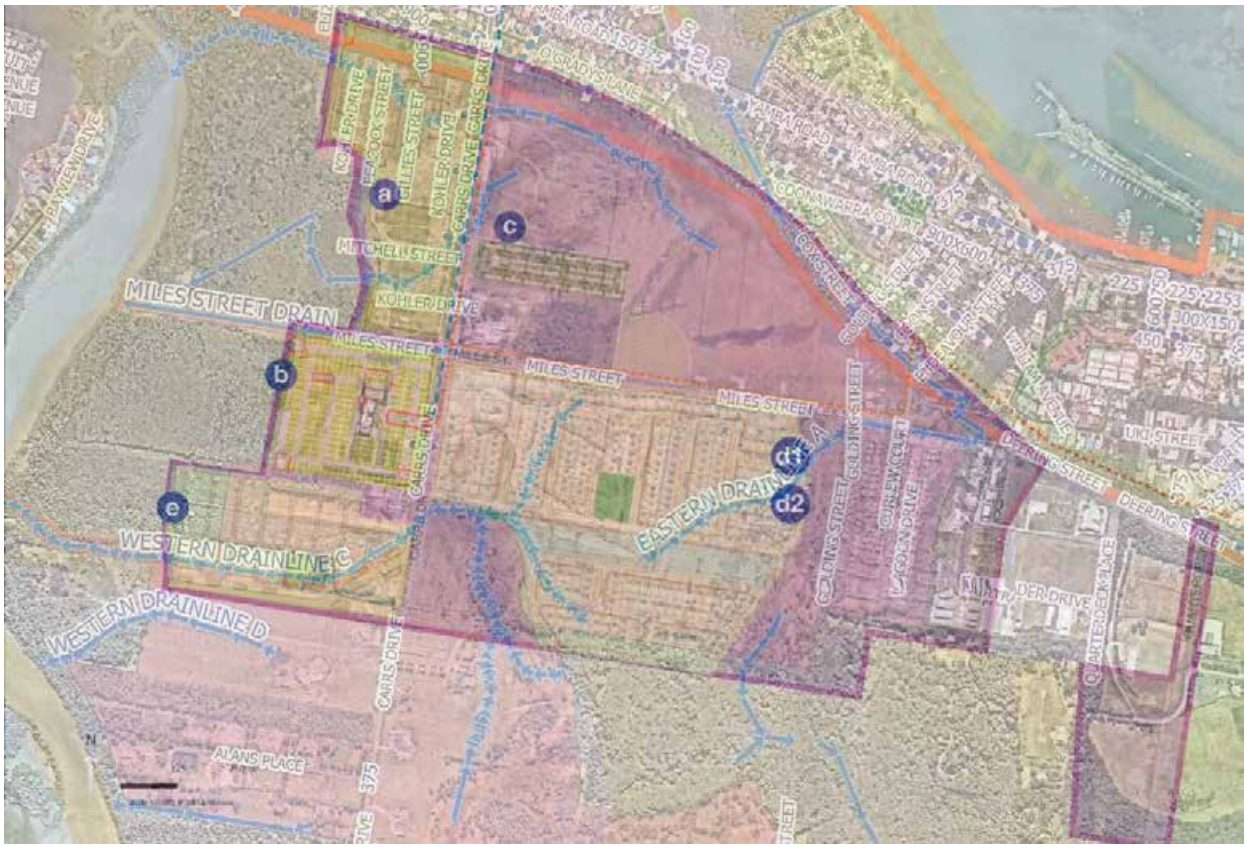


Image 30. The Development Application area superimposed on the flow paths shown in Image 28

Assessment of flood storage

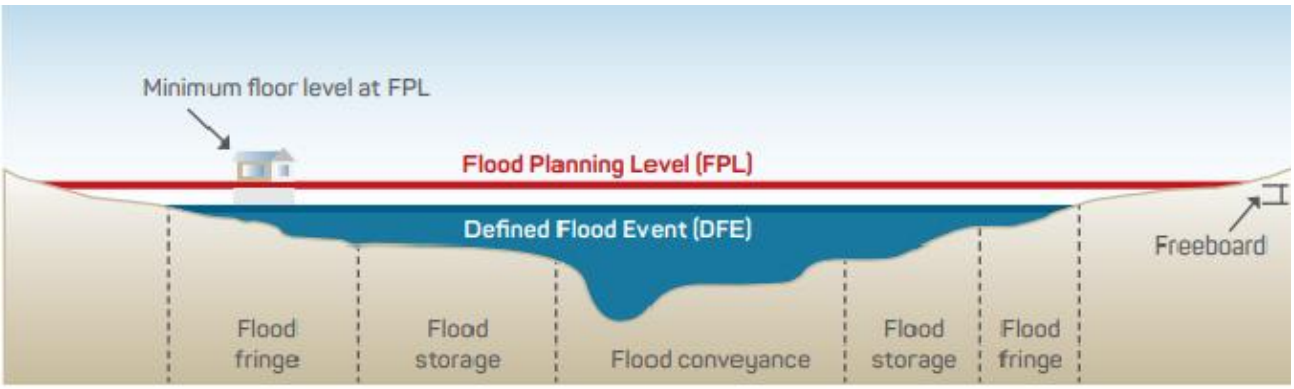
In the "Flood Risk Management Flood Function" guide, Section 4.2 mandates the assessment of flood storage, emphasising its importance in flood behaviour management. This section highlights the need to identify and preserve flood storage areas to mitigate flood risks effectively.

Assessment of floodways

In the "Flood Risk Management Flood Function" guide, Section 4.1 outlines the key requirements for identifying floodways. It states that a floodway should be continuous, connected, and hydraulically logical, and the outcomes of any assessments must meet these criteria to be deemed suitable.

Floodplains have the natural hydraulic functions of conveying and storing water. The flood function categories of floodway areas, flood storage areas and flood fringe are defined in the Flood risk management manual: the policy and manual for the management of flood liable land (the manual; DPE 2023) as follows:

- floodways are generally areas which convey a significant portion of water during floods and are particularly sensitive to changes that impact flow conveyance. They often align with naturally defined channels
- flood storage areas, which are areas outside of floodways, are generally areas that store a significant proportion of the volume of water and where flood behaviour is sensitive to changes that impact on the storage of water during a flood
- flood fringe areas are areas within the extent of flooding for the event but which are outside floodways and flood storage areas. Flood fringe areas are not sensitive to changes in either flow conveyance or storage



Note: flood conveyance, flood storage and flood fringe areas vary with the severity of the flood event

Image 31.

Identification of Flood Depths: Using hydraulic models and historical flood data, you can determine the depth of flooding at various points across the floodplain.
The starting point for the initial iterations may be a global set of depth criteria, such as 1 m for the transition from floodway to flood storage and 0.5 m for the transition from flood storage to flood fringe[17].

Depth

The current flood model indicates flood depths of 2.9—to 3.0 meters for the required Climate Change 1 (CC1) scenario, these controls that required for all new residential developments to have a primary habitable floor level above the 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm.

The WYURA site

"The site is located within a region characterised by low lying sand flats with localised swampy areas in lower lying areas and depressions across the site. The provided survey indicates that site levels are generally between about RL1.0 to 1.4m (AHD) with lower lying depressions and drainage lines having elevations of between about 0.5 to 1.0m."[18]

The land has a general ground level of from 1 m to 2 mAHD and is therefore inundated frequently and by over 1 m deep in the 100 year ARI event.[19]

a) The Clarence Valley Council Intramaps indicate the 1% CC1 AEP height of 2.9 to 3.0 m AHD for WYURA

[17] flood-risk-management-flood-function-230230
[18] Exhibition copy Geotechnical report.pdf
[19] Yamba Floodplain Risk Management Plan - https://www.clarence.nsw.gov.au/files/assets/public/v/1/council/files/flood-plans/yambafrmplan-adoptedfeb_2009_1.pdf pg 11

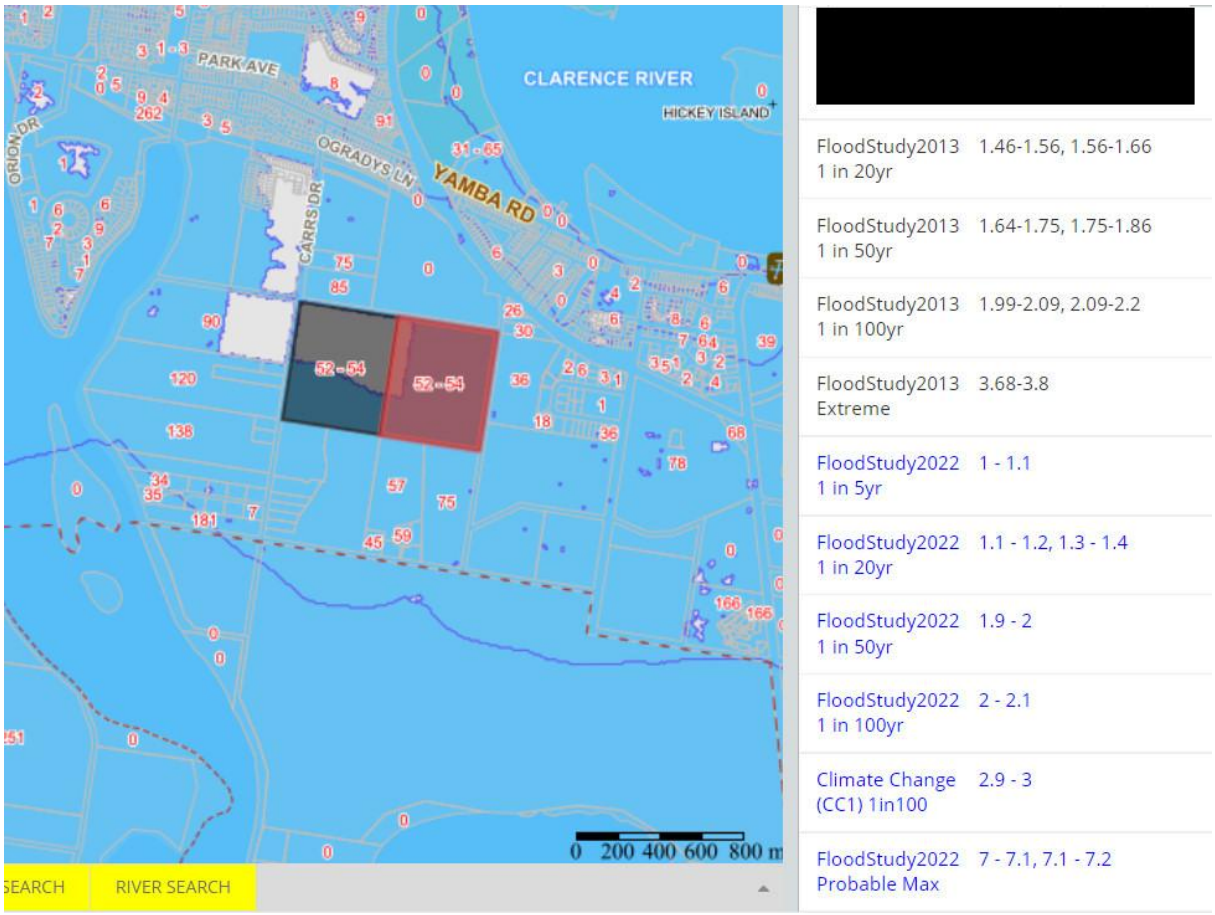


Image 32. Clarence Valley Council Intramaps ;
"The information on this map has been reproduced from flood modelling by WBM Oceanics Australia and adopted by Clarence Valley Council in March 2014 as its design flood levels and in September 2023 as interim flood levels." - CVC[20]

b) 5% AEP Peak Flood Depth and Level Contour map

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[20] https://maps.clarence.nsw.gov.au/intramaps910/

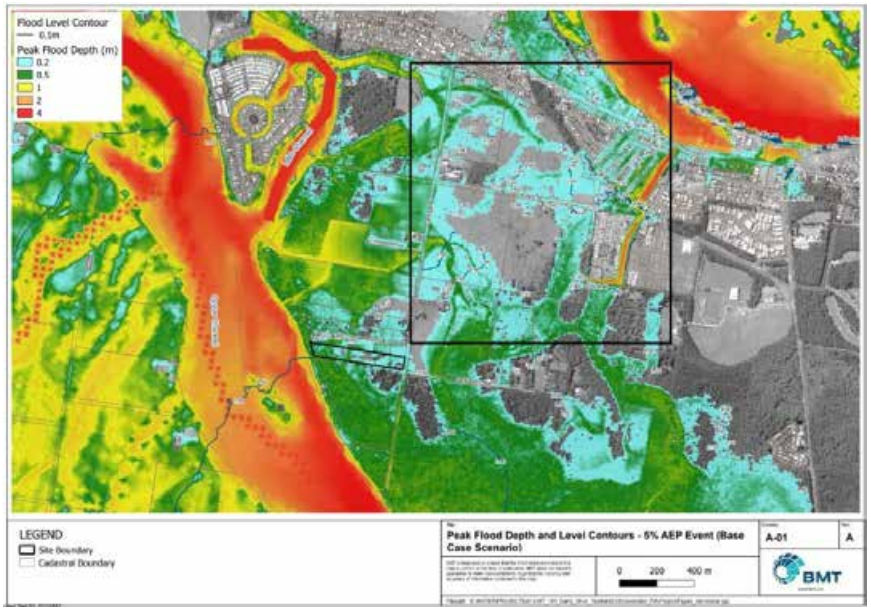


Image 33

c) The 5% AEP Peak Flood Depth and Level Contour map demonstrate flood contours of between 1.3 to 1.6 mAHD.

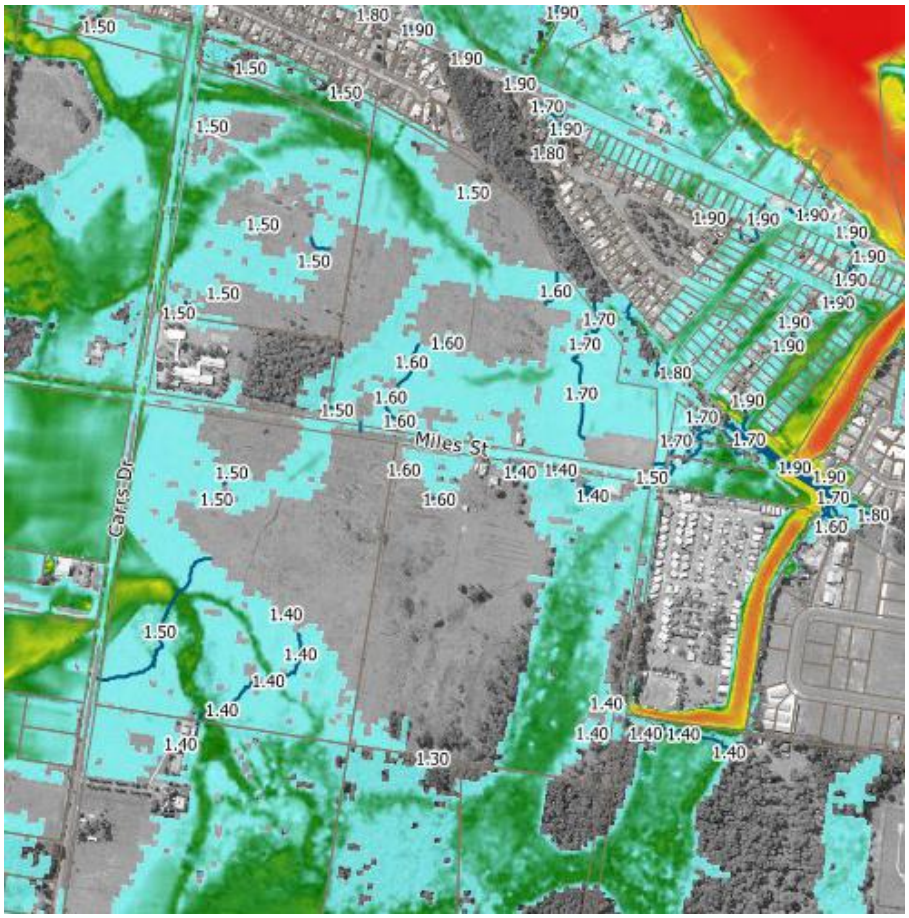


Image 34 extract of Image 33

Summary

When we talk about "storage capacity" in the context of flood management, it often refers to the ability of a floodplain, reservoir, or engineered flood storage area to accommodate floodwater to reduce downstream

flood risks

Interpretation and Calculation:

The flood contours indicate depths of 1.3 to 1.6 mAHD. This range suggests that for a 5% AEP event, the flood depths across WYURA will already exceed the transition depth from floodway to flood storage (1 m), placing these areas within the flood storage zone.

The indication of 1% CC1 AEP heights of 2.9 to 3.0 mAHD represents significantly deeper floodwaters compared to the 5% AEP event. These depths not only surpass the criteria for flood storage but also indicate extensive inundation well into what might be considered beyond the typical flood storage zone into potentially hazardous conditions.

I am submitting a comprehensive request for access to documents, reports, studies, and any other relevant information pertaining to the assessment, categorisation, and management of flood risk areas within the West Yamba Urban Release Area (WYURA). This inquiry specifically targets the apparent absence of flood storage capacity assessments and the detailed categorisation of areas as flood storage, floodways, or flood fringe areas, in alignment with the Flood Risk Management Flood Function guide.

The strategic management of flood risks, particularly in the context of climate change and evolving urban development pressures, underscores the indispensable role of flood storage areas—both naturally occurring and engineered. These areas are crucial for temporarily accommodating floodwaters, thereby attenuating peak flood levels downstream and substantially reducing the risk of damage to communities and infrastructure.

Concerns have been raised due to observations that certain zones, potentially critical as flood storage areas within WYURA, have not been comprehensively assessed for their capacity or suitability to serve in this capacity. This is particularly pressing considering projections for 1% CC1 AEP (Annual Exceedance Probability) events, where climate change factors are anticipated to exacerbate flood risks. The absence of such assessments prompts questions about the thoroughness and resilience of existing flood risk management strategies.

Furthermore, with reference to the "Flood Risk Management Flood Function" guide, specifically Sections 4.1 and 4.2, which highlight the importance of accurately assessing and categorising floodplains to effectively manage flood behaviour, there is a clear mandate to understand the hydraulic functions of floodplains. This includes their roles in conveying and storing water through designated floodway areas, flood storage areas, and flood fringe areas. Given the low-lying nature of WYURA, characterised by sand flats and swampy regions with survey data indicating site levels generally between about RL1.0 to 1.4m (AHD) and lower-lying depressions at about 0.5 to 1.0m (AHD), alongside current flood models indicating flood depths of 2.9 to 3.0 meters for the CC1 scenario, the need for detailed flood function categorisation and management is evident.

To address these concerns and ensure that WYURA's flood risk management is both comprehensive and future-proof, I am seeking the following specific information:

33) Assessment and Categorisation Details: I seek clarification on whether areas within WYURA have been systematically assessed and categorised according to their flood risk functions, such as flood storage areas, floodways, or flood fringe areas. If such assessments have taken place, please provide comprehensive details of the findings, including the criteria and methodologies employed for categorisation.

34) Detailed findings:
Detailed findings from any assessments conducted within WYURA to categorise areas as flood storage, floodways, or flood fringe, including the methodologies and criteria employed.

35) Consultations and Recommendations: Records of consultations with hydrologists, environmental scientists, urban planners, or other experts regarding the use of these areas for flood storage purposes, along with any recommendations or alternative strategies proposed.

36) Reasoning for Current Status: If areas within WYURA have not been categorised as flood storage or floodways or flood fringe, please provide specific reasons why these assessments have not been conducted or completed. This includes any challenges, data gaps, or other factors influencing the assessment process.

37) Impact of Flood Depths on Categorisation: Information on how the identified flood depths of 2.9 to 3.0 meters for the CC1 scenario have been considered in the flood function categorisation process and how these depths influence the determination of floodway, flood storage, and flood fringe areas within WYURA.

38) Future Plans for Assessment: Details on any plans or timelines for conducting or completing the necessary flood function assessments within WYURA, including steps to address any identified data gaps or challenges.

39) Rationale for Omission: A detailed explanation as to why flood storage capacity assessments have not been conducted for these areas. This includes any preliminary assessments or discussions that led to the decision to exclude these areas from detailed flood storage studies.

40) Public Safety and Property Protection Considerations: Documentation on how the absence of flood storage assessments for these areas aligns with broader objectives to ensure public safety and protect property from flood risks.

Considerations for Modelling the Interaction of Catchment Flooding and Oceanic Inundation

NSW OEH legislative guides: Floodplain Risk Management (FRM) Guide[21]

- Waterway entrance/estuary characteristics including NSW estuary classifications and estuary hydrodynamics including tidal planes within coastal waterways.
- Deriving design flood estimates for the interaction of catchment flooding and oceanic inundation considering:
- design ocean levels (including their variability on the NSW coastline);
- wave set-up; historical storm events
- the relative timing of catchment flooding and oceanic inundation events.

Gathering and reviewing background information[22]

The initial step in any investigations into flood behaviour in tidal waterways should start with determining the available background information that can inform the investigations, and the associated model development, calibration and validation. This may include:

- Historical information on flood levels, storm events, catchment flooding, oceanic inundation, tidal inundation and entrance conditions as this will influence modelling of flood behaviour.
- Available studies i.e., flood studies relevant to the current investigations.These may already have considered ocean boundary conditions.
- The way in which ocean boundary conditions were derived and used in existing studies should be assessed for fitness for the intended purpose of current work in consideration of this guide and available historical information (including any significant flood events since completion of existing studies).
- Available information on waterway structures that may influence flood behaviour.
- Historical information on peak shoaled and open conditions of any entrance berms or shoaled waterways.
- Available survey of the waterway and entrance.
- Any management strategy for an entrance berm.
- For site specific assessments, flood related development controls requirements of the relevant council or consent authority. The initial step in any investigations into flood behaviour in tidal waterways should start with determining the available background information that can inform the investigations, and the associated model development, calibration and validation. This may include:
- Historical information on flood levels, storm events, catchment flooding, oceanic inundation, tidal inundation and entrance conditions as this will influence modelling of flood behaviour.
- Available studies i.e., flood studies relevant to the current investigations.These may already have considered ocean boundary conditions.
- The way in which ocean boundary conditions were derived and used in existing studies should be assessed for fitness for the intended purpose of current work in consideration of this guide and available historical information (including any significant flood events since completion of existing studies).
- Available information on waterway structures that may influence flood behaviour.
- Historical information on peak shoaled and open conditions of any entrance berms or shoaled waterways.
- Available survey of the waterway and entrance.

[21] Floodplain Risk Management Guide.pdf - State of NSW and Office of Environment and Heritage https://www.environment.nsw.gov.au/~/media/B6CE9A5D9B8043BCAC62D97486FF1B6C.ashx
[22] Floodplain Risk Management Guide.pdf pg 6

- Any management strategy for an entrance berm.
- For site specific assessments, flood related development controls requirements of the relevant council or consent authority

Determining the waterway entrance type[23]

In simple terms, the degree of influence that coastal processes have on flooding within a waterway depends on the connectivity of the waterway to the ocean. This in turn depends on the type of estuary linked to the coastal waterway, the morphology and training of the waterway entrance and any management intervention.

- Group 1 Oceanic Embayments - (marine waters with little influence of freshwater inflow, e.g. Botany Bay, Jervis Bay);

- Group 2 Tide Dominated Estuaries - (large, deep entrances with tidal ranges similar to the open ocean, also known as 'drowned river valleys', e.g. Port Stephens, the Hawkesbury River).

- Group 3 Wave Dominated Estuaries - (entrances that are constricted by wave-deposited beach sand and flood-tidal deltas, but are permanently open, e.g. Tweed River, Lake Illawarra). Within this group there is significant variation based upon whether the waterway discharges into a bay, port or harbour, whether the entrance is trained (and the degree of training and stability), the relative size of the entrance and potential for the entrance to shoal.

Waterway Entrance Type and Estuary Characteristics

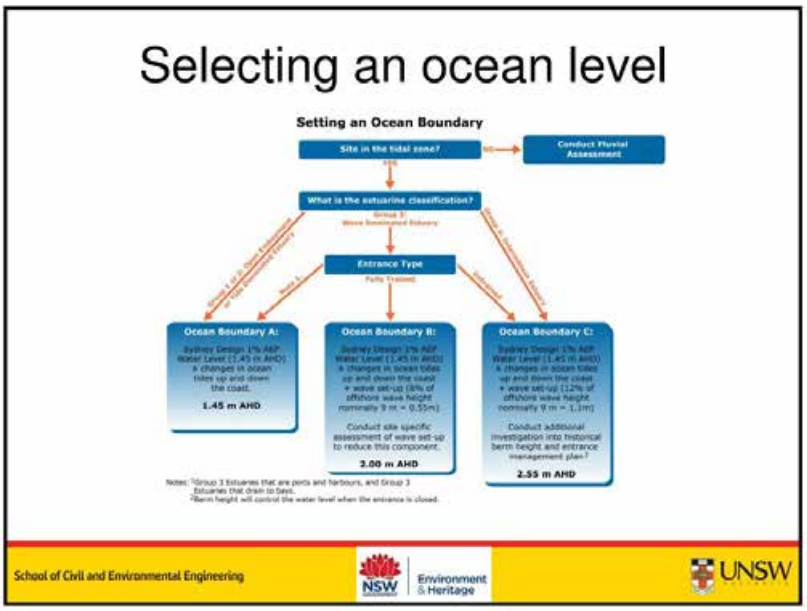


Image 35

Understanding the type of waterway entrance (natural, Type A, or engineered, Type B) is crucial in determining the Annual Exceedance Probability (AEP) of flood events. The connectivity of the waterway to the ocean, dictated by the estuary type, entrance morphology, and any management interventions, significantly influences the impact of coastal processes on flooding.

[23] Floodplain Risk Management Guide.pdf pg 6

In simple terms, the degree of influence that coastal processes have on flooding within a waterway depends on the connectivity of the waterway to the ocean. This in turn depends on the type of estuary linked to the coastal waterway, the morphology and training of the waterway entrance and any management intervention.[24]

Type A and Type B Entrances in the Context of Dynamic Environmental Conditions

Understanding and distinguishing between Type A and Type B waterway entrances, as emphasised in the "Floodplain Risk Management Guide," is crucial for crafting specific flood risk management strategies, particularly when a Type C Entrance is inappropriate. This distinction allows for the application of specific modelling approaches and management practices that are most suited to the dynamic environmental conditions of coastal areas, thereby enhancing the adaptability and effectiveness of flood risk mitigation efforts.

Type A Entrances (Tidal Dominated Estuaries): These are characterised by natural, unmodified conditions where tidal influence is the dominant factor affecting water levels and flows. The methodologies described for Type A entrances, such as those in tidal dominated estuaries, focus on steady state (fixed) entrance conditions without significant wave setup allowance. This implies that Type A entrances may not be as dynamically responsive to sudden changes in environmental conditions, such as heavy rainfall or storm surges, which can rapidly alter water levels and flows.

- These entrance types result in little ocean tide attenuation and negligible wave set-up.[25]
- For Yamba - 1% AEP Peak Design Ocean Water Level 1.55 (m AHD)

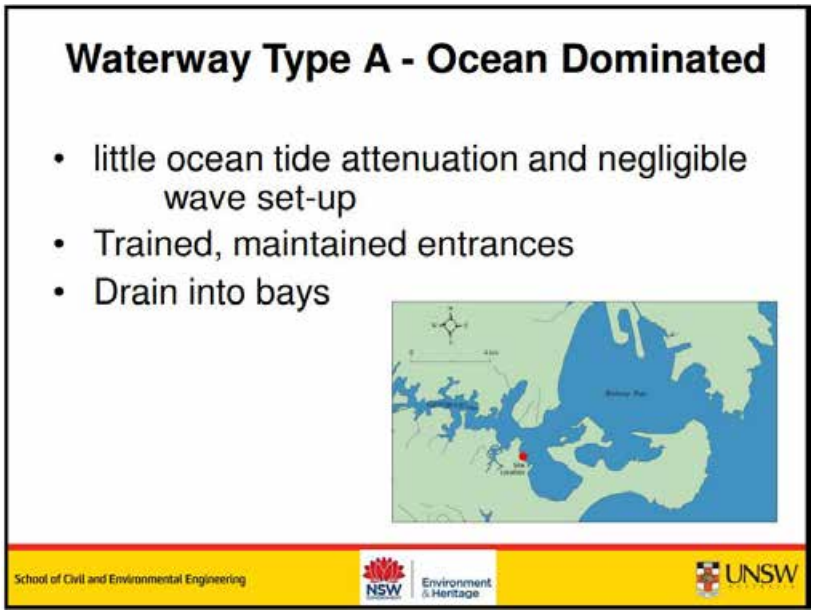


Image 36. Type A Entrance

[24] Floodplain Risk Management Guide - modelling-catchment-flooding-oceanic-inundation.pdf pg 13

[25] Development Of Practical Guidance For Coincidence Of Catchment Flooding And Oceanic Inundation pg 8 - https://www.floodplainconference.com/papers2014/Duncan%20McLuckie%20and%20Grantley%20Smith.pdf

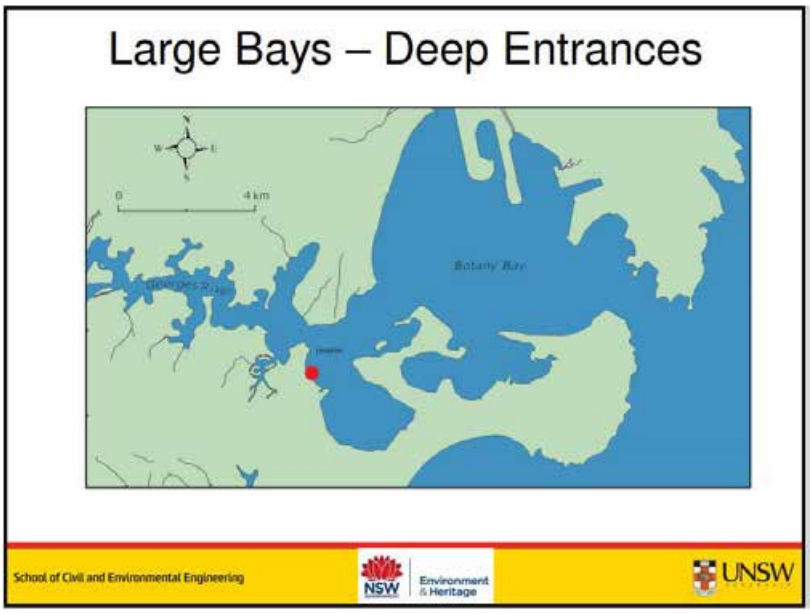


Image 37. Type A Entrance

The influence of wave set-up on entrances varies with the specifics of the entrance. Where estuary entrances are shallow, the impact of coincident ocean waves may increase wave set-up to elevations that are potentially significant to design and planning.[26]

Group 3 estuaries which drain to bays including the Brisbane Water, Tilligerry Creek and Cullendulla Creek should adopt Waterway Entrance Type A.

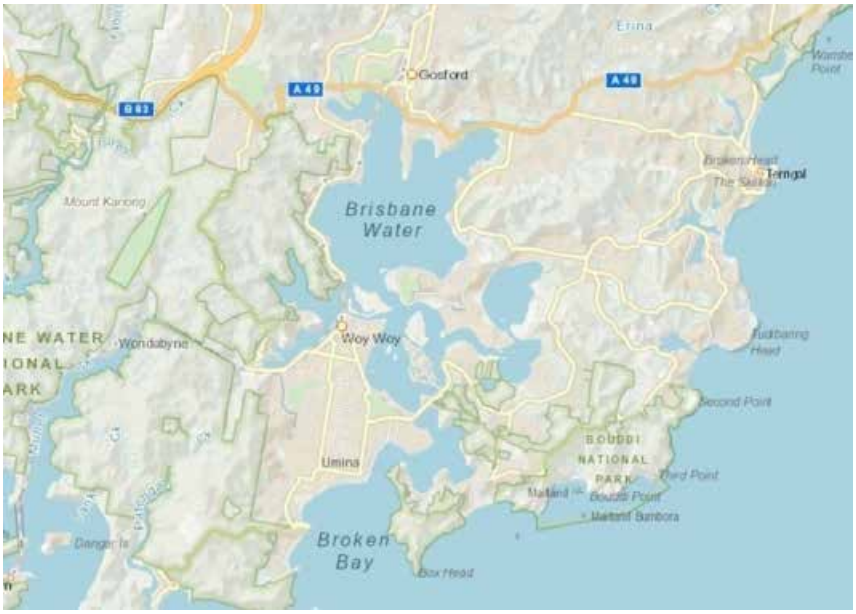


Image 38. Brisbane Water

[26] Development Of Practical Guidance For Coincidence Of Catchment Flooding And Oceanic Inundation Duncan McLuckie and Grantley Smith.pdf - https://www.floodplainconference.com/presentations2014/Grantly%20Smith%20Ducan%20McLuckie.pdf

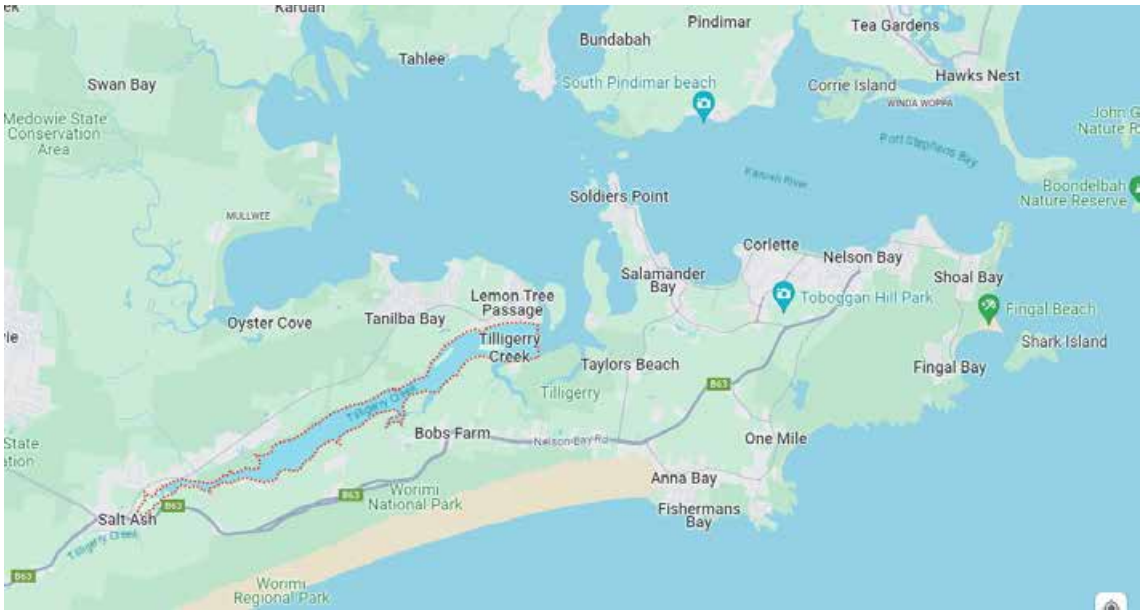


Image 39. Tilligerry Creek

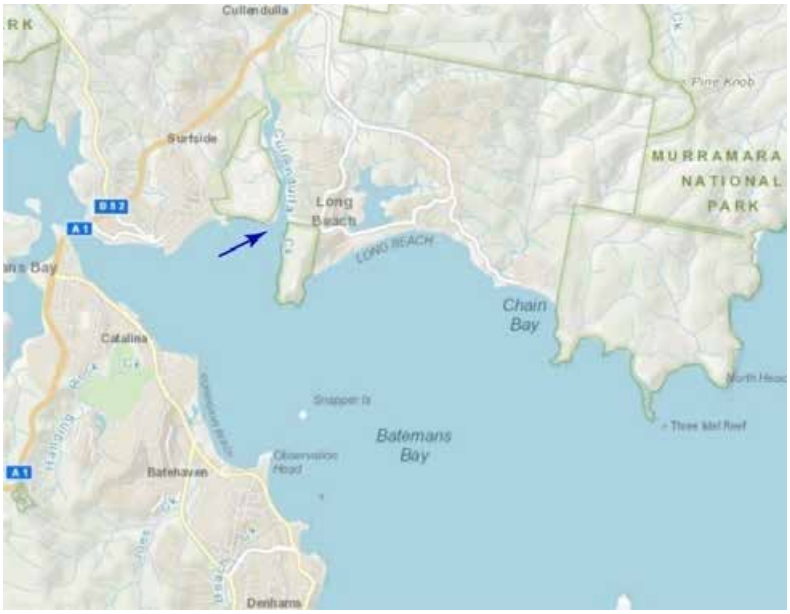


Image 40. Cullendulla Creek

Type B Entrances (Trained Entrances): These are typically modified or managed entrances, often including structures like breakwaters or dredging operations to maintain navigation channels. The guides detail considerations for trained entrances, including the need to assess both current and peak shoaled entrance conditions, entrance management policies, and the presence of waterway structures that may influence flood behaviour. For Type B entrances, some wave setup allowance is considered in modelling the ocean water level boundary, indicating an acknowledgment of their more dynamic interaction with oceanic conditions.

- These entrances result in little ocean tide attenuation but have some potential for wave setup[27]
- For Yamba - 1% AEP Peak Design Ocean Water Level 2.10 (m AHD)

[27] Floodplain Risk Management Guide pg 7

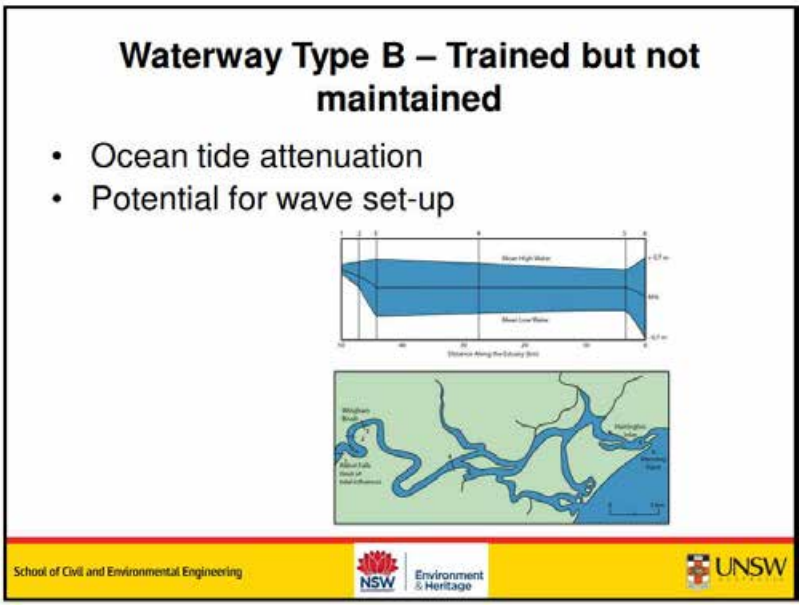


Image 41. Type B Entrance

Determining the waterway entrance type

The key differences between Type A and Type B waterway entrances primarily revolve around the influence of tidal actions versus wave actions and how these factors affect sediment transport, shoaling, and entrance dynamics. The insights provided are based on the guidelines and examples detailed in the "Examples Using the Floodplain Risk Management Guide" document. Here's a summary highlighting the differences and including references:

Type A Entrance (Tide Dominated Estuary):
Predominantly influenced by tidal actions with strong tidal currents and minimal wave influence within the estuary, leading to dynamic changes primarily driven by tidal ebb and flow.
The entrances tend to remain open with variations in depth influenced by tidal cycles, but significant shoaling due to sediment accumulation is less common, reflecting the dominance of tidal flushing over sediment deposition.
Sediment transport is primarily governed by tidal currents rather than wave action, with the sediment dynamics at the entrance more about balancing tidal flushing and sediment supply from upstream.
Direct wave action within the estuary or at the entrance is less pronounced, with wave influences on sediment transport and entrance morphology being secondary to tidal processes.

Type B Entrance (Trained Entrance with Wave Influence):
Experiences significant wave action, especially where waves enter the breakwalls, leading to complex interactions between wave energy and sediment dynamics that influence the entrance's shape and stability.
Shoaling is a critical issue due to wave action, with sediment transported into the entrance by waves leading to varying depths and potential closure or narrowing of the channel. This necessitates active management to control sediment deposition and keep the entrance navigable.
The influence of waves contributes to the formation and dynamics of an ebb tidal delta, with sand transported to the entrance by waves and currents then redistributed by tidal currents, affecting navigation and flood risk management strategies.
Due to the interplay between wave action, sediment transport, and tidal currents, Type B entrances often require active management, including dredging, breakwall maintenance, and other engineering measures.
These differences underscore the need for tailored approaches in flood risk management and engineering to address the distinct challenges each type of waterway entrance presents. Type A entrances require considerations focused on tidal dynamics, while Type B entrances demand active management to mitigate the effects of wave action and sediment transport on shoaling and entrance stability.

Consideration of Clarence River Waterway Entrance Morphology

Whiting Beach is situated within the entrance of the Clarence River
The construction of breakwaters and training walls in the Clarence River entrance does not eliminate the formation of entrance bars and accretion of sand in the navigation channels.[28]

Figure 21: Conceptual sediment processes occurring at Whiting Beach
Source: Royal HaskoningDHV (2014)

Whiting Beach has been receding primarily due to ocean swell wave action in combination with the reduced sand supply.
Whiting Beach experiences erosion and has been impacted by ongoing shoreline recession over a long period of time.[29]

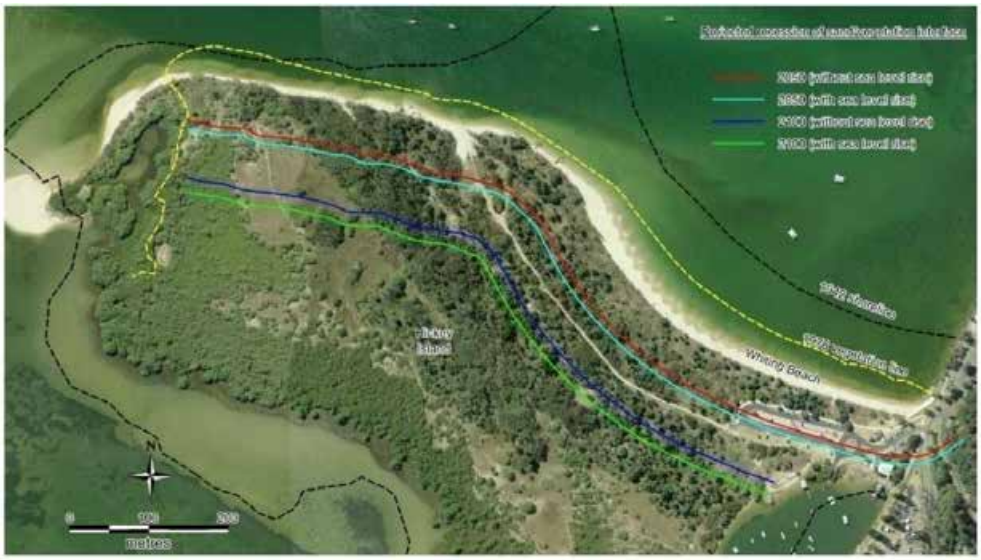


Figure 22: projected shoreline recession at Whiting Beach
Source: Royal HaskoningDHV (2014)

Whiting Beach has been receding primarily due to ocean swell wave action in combination with the reduced sand supply.[30]

[28] Clarence Valley Coastline and Estuaries Coastal Management Program Stage 1: Scoping Study - https://www.clarence.nsw.gov.au/files/assets/public/council/files/strategies-adopted/clarence-cmp-scoping-study-final.pdf
[29] Clarence Valley Coastline and Estuaries Coastal Management Program

Considering the specific environmental conditions at the Clarence River Entrance

Tidal Currents and Sediment Transport

Sand eroded from Whiting Beach by waves is transported by longshore processes in a north-westerly direction along the beach. The sand is then transported either to the ebb tidal delta or the sediment sink between Hickey and Dart Islands by tidal currents, or to the ebb tidal delta due to currents resulting from flood events[31]

Tidal Disturbances and Ebb Streams

Flood waters will affect tide heights resulting in positive residuals and brackish waters. A continuous ebb stream may occur regardless of tide heights and times.
Cross swells are a common occurrence.
At times, due to varying depths and shoal movement the lead marks though the port might not indicate the best navigable water.[32]

River Entrance Width and Depths

River entrance approximately 400 m wide, depths of 3-10 m from entrance to gauge[33]
Shoaling occurs in the Clarence River entrance.
Depending on the height of the bar, it can cause a navigation hazard which was identified as an issue in the Clarence River Estuary Management Plan (Umwelt, 2003).

Shoaling

Shoals are characteristically long and narrow (linear) ridges. They can develop where a stream, river, or ocean current promotes deposition of sediment and granular material, resulting in localised shallowing (shoaling) of the water.
Shoals can appear as a coastal landform in the sea, where they are classified as a type of ocean bank, or as fluvial landforms in rivers, streams, and lakes.[34]

[30] Clarence Valley Coastline and Estuaries Coastal Management Program
[31] Clarence Valley Coastline and Estuaries Coastal Management Program Stage 1: Scoping Study - https://www.clarence.nsw.gov.au/files/assets/public/council/files/strategies-adopted/clarence-cmp-scoping-study-final.pdf
[32] Port Information And Guidance For Agents - https://www.portauthoritynsw.com.au/media/5443/port-information-and-guidance-for-agents-yamba.pdf
[33] NSW EXTREME OCEAN WATER LEVELS Final Report MHL2236 - https://s3-ap-southeast-2.amazonaws.com/www-data.manly.hydraulics.works/www/publications/tide/mhl2236_NSW_Extreme_Ocean_Water_Levels.pdf
[34] https://en.wikipedia.org/wiki/Shoal

Image 42. Clarence river entrance

Shoals are characteristically long and narrow (linear) ridges. They can develop where a stream, river, or ocean current promotes deposition of sediment and granular material, resulting in localised shallowing (shoaling) of the water. Shoals can appear as a coastal landform in the sea, where they are classified as a type of ocean bank, or as fluvial landforms in rivers, streams, and lakes.

Scouring

In choosing between Type A (tide-dominated) and Type B (wave-dominated) entrances, the role of scouring is crucial for determining the stability and morphology of the entrance. For Type A, tidal currents can cause significant scouring, affecting navigation and flood control structures. In Type B entrances, wave action can lead to sediment erosion and bar formation, impacting entrance openness and flood risk management. Understanding scouring effects is essential for designing appropriate protective measures and maintaining the functionality of these entrances.

Image 43. Whiting beach - westerly view

Waves

In general, the seabed contours are not straight and parallel, but are curved. This results in some significant refraction effects. Within a bay, refraction will generally spread the wave rays over a larger region, resulting in a reduction of the wave heights. Conversely, at headlands the wave rays will converge, resulting in larger wave heights. Over offshore shoals the waves may be focused, resulting in a small region where the wave heights are much larger. If the focusing is so strong that the wave rays are predicted to cross, then the wave heights become so large as to induce wave breaking.[35]

Image 44. Whiting beach - easterly view[36]

[35] https://www.coastalwiki.org/wiki/Shallow-water_wave_theory#Shoaling

[36] https://www.youtube.com/watch?v=095vLZF5gkY

Sedimentation

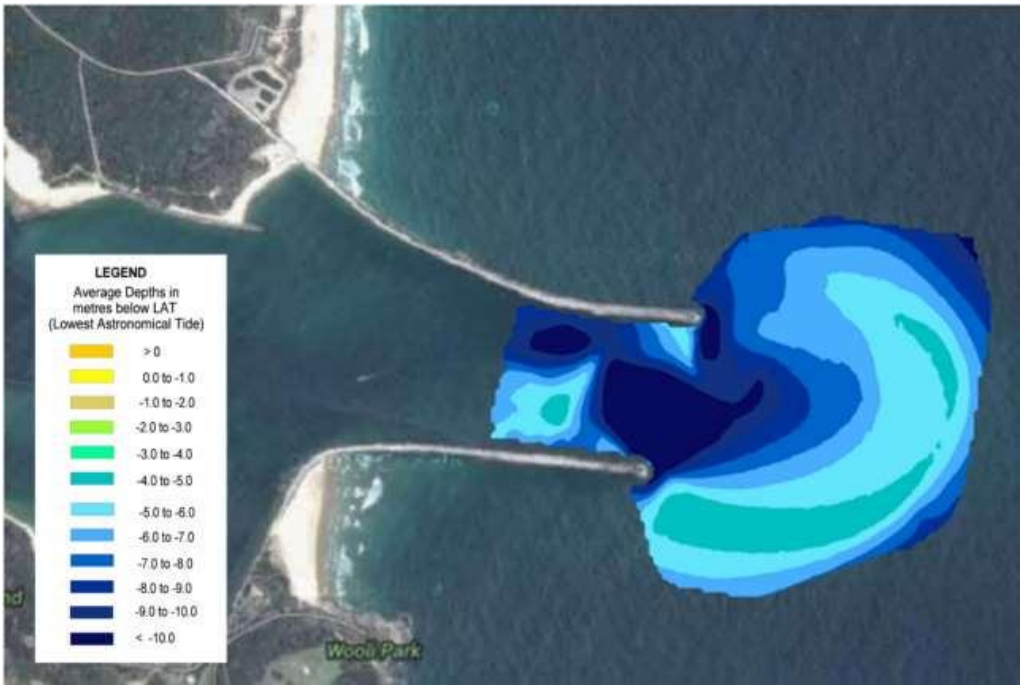


Image 45. Hydrographic survey of the Clarence River entrance (2015) showing formation of entrance bar

Sand accumulates to the east of the breakwaters forming an ebb tide ring bar at the entrance, with its position determined by the equilibrium between off- shore transport of sand by the ebb tide and on-shire transport by wave action.[37]

Image 46. Waves in the breakwall entrance

[37] Clarence-CMP-Scoping-Study-Final.pdf pg 70 - https://www.clarence.nsw.gov.au/files/assets/public/council/files/strategies-adopted/clarence-cmp-scoping-study-final.pdf

Sand also accumulates inside the entrance in the Yamba Harbour approach channel, creating a navigation issue. Sand from within the approach channel is periodically dredged to a navigable depth when required.[38]

Image 47. Waves at the bar at the end of breakwall entrance[39]

Entrance Instability

The development of the natural and artificial channel network within the lower section of the Clarence River estuary has had a significant impact on the tidal and flood current regime.[40]

Sand Dynamics and Navigation Challenges at Clarence River Entrance

Clarence Valley Coastline and Estuaries Coastal Management Program
2.2 Coastal Lake or Watercourse Entrance Instability
2.2.1 Clarence River entrance
Sand accumulates to the east of the breakwaters forming an ebb tide ring bar at the entrance, with its position determined by the equilibrium between off-shore transport of sand by the ebb tide and on-shire transport by wave action. A rock reef, recognised as a significant cultural site to the Yaegl Aboriginal community, consisting of hard sandstone, limits water depths in the river downstream of Moriarty's Wall. The river mouth is subject to a net northerly littoral sand drift which is driven at variable rates by the combination of waves, tides and ocean currents. Floods continue to play a major role in the exchange of sediment between the river and coast (Hydrosphere Consulting, 2021).
The construction of breakwaters and training walls in the Clarence River entrance does not eliminate the formation of entrance bars and accretion of sand in the navigation channels. Depending on the height of the bar, it can cause a navigation hazard.
Sand also accumulates inside the entrance in the Yamba Harbour approach channel, creating a navigation issue. Sand from within the approach channel has previously been dredged to a navigable depth when required with dredging activities managed by TNSW - MIDO. Sedimentation and navigation impacts within the Clarence River entrance are an ongoing concern raised by stakeholders (Hydrosphere Consulting, 2021)[41]

[38] Clarence-CMP-Scoping-Study-Final.pdf pg 70 - https://www.clarence.nsw.gov.au/files/assets/public/council/files/strategies-adopted/clarence-cmp-scoping-study-final.pdf
[39] https://www.dailytelegraph.com.au/news/nsw/grafton/fleet-wing-rides-setback/news-story/3b09ae420041fd7ce17d23e903655484
[40] WRL_TechnicalReport_2008-28 .pdf pg8 - https://unsworks.unsw.edu.au/entities/publication/569fb87b-1980-4fe7-b8b0-42ec5719edcc
[41] Clarence-Coastline-and-Estuaries-CMP-Stage-2-Rev-1-comp.pdf – pg 10
https://www.clarenceconversations.com.au/73865/widgets/357880/documents/275537

Transport of sediment

The transport of sediment within the channel is dominated by tidal and flood currents. In low flow periods there is a bias of net transport of marine sand into the estuary under the influence of wave action and a flood tide bias in the tidal flows. Indeed, MHL (2000) estimated a gross annual net sediment transport rate in the upstream direction due to tidal currents of 200,000 m3/year at the entrance. During high-flow flooding periods, sand can be scoured from the estuary and deposited either in the entrance or further offshore. Sediments may be completely scoured away during these events, resulting in an exposed layer of indurated sand or rock reef. Depending on the magnitude of the flooding event, some of the scoured sand may be completely removed from the estuarine system. In this case the sand is likely to become part of the northward littoral drift that supplies sand to Iluka Beach. Conversely, if the sand is not completely removed from the entrance it may be reworked back into the various shoals that form in the lower estuary.[42]

Waves at Whiting Beach and surrounds[43]

Wave conditions at the open boundary were extracted from previous modelling undertaken using both spectral and Boussinesq wave models (MHL2553) which forecast entrance wave heights for extreme offshore wave conditions (Hs of 6 m, 7 m and 9.5 m for 12 and 15 second wave periods). The largest wave heights produced by the offshore forcing conditions of period 12 and 15 seconds were selected for boundary conditions in two model scenarios.
Wave and current interaction: It is observed that although the current does not have significant influence on the wave direction, it does have influence on the wave heights in close proximity to the model boundary.

Approach to Modelling the Clarence river Ocean Water Level Boundary

Identified site specific tidal conditions at the Clarence River

The Clarence river entrance is a Wave Dominated Estuary.[44]

The choice of waterway entrance type is paramount in coastal flood risk management because it directly influences the accuracy of modelling the ocean boundary. This modelling is essential for determining the 1% AEP Design Flood Level, a critical metric for ensuring flood resilience. By accurately setting this level, we can establish benchmarks for infrastructure robust enough to withstand flood events, significantly minimising property damage. It also plays a crucial role in guiding emergency planning for effective responses, shaping zoning and construction standards to reduce economic losses, identifying flood-prone areas to preserve environmental integrity, and safeguarding community health by mitigating exposure to flood risks and stressors. Therefore, selecting the appropriate entrance type is not just a technical decision but a foundational aspect of holistic flood risk management strategies.

The size of vessel capable of navigating the river is restricted due to the depth of the shipping channels and the presence of a rocky reef, which extends across the entrance between the breakwaters. Consequently, only partially laden bulk sugar carriers are able to traverse the entrance channel and are restricted to the area between the Clarence River entrance and the Goodwood Island Wharf.

[42] WRL_TechnicalReport_2008-28.pdf pg 6 - https://unsworks.unsw.edu.au/entities/publication/569fb87b-1980-4fe7-b8b0-42ec5719edcc/full
[43] https://www.coastalconference.com/2016/papers2016/Indra%20Jayewardene%20Full%20Paperl.pdf
[44] Conceptual Models Of Australia's Estuaries And Coastal Waterways pg 113 - https://www.ga.gov.au/pdf/GA1858.pdf

Flood levels are dominated by ocean anomalies

Yamba Floodplain Risk Management Study 2008 - 4.2.5 Storm Surge/Ocean Levels/Wave Runup
As Yamba is located at the entrance to the Clarence River, on the Pacific Ocean, the flood levels are dominated by ocean anomalies (a combination of elevated ocean levels (tides), storm surge) and wave runup. Flooding in the Clarence River could occur at the same time, or independently to ocean anomalies and thus must still be considered.

"Wave runup activity and ocean anomalies can produce flooding on the northern foreshore of Yamba"
"At present a study has not been undertaken which considers the effects of wave runup for the Yamba township, however such a study is recommended in order to quantify the impacts on houses, as well as on possible flood mitigation measures (levees)."
"A study into the effects of wave runup should be undertaken for the township of Yamba. Until such time, the potential impacts should be considered when evaluating mitigation measures"[45]

Depth restricted by a rocky reef

The size of vessel capable of navigating the river is restricted due to the depth of the shipping channels and the presence of a rocky reef, which extends across the entrance between the breakwaters. Consequently, only partially laden bulk sugar carriers are able to traverse the entrance channel and are restricted to the area between the Clarence River entrance and the Goodwood Island Wharf.[46]
In the past commercial ventures for the region had been lost due to insufficient depths.
"Yamba is and always will be a small port."[47] -

For the Lower Clarence Flood Model Update 2022, a Type A Entrance was selected. These entrance types result in little ocean tide attenuation and negligible wave set-up.

Clarence River Entrance Type Evaluation

Evaluating and comparing the effectiveness of Type A (natural, minimally managed) and Type B (engineered, actively managed) river entrances in dealing with specific hydrodynamic challenges such as shoaling, wave action, and sedimentation.

Shoaling

Type B Entrance Modelling Advantage: Models for Type B entrances can precisely simulate the effects of and responses to shoaling by incorporating dredging and structural interventions. This allows for predictive and reactive management in the model, offering insights into how shoaling can be controlled or mitigated through human intervention, which is a complexity not readily managed in Type A entrance modelling.

Wave Action

Type B Entrance Modelling Advantage: The modelling of wave action benefits from the inclusion of engineered structures like breakwaters in Type B entrances. These models can accurately predict the efficacy of such structures in reducing wave-induced erosion and sedimentation, enabling the detailed planning of interventions to manage wave impacts more effectively than the natural variability accounted for in Type A models.

Sandbar Formation

Type B Entrance Modelling Advantage: For Type B entrances, models can simulate the strategic placement of jetties, groynes, or the effects of dredging to prevent or minimise sandbar formation. This level of control and predictability in managing sandbar formation is a distinct advantage, allowing modellers to test various scenarios and interventions to find the most effective solutions.

[45] 2008 yamba-floodplain-risk-management-study.pdf pg 20
[46] Environmental Impact Statement for Port of Yamba Improvements on the Clarence River mhl758.pdf pg 13 - https://www.mhlservices.net/apps/library/view.php?reportnumber=758
[47] https://www.dailytelegraph.com.au/news/nsw/grafton/sacred-yamba-reef-protected/news-story/e8fea578dabb0f32a60b4ec847c5ab82

Dredging Needs

Type B Entrance Modelling Advantage: Modelling for Type B entrances integrates dredging operations as part of the sediment management strategy. This allows models to forecast the long-term impacts of dredging on sediment dynamics and entrance stability, planning dredging schedules, and volumes to maintain desired conditions. The ability to model these active management strategies offers clear advantages in predicting and mitigating sedimentation issues.

Tidal Disturbances and Ebb Streams

Type B Entrance Modelling Advantage: The complexity of modelling tidal disturbances and ebb streams is better managed in Type B entrances by simulating the impact of engineered controls and modifications. These models can assess the effectiveness of entrance modifications in mitigating undesirable tidal and stream effects, providing a basis for designing structures or management practices that can adapt to or mitigate these natural processes.

Conclusion

From a modelling standpoint, Type B entrances offer a significant advantage in managing complex hydrodynamic and sedimentation challenges. The ability to incorporate and simulate active management strategies and engineering solutions within these models allows for a detailed analysis of potential interventions, predicting their impacts on shoaling, wave action, sandbar formation, and the effects of tidal disturbances and ebb streams with greater accuracy and efficacy. This predictive capability is critical for planning and implementing measures to maintain entrance stability and functionality, showcasing why Type B entrances are preferred when leveraging advanced modelling techniques for entrance management.

Request for Information on Flood Modelling and Entrance Conditions

I request detailed documents concerning flood risk management, modelling, and assessments specific to the river entrance conditions and the area surrounding Whiting Beach, especially as these pertain to the West Yamba Urban Release Area (WYURA).
Given the distinctive environmental and geographical features of Whiting Beach, such as its erosion from ocean swells, sand transport by longshore currents, specific river entrance conditions, and the influence of flood waters on tidal variations, alongside the river entrance's environmental complexities—including effects from ocean swell, sand transport, cross swells, scouring, sandbar formation, sedimentation, shoaling, wave actions, entrance dimensions, tidal currents, sediment transport, tidal changes, and ebb streams—there's an essential need for a comprehensive flood risk management strategy that thoroughly encompasses these dynamics.

Specifically, I seek any documents, reports, correspondence, or memos that detail:

41) Comprehensive Flood Modelling Documentation: Insights into how the Lower Clarence Flood Model 2022 (LCFM 2022) and subsequent models consider the unique environmental and geographical characteristics near Whiting Beach and the river entrance, including but not limited to the aspects described by the Marine Hydrographic Laboratory (MHL) and the Port Information And Guidance For Agents by Port of Clarence River (Yamba).

42) Methodologies Employed for Flood Risk Assessment: Details on the methodologies and factors considered in flood modelling, particularly how entrance conditions such as scouring, sandbar formation, sedimentation, shoaling, waves, river entrance width and depths, tidal currents and sediment transport, tidal disturbances, and ebb streams are factored into assessments of flood risk and impact.

43) Decision-Making Processes: Documentation on the inclusion or exclusion of specific entrance conditions in flood modelling outcomes, including any revisions, updates, or amendments reflecting an evolving understanding of these environmental dynamics.

44) Compliance with Flood Risk Management Guidelines: Clarification on the alignment of the Council's strategies with the principles of sustainable governance, strategic planning, and continuous improvement, as outlined in the "Principles for Flood Risk Management in New South Wales.

45) Community Engagement and Consultation Records: Evidence of processes undertaken to engage the community and stakeholders in discussions related to flood modelling practices and the consideration of river entrance conditions.

46) Any revisions, updates, or amendments to flood modelling practices for this area that have been made or proposed, reflecting an evolving understanding of the environmental dynamics at play.

This request is motivated by a commitment to enhancing transparency, accountability, and community participation in flood risk management practices. The consideration of complex entrance dynamics is crucial for informed decision-making, environmental stewardship, and the safety of communities vulnerable to flooding.

I am requesting information regarding the decision-making process, studies, and analyses that led to the selection of a Type A entrance for the Clarence River, particularly in the vicinity of Yamba, New South Wales.

Given the complex hydrodynamic and sediment transport dynamics associated with the Clarence River and its estuary, as well as the critical need for effective flood risk management outlined in the "Exhibition copy Flood Risk Management Report" and the "Lower-Clarence-Flood-Model-Update-2023-Final-Report," it is imperative to understand the rationale behind choosing a Type A entrance, which generally allows for natural processes to dominate without significant human intervention for managing shoaling, wave action, sandbar formation, and tidal disturbances.

Specifically, I am seeking information on the following aspects related to the selection of a Type A entrance:

47) Assessment Reports or Studies: Documents detailing hydrodynamic studies, sediment transport analyses, environmental impact assessments, or other relevant studies that influenced the classification of the Clarence River entrance as a Type A entrance. This includes consideration of the river's dynamic environmental conditions, such as variable tidal streams and sediment transport dynamics.

48) Flood Risk Management Manual Adherence: Evidence of how the Type A Entrance classification aligns with the Flood Risk Management Manual 2023 principles, particularly:
- Principle 5: Understanding flood behaviour and constraints
- Principle 6: Understanding flood risk and how it may change
- Principle 9: Effective flood risk management

49) Comparative assessments: Any comparative assessments or discussions that weighed the benefits and drawbacks of a Type A entrance against a more managed Type B entrance, considering the unique environmental, hydrodynamic, and community contexts of the Clarence River at Yamba.

50) Operational and Navigational Guidelines: Copies of guidelines, harbour master directions, or port operation manuals that support the Type A classification. This request aims to assess how these guidelines reflect the characteristics of a Type A entrance and the consultation processes involved in establishing these operational standards.

51) Consultative Processes and Community Engagement: Records of the consultative process, community engagement activities, or committee deliberations that contributed to the decision-making process regarding their preferences and concerns about the entrance type selection.
This includes documentation aligning with Principle 3 of the Flood Risk Management Manual 2023, which stresses the importance of consultative approaches in flood risk management.

52) Justification for Classification: Internal memos, policy papers, or records that provide the rationale for selecting a Type A classification. This information should illustrate how the decision supports sustainable governance arrangements and strategic planning in accordance with Principles 1 and 2 of the Flood Risk Management Manual 2023.

53) Environmental Considerations: Details on how environmental considerations, especially maintaining natural flood functions as per Principle 8, were integrated into the decision to classify the entrance as Type A.

54) Risk management strategies: Documentation of flood risk management strategies that considered the implications of a Type A entrance on the effectiveness of flood mitigation efforts and the long-term resilience of the Yamba area to flood risks

55) Decision-making records: Minutes of meetings, internal communications, and decision-making records that provide insights into the rationale behind selecting a Type A entrance, including any considerations related to cost, feasibility, and long-term maintenance.

These documents should demonstrate the rationale behind the preference for a Type A Entrance, considering the principles of effectively managing flood risk, understanding the behaviour of floodwaters, and anticipating changes in flood risk.
This information is sought to comprehend the comprehensive evaluation and decision-making framework that justified the selection of a Type A Entrance for Yamba - Port of Clarence River, in the context of the principles and consultative processes advocated by the Flood Risk Management Manual 2023.

Sensitivity Testing Inquiry for the Lower Clarence Flood Model Update 2023

I request information regarding sensitivity testing within the Lower Clarence Flood Model Update 2023. My request is driven by an interest in understanding the comprehensive measures taken to assess the robustness and reliability of the updated flood model, specifically in terms of how different input parameters might affect the model's outcomes.

Information Sought:

56) Details of Sensitivity Tests Conducted: Any records, reports, or analyses of sensitivity tests conducted as part of the LCFM Update 2023. This includes, but is not limited to, tests on variables such as precipitation intensities, sea-level rise, storm tide levels, and land use changes, and how these variables influence flood extents, depths, and velocities.

57) Rationale for Selected Parameters: Documentation explaining the selection of parameters for sensitivity testing, providing insights into the perceived critical factors influencing flood risk within the lower Clarence region.

58) Interaction Effects between Variables: Information on whether the model considers the interaction effects between multiple variables, such as the compounded flood risk from simultaneous sea-level rise and increased precipitation intensity.

59) Temporal Variability and Change Scenarios: Details on tests assessing the impact of temporal changes, including the progressive impact of climate change on flood risk variables over the coming decades.

60) Infrastructure and Mitigation Measures Sensitivity: Analyses regarding the sensitivity of flood risks to existing or planned flood mitigation infrastructure and their effectiveness under various scenarios.

61) Economic and Social Impact Sensitivity: Insights into how changes in flood risk parameters might influence economic costs, social impacts, and the resilience of vulnerable communities within the floodplain.

62) Emergency Response and Evacuation Planning: Information on sensitivity testing utilised to evaluate emergency response strategies and evacuation plans under different flood scenarios.

63) Environmental and Ecological Sensitivity: Details on the consideration of environmental and ecological impacts of flooding, including effects on local habitats, wildlife, and water quality.

64) Data Quality and Source Sensitivity: Assessments concerning the sensitivity of flood risk projections to the quality and sources of data used in the model, highlighting the implications of utilising historical vs. projected climate data.

65) Regulatory and Policy Sensitivity: Analysis on the implications of potential changes in regulatory or policy frameworks on flood risk management strategies and land use planning within the Clarence Valley.

66) Outcomes of Sensitivity Tests: Results and interpretations of any sensitivity tests performed, including how variations in key parameters impact flood modelling predictions and the implications for flood risk management and planning in the Clarence Valley.

67) Reasoning for Omission of Sensitivity Tests: If sensitivity testing was not conducted or certain parameters were not included in sensitivity analyses, I seek detailed explanations or documentation on the reasons behind these decisions. This is particularly relevant for understanding the scope and limitations of the current flood model update.

68) Impact on Flood Risk Management: Information on how the findings from any sensitivity tests conducted (or the decision not to conduct certain tests) have influenced flood risk management strategies, planning decisions, and community safety measures within the Clarence Valley Council area.

Rationale for Request:
Understanding the scope and outcomes of sensitivity testing is crucial for evaluating the LCFM Update 2023's capability to accurately predict flood risks under a range of conditions.
This inquiry seeks to encapsulate the multifaceted aspects of flood risk management that are crucial for devising effective, adaptable, and community-centric flood mitigation and adaptation strategies. By understanding the comprehensive approach to sensitivity testing, stakeholders can better anticipate, prepare for, and mitigate the diverse impacts of flooding within the Clarence Valley region.

Selecting a modelling approach[48]

Having selected the waterway entrance type appropriate to the location, the next step is to select the modelling approach used for determining an ocean water level boundary condition.

Elevated water levels at the ocean boundary can vary significantly with the waterway entrance type and the specifics of the location and can be costly to derive. The decision on the approach used for their selection needs to weigh up the degree of investigation required against the potential implications in determining an approach that is fit for purpose.

The guide outlines three modelling approaches: a simplistic approach, a general approach and a detailed approach. The first two approaches comprise components related to elevated ocean water levels, tidal anomalies and wave setup and can be considered conservative in some situations, particularly where these factors are reduced or negated by entrance conditions. This degree of conservatism is in lieu of a more sophisticated analysis outlined in the detailed approach.

To be consistent with the guide, studies undertaken for a local council or with state government funding under the State Floodplain Management Program should follow either the general or detailed approaches unless agreed to in writing by: the relevant council and; where the council project has state government financial assistance, through the Office of Environment and Heritage.

General approach. This requires a more detailed and rigorous modelling approach. It should be used where information is required to provide the basis of a floodplain risk management plan, or strategic land use planning, or for larger scale developments. This approach will generally involve modelling to derive design flood levels and flow velocities across a range of flood events.

Detailed approach. This approach may to be undertaken where the general approach for an entrance waterway type may be considered conservative, given the minimum analysis and considerations nominated in this guide and the specific characteristics of the waterway entrance. This approach will involve detailed modelling to derive design flood levels and flow velocities across a range of flood events.

[48] Floodplain Risk Management Guide.pdf pg 7

Ocean Water Level Modelling Approach for West Yamba Flood Impact Assessment

I request for information concerning the modelling approach selected for determining ocean water level boundary conditions in the context of flood impact assessment for the West Yamba Urban Release Area (WYURA).
Given the significance of the floodplain management and risk assessment for the area and the potential impacts on strategic land use planning and large-scale developments, it is crucial to understand the modelling approach adopted by the Clarence Valley Council or any relevant bodies involved in this assessment. The guidelines mention a need for selecting a modelling approach that aligns with the specifics of the location, including the waterway entrance type and the expected elevated water levels at the ocean boundary.
Specific Information Requested:

69) Selected Modelling Approach: Clarification on the modelling approach selected (simplistic, general, or detailed) for the flood impact assessment within the WYURA and the rationale behind this choice.

70) Reasoning for Approach Selection: Detailed reasoning on why the chosen modelling approach is deemed fit for purpose for the WYURA, taking into account the degree of investigation required against potential implications.

71) Consistency with Guidelines: Confirmation on whether the general or detailed approaches were followed in consistency with the guide for studies undertaken for or with financial assistance from the state government under the State Floodplain Management Program. Additionally, if any deviations were agreed upon, documentation or written agreements specifying these exceptions.

72) Basis for Floodplain Risk Management Plan: Insights on how the chosen modelling approach provides a basis for a floodplain risk management plan, strategic land use planning, or for addressing larger scale developments within WYURA.

This information is essential for understanding the foundational assumptions and methods that guide flood risk management strategies and decisions affecting the West Yamba area. It will aid in evaluating the adequacy and appropriateness of the flood impact assessments conducted, ensuring that they meet the required guidelines and standards for floodplain risk management.

Coincidence of Peak Catchment Flooding and Peak Oceanic Inundation

Coincidence of Catchment/Oceanic Inundation - LCFM
"The storm tide boundary is modelled as a dynamic (tidal) boundary. Because the boundary is dynamic, the relative timing of the catchment runoff peak flow and the storm tide peak needs to be considered.
The adopted approach follows the recommended approach provided in state guidelines in which the catchment runoff peak is timed to coincide with the storm tide peak at the location of interest"[49]

Peak catchment coincident: refers to the highest level of water flow from a river catchment area meeting with the highest increased water levels from the sea, where the river meets the sea or a designated point of interest for flood modelling.

- highest level of water flow = Riverine Peak
- highest increased water levels from the sea = Storm Tide Peak or Peak Storm tide

Both are vital in integrating riverine and coastal flood factors, crucial for comprehensive flood risk assessment and management in coastal and estuarine areas.

[49] Lower-Clarence-Flood-Model-Update-2023-Final-Report.pdf pg32

Riverine Peak:
This is the highest level reached by the river during flooding. It is influenced by factors like upstream rainfall, runoff, and the catchment area's characteristics.
In the context of a river entrance, this peak is critical as it reflects the volume of water flowing from the river into the ocean or estuary.

Storm Tide Peak:
This includes the combination of;

- the storm surge (which is driven by wind and atmospheric pressure changes from a storm)
- astronomical tide
- wave setup
- wave runup

The "peak storm tide" is an integral component of assessing 'peak catchment coincident with ocean boundary', as it represents the highest level that the sea reaches during a storm, acting as a key factor in compound flood risk assessment.
At a river entrance, the storm tide peak is particularly important as it influences the level of seawater that can potentially push back against the river flow, affecting flooding and water levels in the estuarine area.

Where the 'riverine peak' and 'storm tide peak' meet is the ''peak catchment coincident"

2008 This study assumes that peak rainfall on the main and tributary catchments coincides with the storm tide peak, representing a slow moving storm which crosses the coast and moves inland. This boundary configuration results in backwater storm tide inundation prior to the arrival of catchment flooding in the lower catchment, as demonstrated in Figure 4-4.

Wave Setup and Runup in Shallow Coastal Waters

As a wave enters increasingly shallow water it will eventually reach a point of gravitational instability and wave breaking will occur. This is the point where the water particle velocity at the wave crest begins to exceed the wave speed. During the wave shoaling and breaking processes, the wave potential energy and kinetic energy is redistributed in response to the retarding effects of the shallow coastal waters.

Ultimately much of the energy of the wave is dissipated as turbulence and heat during the breaking process. However, some of the energy is transferred into a forward momentum within the surf zone. This results in a quasi-steady superelevation of the local water level above the still water level that would otherwise occur in the absence of any waves. This phenomenon is termed wave setup. Great Barrier Reef cays and atolls can be especially susceptible to wave setup effects.

In addition to wave setup, any residual kinetic energy of waves is manifested as vertical runup of the upper beach face. This allows some wave energy to attack at higher levels than just implied through the setup level alone. Since setup and runup are essentially part of the same energy dissipation process, it follows that their influences are typically complementary. For example, very flat beaches will experience the majority of the energy dissipation as setup while very steep beaches experience higher levels of runup. The absolute vertical level of runup though will typically exceed that of setup and allow erosion of the upper beach or possible dune overtopping to occur. The time for which the sensitive portion of the beach is exposed to severe runup is therefore critical in determining the degree of damage that might result.

Two aspects of wave breaking are important in relation to coastal sea levels. The cumulative effect of wave breaking in the surf zone leads to a shoreward momentum transfer, and consequent elevation in coastal sea levels known as wave setup. Typically, wave setup at the coast is considered to reach between 15 and 20% of the incident root mean square (rms) wave height (WMO, 1988). The contribution to coastal sea levels due to

storms from wave setup has been estimated to be 0.7-1.5 m on the NSW coast (NSW Govt, 1990). Wave runup is the additional vertical distance that the water reaches due to the breaking of individual waves at the coast. Although wave runup is transitory and therefore not a contributor to the 'still water levels', it has been estimated to reach an elevation of 4.0-8.0 m higher than the still water level attained by the combination of astronomical tides, storm surge and wave setup (NSW Govt,1990).[50]

In an exposed open ocean situation, the most significant components of elevated ocean water levels are the combined processes of wave setup and wave runup on beaches. These processes alone can **super elevate the water level at the shoreline by as much as 7.0m above the still water level** of the ocean under extreme oceanic storm wave activity.[51]

Wave runup is site specific, but typically reaches a maximum level of about 7m AHD on the open NSW coast at present. The height of wave runup on beaches depends on many factors, including:

- wave height and period;
- the slope, shape and permeability of the beach;
- the roughness of the foreshore area; and
- wave regularity.

Wave runup can be difficult to predict accurately due to the many factors involved. Anecdotal evidence and the surveying of debris lines following a storm event usually provide the best information on wave runup levels.[52]

Peak catchment coincident

Based on elevation, starting from the foundational elements and moving up to those contributing to increased elevation:

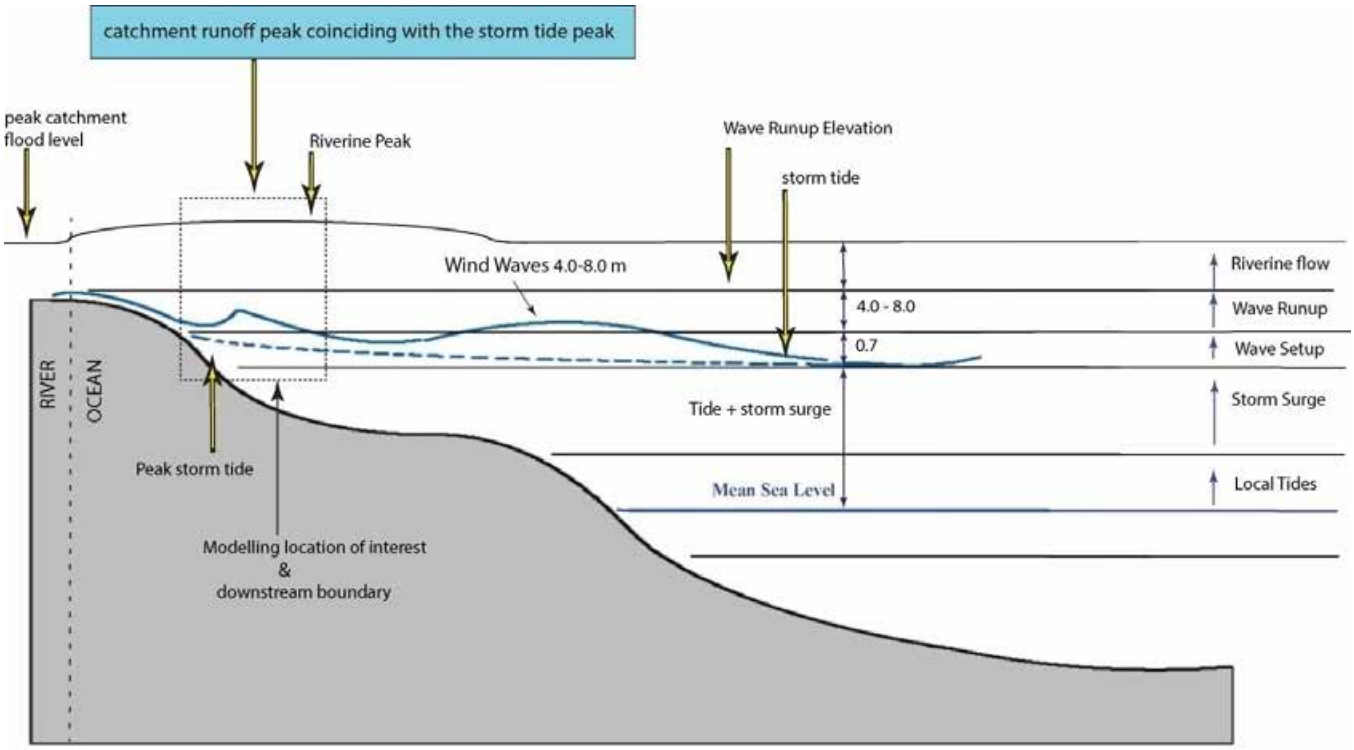


Figure 1. Peak catchment coincident components

[50] Sydney Coastal Councils & CSIRO Mapping & Responding to Coastal Inundation - https://www.sydneycoastalcouncils.com.au/sites/default/files/stage_one_outcome_report.pdf

[51] FORT DENISON Sea Level Rise Vulnerability Study pg 20

[52] https://cdn.centralcoast.nsw.gov.au/sites/default/files/open-coast-and-broken-bay-beaches-coastal-processes-and-hazard-definition-study.pdf pg 51 - Coastal Processes and Hazard Definition Study - WorleyParsons

Peak catchment coincident components

For Riverine Peak:

Peak Catchment Flood Level:
- Local precipitation
- Catchment area features
- Soil and land use

Riverine Peak:
- Upstream rainfall/runoff
- Catchment characteristics
- River flow

For Storm Tide Peak:

Astronomical Tide:
- Gravitational pull of moon and sun
- Earth's rotation

Storm Surge:
- Wind-driven water elevation
- Barometric pressure changes

Wave Setup:
- Water pile-up from breaking waves
- Storm wind and pressure

Sea Level Rise:
- Thermal seawater expansion
- Oceanographic factors

Wave Runup:
- Maximum water uprush on shore
- Wave-shoreline interaction

Events Applicable to Both Peaks (Ordered by Elevation):

Historical Tide Readings:
- Recorded tide levels
- Historical patterns

Local Tide:
- Astronomical Tide
- Local coastal geography
- Bathymetry

Sea Level Rise Forecasts:
- Climate change projections
- Historical sea level data

Waves:
- Wind-generated waves
- Swell waves,

Wind Waves:
- Local wind conditions
- Fetch

Total Water Level:
- Tide
- Storm Surge
- Wave Setup
- Wave Runup

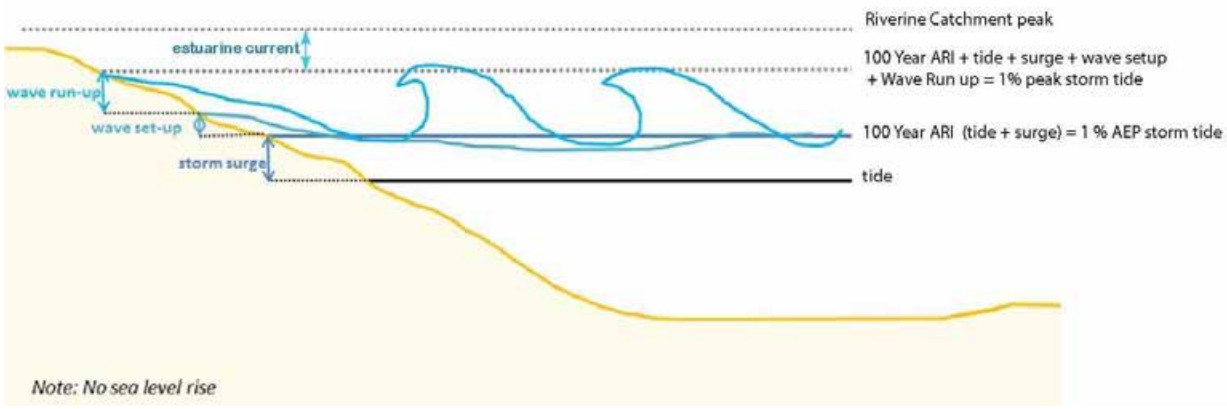


Figure 2. Inundation level components

73) I am requesting the specific height in meters of the surge component as it is depicted in Figure 3, from the Lower Clarence Flood Model (LCFM) 2022 study concerning the "peak 1% AEP storm tide of 1.62m AHD.

74) I am requesting the specific height in meters of the wave run-up component as it is depicted in Figure 3, from the Lower Clarence Flood Model (LCFM) 2022 study concerning the "peak 1% AEP storm tide of 1.62m AHD.

77) I am requesting the specific height in meters of the wave setup component as illustrated in Figure 3, from the Lower Clarence Flood Model (LCFM) 2022 study, in relation to the "peak 1% AEP storm tide of 1.62m AHD

78) I am requesting the specific height in meters of the riverine catchment peak or in the alternate the height of the riverine current as shown in Figure 3,from the Lower Clarence Flood Model (LCFM) 2022 for the 1% AEP of 1.85mAHD

Wave Runup Study recommended in 2009

The Yamba Floodplain Risk Management Plan, developed for Clarence Valley Council and prepared by Webb McKeown & Associates in February 2009, outlines a comprehensive approach to managing flood risks in the Yamba area. The plan recommended undertaking a study of wave runup at Yamba to understand its potential impact and mitigation measures In the Yamba Floodplain Risk Management Plan.
'Wave runup has the potential to cause significant damage to structures along the foreshore.
However little is known about this phenomenon. This study would investigate the magnitude, likelihood and damage potential of wave runup at Yamba as well as possible mitigation measures. It could be combined with a similar study for Iluka on the north side of the Clarence River.'

Request for Information on Wave Runup Studies in the Context of Flood Risk Management in Yamba

I request information regarding the wave runup studies and considerations within the Yamba area, particularly in relation to flood risk management and the implications of not conducting such studies as part of the Lower Clarence Flood Model 2022 (LCFM 2022) and its applications in Flood Impact Risk Assessments for development applications within the West Yamba Urban Release Area (WYURA).

Given the significance of wave runup phenomena in exacerbating flood impacts along coastal areas and the recommendations in the Yamba Floodplain Risk Management Plan (February 2009) for conducting a study on wave runup at Yamba, my request seeks to understand the council's actions and considerations in this regard. The document mentions that "Wave runup has the potential to cause significant damage to structures along the foreshore... This study would investigate the magnitude, likelihood, and damage potential of wave runup at Yamba, as well as possible mitigation measures."

Specifically, I am interested in the following information:

79) Wave Runup Study:
a. Documentation on the decision-making process regarding the conduct (or lack thereof) of a wave runup study for the Yamba area, in light of its known susceptibility to coastal flooding and wave action.

b. Any existing studies, assessments, or analyses relating to wave runup impacts within the Clarence Valley, especially concerning Yamba and surrounding coastal areas.

c. Correspondence between the council and any external agencies or consultants regarding the necessity, planning, or execution of a wave runup study.

80)) Non-Compliance with Legislative and Policy Frameworks:
a. Records detailing how the council's approach to flood risk management, specifically regarding wave runup, aligns or conflicts with the Environmental Planning and Assessment Act 1979 (NSW), Local Government Act 1993 (NSW), State Environmental Planning Policy (Coastal Management) 2018, the Floodplain Development Manual, and the guidelines provided by Australian Rainfall and Runoff.

b. Documents or communications that discuss any identified risks, challenges, or barriers to compliance with these frameworks in relation to flood risk management and coastal development planning.

c. Any actions taken or proposed by the council to address non-compliance issues or to enhance adherence to the aforementioned legislative and policy frameworks.

81) Details and Justifications for the Omission of Wave Runup Studies: Any documents, reports, or communications that explain why wave runup studies have not been conducted or included in the flood risk assessments for Yamba and WYURA, especially given previous recommendations and the potential impact on flood management strategies.

82) Details and Justifications for the Omission of Wave Runup Studies: Any documents, reports, or communications that explain why wave runup studies have not been conducted or included in the flood risk assessments for Yamba and WYURA, especially given previous recommendations and the potential impact on flood management strategies.

83) Impact Assessments and Considerations: Information on how the absence of wave runup data has been considered in the flood risk management planning and the development of flood models for the Yamba area. This includes any assessments of potential risks or damage that could result from not incorporating wave runup effects into flood models and planning.

84) Community Engagement and Consultation: Records of any community engagement or consultations undertaken regarding the decision to exclude wave runup studies from flood risk management strategies and modelling. This also includes how community feedback has been addressed or incorporated into decision-making processes.

85) Future Plans for Wave Runup Studies: Details on any planned or proposed studies to investigate wave runup at Yamba, including timelines, methodologies, and objectives. Furthermore, how these studies will be integrated into future flood risk management and development planning for the area.

This request is motivated by concerns over the adequacy of current flood risk management practices in coastal areas under the jurisdiction of the Clarence Valley Council, especially in light of recent and historical flood events. It seeks to ensure transparency, accountability, and the incorporation of best practices in environmental planning and disaster resilience efforts.

Assessing Ocean Water Levels in Flood Modelling

Ocean water levels are fundamental to determining the peak 1% AEP storm tide. Assessing the ocean water levels in the LCF Model is difficult as it relies on "*The Risk Frontiers report"* which *"comprise confidential information"* and "*disclosure of the documents would diminish the competitive commercial value",* this process lacks openness and transparency for the public.
To assess ocean water levels across various entrance types, reference is made to the state guidelines detailed in the OEH (2015) Floodplain Risk Management Guide. BMT emphasises "It is also similar to the peak 1% AEP storm tide suggested by state guidelines (OEH, 2015)"

The guidelines suggest;

- 1.55 mAHD for Type A Entrances
- 2.10 mAHD for Type B Entrances

highlighting a difference of 0.55 meters.

Classification	Peak Design Ocean Water Level (m AHD)			
	South of Crowdy Head		North of Crowdy Head	
	1% AEP	5% AEP	1% AEP	5% AEP
Waterway Entrance Type A	1.45	1.40	1.55	1.50
Waterway Entrance Type B	2.00	1.90	2.10	2.00
Waterway Entrance Type C	2.55	2.35	2.65	2.45

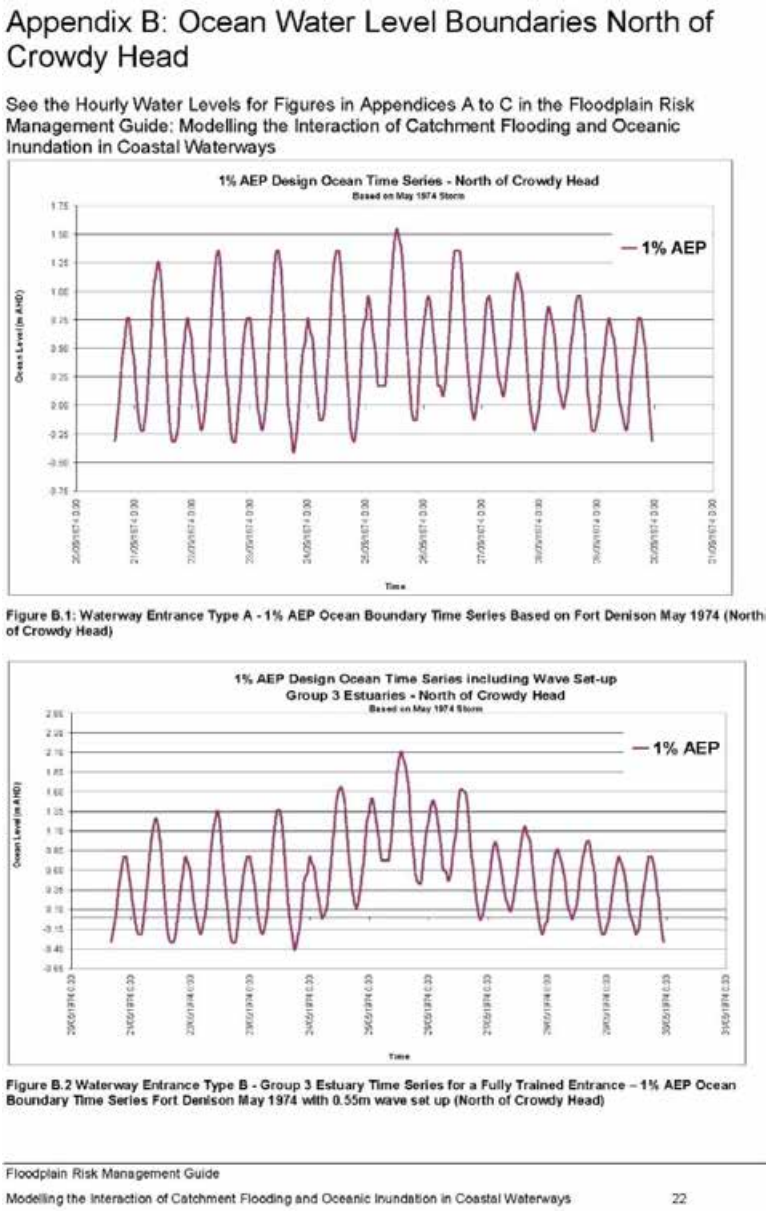
Table 5.2 OEH Peak Design Ocean Water Levels

The Critical Role of Additional Still Water Levels

For Type A waterways, the documents describe the approach for determining the ocean (downstream) boundary conditions for design events, the focus is on providing a general methodology and considerations for assessing flood risk and determining design flood levels in coastal waterways, including the translation of ocean boundary to study boundary, relative timing of catchment flooding and oceanic inundation, determination of design flood levels, and sensitivity testing.

Following the Flood Risk management Guide, in the context of designing flood mitigation strategies and assessing flood risk for coastal waterways, particularly at tide-dominated (Type A) entrances such as Fort Denison, it is imperative to account for variations in still water levels that influence flood risk assessments and management plans. Given the dynamic interaction between catchment flooding and oceanic inundation, the consideration of an additional height of 0.55 meters to the still water levels represents a critical factor in accurately modelling potential flood scenarios and their impact on coastal and estuarine environments.

The Floodplain Risk Management Guide advises to include wave runup of 0.55 meters for a Type B Entrance



Appendix B: Ocean Water Level Boundaries North of Crowdy Head

See the Hourly Water Levels for Figures in Appendices A to C in the Floodplain Risk Management Guide: Modelling the Interaction of Catchment Flooding and Oceanic Inundation in Coastal Waterways

Figure B.1: Waterway Entrance Type A - 1% AEP Ocean Boundary Time Series Based on Fort Denison May 1974 (North of Crowdy Head)

Figure B.2 Waterway Entrance Type B - Group 3 Estuary Time Series for a Fully Trained Entrance – 1% AEP Ocean Boundary Time Series Fort Denison May 1974 with 0.55m wave set up (North of Crowdy Head)

Floodplain Risk Management Guide

Modelling the Interaction of Catchment Flooding and Oceanic Inundation in Coastal Waterways 22

Image 48. Floodplain Risk Management Guide Page 28

Lower Clarence Flood Model Design ocean water levels

The LCFM 2023 highlights that the storm tide boundary is modelled as a dynamic (tidal) boundary, necessitating consideration of the relative timing between catchment runoff peak flow and the storm tide peak.

"*The modelled storm tide for the existing climate is provided by state guidance (OEH, 2015) and increased slightly so that the peak storm tide level matches the peak level from a storm tide investigation assessment undertaken for Clarence Valley Council in 2021 (Risk Frontiers, 2021*)" (LCFM)

A flood study generally requires design ocean still water levels over the range of probabilities. Peak elevated ocean levels for Fort Denison gauge in Sydney;

'are suggested for design purposes (rounded up to nearest 0.05 metre) in lieu of a similar analysis for a more local ocean tide gauge with length of record that is fit for purpose'[53] - Office of Environment and Heritage

Table 2-2: Estimated extreme water level elevation (m AHD) per postcode in the Clarence Valley.

Postcode	1% AEP (Risk Frontiers)	2% AEP	10% AEP
Open Coastline			
2462 - Wooli Coastline	1.58	1.53	1.48
2463 - Brooms Head/Sandon	1.60	1.55	1.50
2464 - Yamba/Clarence River	1.61	1.56	1.51
2466 - North Clarence River	1.62	1.57	1.52
2469 - Upstream Clarence River	1.62	1.57	1.52
Adjusted allowance for estuaries			
Clarence River (+0)	1.61	1.56	1.51
Wooli River (+0.55)	2.13	2.08	2.03
Lake Cakora and Sandon (+1.1)	2.70	2.65	2.60

Comparative Anomalies

Anomalies in 1% AEP Flood Design Levels Comparison

As shown in Table 2-2, Wooli River has a 1% AEP of 2.13 mAHD[54] with a catchment of 195 kms², while for the Clarence River, with a catchment of 22,055 kms,² the BMT flood model has assumed a 1 % AEP of 1.62 mAHD.

[53] modelling-catchment-flooding-oceanic-inundation-150769(AutoSave).pdf

[54] Tidal-and-Coastal-Inundation-Hazard-Mapping.pdf

Impact of Wave Runup Exclusion

The exclusion of wave runup significantly affects design flood levels for Lake Wooloweyah, WYURA, and West Yamba, leading to flawed flood impact and risk assessments based on the LCFM.

A theoretical adjustment to account for wave runup illustrates a considerable decrease in the magnitude of 1% AEP design flood levels, emphasising the necessity for its inclusion in flood models.

To assess the impact of excluding wave runup for the Lake Wooloweyah and West Yamba, we must incorporate a wave runup component into the ocean boundary. Following the OEH's recommendation of adding 0.55m for wave runup yields, we add the boundary height of 2.40m to the product of the difference in lake height (0.78m) divided by the corresponding boundary height difference (2.47m), and then multiply by the boundary height (2.4m). ([3.25 - 2.47] = 0.78/2.47 x 2.4) = 0.76 + 2.4 = 3.16 mAHD[55].

Summary:

- For Lake Wooloweyah, WYURA, and West Yamba, the reduction of the ocean boundary by 0.55m significantly alters the magnitude of the 1% AEP design flood level, lowering the flood level height of 3.16m to 2.08m—a notable decrease in magnitude of 1.08 meters

- The current WYURA Flood Impact and Risk Assessment rely on the flood model established by the Council in the Lower Clarence Flood Model Update 2022, as documented by BMT in 2023

- The Flood Impact Risk Assessments (FIRA), due to their diminished consideration of storm surge magnitude, have resulted in an underestimation of potential impacts. This is particularly evident in the oversight of wave runup's crucial role in determining design flood levels.

Impact of Entrance Type upon the 1% AEP Flood Levels

- The entrance type is critical to ocean water levels in flood modelling because it directly affects how oceanic forces interact with riverine flows at the point where the river meets the sea.
- At a river entrance, the Ocean Water Level is particularly important as it influences the level of seawater that can potentially push back against the river flow, affecting flooding and water levels in the estuarine area.

- For the Lower Clarence Flood Model study the selection of an Type A Entrance in preference to a Type B entrance, resulted in a lower peak 1% AEP storm tide of 1.62mAHD being applied in the study.
- The LCF Model states "*A peak 1% AEP storm tide of 1.62mAHD has been applied in this study. This peak storm tide was determined from a storm tide investigation assessment undertaken for Council in 2021 (Risk Frontiers, 2021). It is also similar to the peak 1% AEP storm tide suggested by state guidelines (OEH, 2015) of 1.55mAHD.*"
- The previous flood models had a 2.6 mAHD[56] 1% AEP peak storm tide.

[55] Based on the LCFM Table 6.4 Peak Design Flood Levels at Gauges pg 35
[56] Exhibition copy Flood Risk Management Report.pdf pg 11

Impact of Wave Runup Exclusion on Flood Impact and Risk Assessments

The WYURA Flood Impact and Risk Assessment, October 2023 relies on the Lower Clarence Flood Model Update 2022 (BMT, 2023). The reduction in storm surge magnitude within this model has led to a diminished representation of true potential impacts due to a reduction in storm surge magnitude;

- *The magnitude of the storm tide adopted in 2022 Council Model is considerably smaller than the storm tide adopted in 2014 Council Mode*
- *The latest modelling has used the latest OEH (2015) guidelines to refine the storm surge component in the model. As a result, the magnitude of the storm surge has reduced and the inclusion of the floodway is less critical.*
- *A minor increase in flood levels was observed at St James Catholic Primary School in the 0.2% AEP and 1% AEP CC1 events. The increase in flood level at the school is minor (up to 24mm) and does not change the flood hazard category*
- *No adverse flood impacts on residential properties were identified in any of the analysed flood events*
- *No changes in flood level affected any residential properties in the 1% and 0.5% AEP events."*
- *A reduction in flood hazard category from H3*
- *No flood impacts of the proposed development were observed on residential properties in any of the analysed flood events*
- *No significant changes in flow velocity, flood hazard category, duration and frequency of inundation are observed throughout the study area*

The exclusion of wave runup is demonstrated in Figure 3.

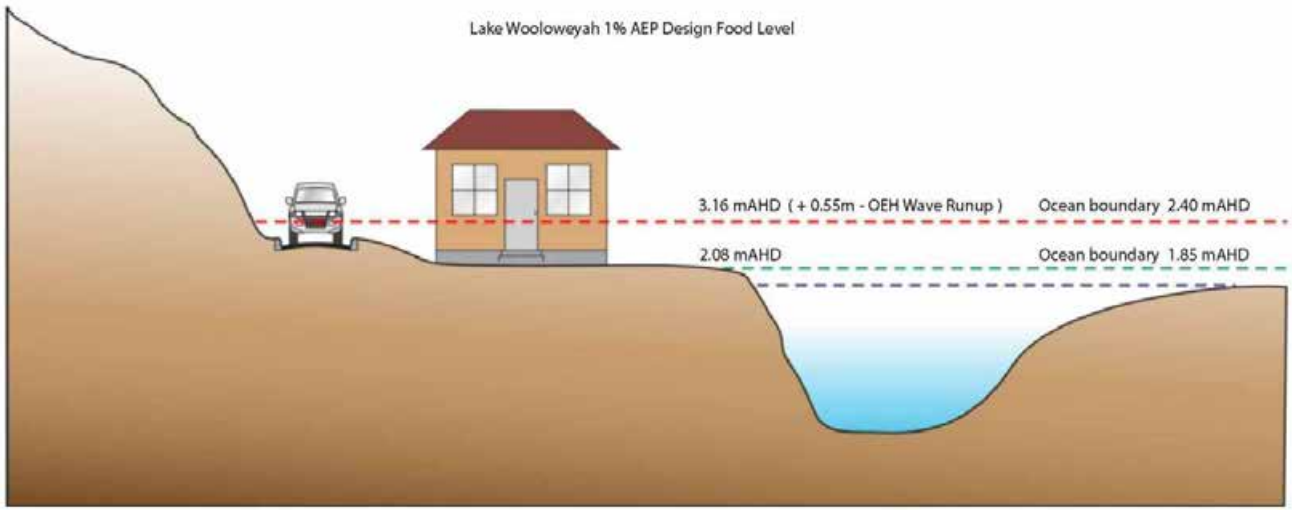


Figure 3. Impact of the wave run-up exclusion

A Wave Runup study should be undertaken

"A study into the effects of wave runup should be undertaken for the township of Yamba. Until such time, the potential impacts should be considered when evaluating mitigation measures"[57]

[57] 2008 yamba-floodplain-risk-management-study.pdf pg 20

I request access to documents, or any information that concerns the methodologies, decision-making processes, analyses, and adherence to flood risk management principles related to the exclusion of wave runup in flood modelling. This request is specifically directed at the practices employed in the Lower Clarence Flood Model Update 2022 and its application in the WYURA Flood Impact and Risk Assessment, October 2023.

Given the principles outlined in the Flood Risk Management Manual and relevant legislation, including the Environmental Planning and Assessment Act 1979, the Standard Instrument (Local Environmental Plans) Amendment (Flood Planning) Order 2021, and the State Environmental Planning Policy Amendment (Flood Planning) 2021, my request seeks to ensure that flood modelling and risk assessments align with sustainable governance, strategic planning, and a consultative approach that respects both environmental and community safety standards.

Furthermore, in alignment with the objectives of the Clarence Valley Council Local Strategic Planning Statement 2020, which emphasises ecologically sustainable development and resilience against natural hazards, it is imperative that flood models incorporate a holistic view of flood behaviour, including the impacts of wave runup on flood risk assessments.

Accordingly, I request detailed information on the following:

86) Modelling details: Documentation that clearly articulates the 'modelled storm tide' and the aditional 'increase' in meters

87) Justification for the Exclusion of Wave Runup: Documents or communications that provide the rationale behind the decision to exclude wave runup from the flood modelling processes, including assessments of how this decision aligns with flood planning principles and legislation.

88) Modelling Processes and Methodologies: Documentation that clearly articulates the methodologies employed in modelling the interactions between catchment flooding and oceanic inundation, including considerations of climate change impacts, and how the exclusion of wave runup might affect these models.

89) Consideration of Legislation and Planning Principles: Information on how flood modelling practices adhere to the principles set forth in the Flood Risk Management Manual, the Environmental Planning and Assessment Act, and relevant state policies, ensuring a proactive approach to flood risk management that prioritises community safety and environmental sustainability.

90) Community Consultation and Engagement: Records of consultations or community engagement sessions that discuss the exclusion of wave runup and its implications on flood risk assessments and management strategies.

This request aims to ascertain the compatibility of current flood modelling practices with best practices, regulatory requirements, and the overarching goal of ensuring the safety and well-being of the community in the face of flood risks.

Flood model Design Flood Levels

Design Flood Levels (DFLs) are established based on the critical information provided by Flood Peak Analysis, which measures the maximum flow rate of water during a flood. By determining DFLs, infrastructure can be designed to resist inundation up to a specified flood severity, using data from Flood Peak Analysis to ensure safety and manage flood risks effectively.

The Significance of the '1% AEP' = 100 Year Flood = 1:100 ARI

The term "1 in 100 year" flood, while commonly used, is a statistical measure indicating a 1% chance of such a flood occurring in any given year, not a prediction of flood intervals. The "1:100 ARI" and "1% AEP" both describe the likelihood of a specific flood event, indicating a flood has a 1 in 100 chance of occurring in any given year.
Because the 1-percent AEP flood has a 1 in 100 chance of being equalled or exceeded in any 1 year, and it has an average recurrence interval (ARI) of 100 years, the '1 in 100 year' flood is referred to as the 1% AEP flood event. While ARI focuses on the event's average recurrence over a century, AEP emphasises the annual probability of the event happening. Both terms convey the same risk level but from different perspectives.

The Flood Planning Area encompasses regions where developments are regulated by flood-related controls, aimed at mitigating flood risks. Within this area, the Flood Planning Level dictates the minimum floor elevation for new buildings, incorporating a safety margin (freeboard) above the 1% Annual Exceedance Probability (AEP) flood level to account for additional risks like wind and wave action.

The Flood Planning Level

The Flood Planning Level (FPL) is a height used to set floor levels for property development in flood prone areas. It is generally defined as the 1% AEP flood level plus an appropriate freeboard (see explanation of 'freeboard' below). This level may be higher for vulnerable land uses (e.g. hospitals or schools).
Flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.
The Flood Planning Level is based on the 1% AEP flood event, adding a safety margin called freeboard.

Freeboard is a height above the 1% AEP flood level that is included in the Flood Planning Level to account for factors such as wind, waves, unforeseen blockages, other localised hydraulic effects. Freeboard is usually 0.5m above a flood level.

Summary:
The 1% AEP flood level forms a foundational part of the 1% AEP design flood level. The 1% AEP design flood level is essentially the 1% AEP flood level plus additional safety margins and considerations for design and planning purposes

The 1% AEP Design Flood Level

The "Floodplain Risk Management Guide" provides comprehensive guidance on assessing and managing flood risks in coastal waterways, addressing the interaction between catchment flooding and oceanic inundation. It details methodologies for modelling flood behaviour, establishing design flood levels, and considering the effects of sea level rise.

The 1% AEP Design Flood Level determines flood resilience by setting benchmarks for infrastructure design to withstand floods, thereby minimising property damage. It guides emergency planning to ensure rapid response, aims to reduce economic losses by informing zoning and construction standards, and helps preserve environmental integrity by identifying flood-prone areas. Additionally, it protects community health by reducing exposure to flood risks and associated stressors.

The 1% AEP Design Flood Level is crucial in understanding the flood impacts from development, as it guides the determination of minimum floor heights and the necessary fill to elevate the ground within the WYURA development. This level plays a pivotal role in both flood mitigation efforts and assessing how development influences flood dynamics.

Given that flood models will be in use for many years, extra scrutiny in flood model development is essential to ensure accuracy, adaptability to future conditions, and informed decision-making for long-term flood risk management.
The interaction of catchment flooding and coastal processes is an important consideration in determining overall flood risk in coastal waterways. The influence of these two factors on flooding varies with ocean level, due to both tidal fluctuations and storm impacts, the condition of the entrance interface between the coastal waterway and the ocean, distance from the ocean, and the size and shape of the waterway and catchment draining to the entrance.
The floodplain risk management process outlined in the Floodplain Development Manual (DIPNR 2005) provides the opportunity to understand the interaction of catchment flooding with oceanic inundation and examine and decide on options to manage the associated flood risks to existing and future development.
Storm surge-related tidal anomalies may be generated by weather phenomena that also contribute to coastal rainfall and potentially flooding, thus considerations concerning joint coincidence become more important

West Yamba's design flood levels

"As per 2022 Council Model setup, the design flood levels in West Yamba and the WYURA site are determined by assuming coincidental occurrence of flood peak and storm tide peak in accordance with OEH (2015) guidelines."[58]
West Yamba's design flood levels are established based on an ocean boundary, the height of which is determined by historical records from tide gauges around the coastline."[59] The WYURA is contained within West Yamba.
The Lower Clarence Flood Model Update 2022 (LCFM 2023) notes;

- For this update, the main Clarence River inflow location and the ocean boundary location have been retained in the model.
- The 2013 model included four main types of model boundary as follows: Ocean water levels
- The storm tide boundary is modelled as a dynamic (tidal) boundary
- Conditions were defined using recorded tide data at Yamba supplied by Manly Hydraulics Laboratory LCFM 2022 Pg 21
- A peak 1% AEP storm tide of 1.62mAHD has been applied in this study

[58] WYURA Flood Impact and Risk Assessment pg 18
[59] https://www.ga.gov.au/scientific-topics/positioning-navigation/geodesy/ahdgm/ahd

- This peak storm tide was determined from a storm tide investigation assessment undertaken for Council in 2021 (Risk Frontiers,2021).
- It is also similar to the peak 1% AEP storm tide suggested by state guidelines (OEH, 2015) of
- 1.55mAHD4.
- The adopted approach follows the recommended approach provided in state guidelines in which the catchment runoff peak is timed to coincide with the storm tide peak at the location of interest
- For the purposes of this study, the location of interest with regards to the storm tide considerations is the lower Clarence between Maclean and Yamba/Iluka.

Ocean Boundary level at Yamba

Manly Hydraulics Laboratory - The Ocean Tidal Data Collection Program provides water levels which are a measure of the ocean tide.[60]

Risk Frontiers investigation assessment

In 2021 CVC commissioned consultants Risk Frontiers (2021) to undertake a climate risk assessment;[61]
"Risk Frontiers (2021) Physical Climate Risk Assessment - Coastal Flood and Sea Level Rise, Supplementary Report S6"
Risk Frontiers produced the study from 'continuous hourly sea level records at approximately 1-km resolution around the Australian coast'[62]

OEH ocean levels

Levels applied by the OEH Fort Denison levels relate the "relative sea level changes" to 'to a local land benchmark'
"Mean sea level" at the coast is defined as the height of the sea with respect to a local land benchmark, averaged over a period of time, such as a month or a year, long enough that fluctuations caused by waves and tides are largely removed. Changes in mean sea level measured by coastal tide gauges are called "relative sea level changes", because they can come about either by movement of the land on which the tide gauge is situated or by changes in the height of the adjacent sea surface (both considered with respect to the centre of the Earth as a fixed reference)."[63]

"AHD was adopted by the National Mapping Council in May 1971 as the datum to which all vertical control for mapping was to be referred. The datum surface passes through approximate mean sea level (MSL) realised between 1966 and 1968 at tide gauges around the coastline"[64]

Yamba tide gauge

The relationship between the "location of interest" and the Yamba river gauge is such that the Yamba River Gauge forms a part of the location of interest.

Summary:

- " As per 2022 Council Model setup, the design flood levels in West Yamba and the WYURA developments are determined by assuming coincidental occurrence of flood peak and storm tide peak "in accordance with OEH (2015) guidelines."

- The model's downstream boundary conditions, critical for capturing the interaction between river flows and oceanic influences, are defined using recorded historical tide data, where the Yamba river gauge plays a role in providing this data.

[60] https://mhl.nsw.gov.au/Data-OceanTide
[61] Clarence Valley Coastline and Estuaries Coastal Management Program Stage 2. pg19
[62] Risk Frontiers email exchange.pdf
[63] Fort Denison Sea Level Rise Vulnerability Study pg26
[64] https://www.ga.gov.au/scientific-topics/positioning-navigation/geodesy/ahdgm/ahd

- West Yamba's design flood levels are set from the height of the Ocean Water Levels at the Ocean Boundary determined from historical coastline gauge data.

West Yamba's design flood levels have Limited Correlation with Ocean Level Modelling

Ocean boundary: Conditions were defined using recorded tide data at Yamba supplied by Manly Hydraulics Laboratory.[65]
The flood model bases West Yamba design flood levels on historical ocean level data from the Yamba River gauge. Flooding in West Yamba comes from two directions the river in the North and the lake in the South.

(a) On the 1st March 2022 at 7:30, at the Yamba river gauge, a record Ocean Boundary tide was recorded of 1.597 mAHD.

Station Name	Yamba		
Station Number	204454		
Longitude	153.3621		
Latitude	-29.429		
Web	http://www.mhl.nsw.gov.au/Station-204454		
Datum	AHD (1971)		
Parameter	Level 1		
Date	Time	Value[m]	State of value
1/03/2022	7:30:00	1.597	55

Image 48. Ocean Boundary at Yamba river gauge[66]

(b) Simultaneously, at Lake Wooloweyah a height of 1.493 mAHD was recorded.

A decrease of 0.104 meters in flood water height.

Station Nam	Lake Wooloweyah		
Station Num	204485		
Longitude	153.34184		
Latitude	-29.477569		
Web	http://www.mhl.nsw.gov.au/Station-204485		
Datum	AHD		
Parameter	Level 1		
Date	Time	Value[m]	State of value
1/03/2022	7:30:00	1.493	55

Image 49. Lake Wooloweyah water gauge level[67](DST)

(c) The modelled Peak Design Flood Levels show that flood water heights at Lake Wooloweyah regularly exceed Ocean Boundary heights at Yamba once Yamba flood waters rise above 1.34 mAHD.

[65] Lower Clarence Flood Model Update 2022. Pg 21
[66] Yamba.Level1.csv
[67] LakeWooloweyah.Level1.csv

Table 6.4 Peak Design Flood Levels at Gauges (mAHD)

Gauge	20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.2% AEP	Extreme	1% AEP (CC1)	1% AEP (CC2)
Grafton (Prince St)	6.27	8.11	8.38	8.44	8.87	9.39	13.58	8.78	9.05
Ulmarra	5.08	6.15	6.38	6.42	6.77	7.53	12.71	6.73	7.11
Brushgrove	4.24	5.14	5.40	5.66	6.35	7.21	12.50	6.31	6.78
Tyndale	3.91	4.61	5.25	5.50	6.14	6.99	12.34	6.11	6.59
Lawrence	3.51	4.65	4.89	5.14	5.81	6.69	12.10	5.79	6.29
Maclean	2.41	3.18	3.41	3.55	3.98	4.59	8.56	4.07	4.46
Palmers Island Bridge	1.96	2.59	2.86	2.99	3.37	3.93	7.77	3.56	3.95
Oyster Channel	1.08	1.41	1.94	2.07	2.55	3.21	7.17	2.99	3.45
Lake Wooloweyah	0.88	1.32	1.92	2.08	2.58	3.25	7.20	3.01	3.47
Yamba	1.17	1.34	1.79	1.85	2.08	2.47	6.07	2.65	3.05

Image 50. Peak Design Flood Levels at Gauges

"The updated model has been calibrated to the flood events of January 2013, March 2021 and February/March 2022 and a good match to recorded flood levels has been achieved for all events. This has been undertaken using the historic events of January 2013, March 2021 and February/March 2022.

(d) Following the record Ocean Boundary peak at Yamba, floodwaters rose in the lake for an additional 27.5 hours beyond the record highest flood level of 1.597m in Yamba, culminating in a new record with flood water height of 1.732mAHD.[68]

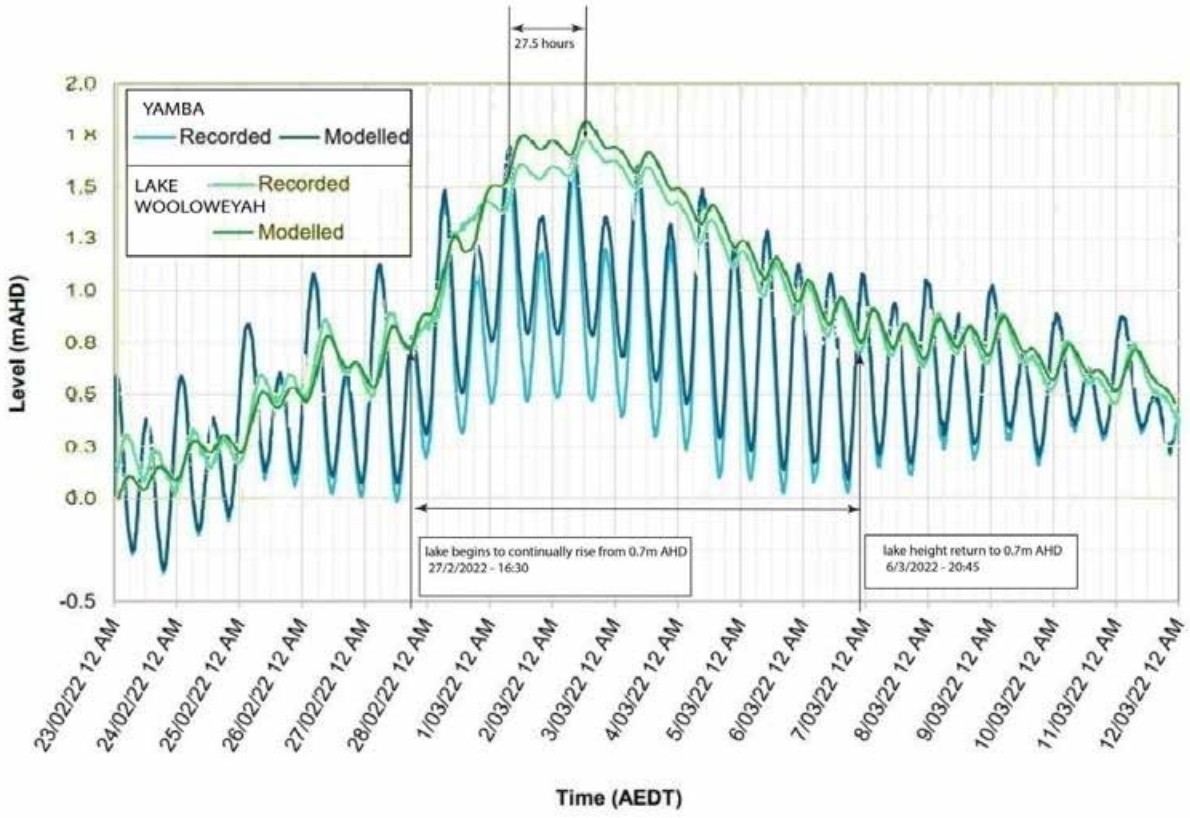


Image 51. Lake water levels superimposed on the Ocean Boundary at Yamba

[68] LakeWooloweyah.Level1.csv

d) As the tide was receding at the Yamba Ocean Boundary, (Low tide - 13:57), the river catchment peaked in Lake Wooloweyah, with the ocean boundary being 0.733 meters lower than the lake, as shown in image 53

Station Nar	Yamba			Station Nar	Lake Wooloweyah		
Station Nur	204454			Station Nur	204485		
Longitude	153.362061			Longitude	153.3418		
Latitude	-29.428958			Latitude	-29.4776		
Web	http://www.mhl.nsw.gov.au/Station-204454			Web	http://www.mhl.nsw.gov.au/Station-20448		
Datum	AHD (1971)			Datum	AHD		
Parameter	Level 1			Parameter	Level 1		
Date	Time	Value[m]	State of value	Date	Time	Value[m]	State of value
2/03/2022	11:30:00	0.999	55	2/03/2022	11:30:00	1.732	55

Image 52. Water levels at the Ocean Boundary at Yamba & Lake Wooloweyah

e) For a given longitudinal location along the north-south axis, lake flood water levels can be higher due to tidal pumping effects.

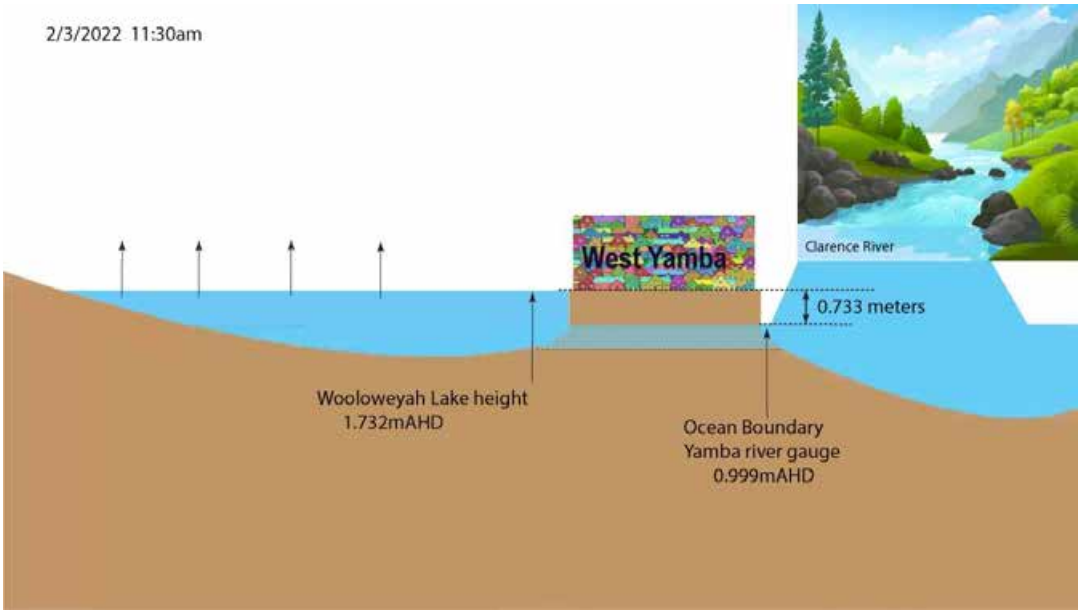


Image 53.

f) Riverine peak flood waters flowed north form Lake Wooloweyah towards West Yamba and into Golding Street and surrounds (Images 1-13), exceeding 1.712 mAHD

Image 54. 18-20 Fairtrader Drive, Yamba

Located at 18-20 Fairtrader Drive, Yamba, is State Permanent Survey Mark SS125393[69] with a height of 1.712 mAHD[70]. The marker is included in the Survey Control Information Management System (SCIMS). SCIMS is a database managed under the guidance of the Surveyor-General of NSW, containing coordinates, heights, and other details for Permanent Survey Marks that make up the State Control Survey.

f) About the time West Yamba's flood waters were recorded at 1.712 mAHD, the Ocean Boundary was at a height of 0.578mAHD, which is 1.134 meters lower than in West Yamba.

Station Name	Yamba		
Station Number	204454		
Longitude	153.3621		
Latitude	-29.429		
Web	http://www.mhl.nsw.gov.au/Station-204454		
Datum	AHD (1971)		
Parameter	Level 1		
Date	Time	Value[m]	State of value
2/03/2022	13:45:00	0.578	55

Station Nam	Lake Wooloweyah		
Station Num	204485		
Longitude	153.34184		
Latitude	-29.477569		
Web	http://www.mhl.nsw.gov.au/Station-204485		
Datum	AHD		
Parameter	Level 1		
Date	Time	Value[m]	State of value
2/03/2022	13:45:00	1.712	55

Image 55. Ocean Boundary at Yamba river gauge[71] (DST)

[69] SS125393 getSketchPlans.pdf
[70] SS125393 State survey mark height from surveyor.jpg
[71] Yamba.Level1.csv

g) The riverine catchment peak recorded at Yamba river gauge does not synchronise with the riverine catchment peaks observed at Palmers Island, Oyster Channel, or Lake Wooloweyah a shown in Image 55.

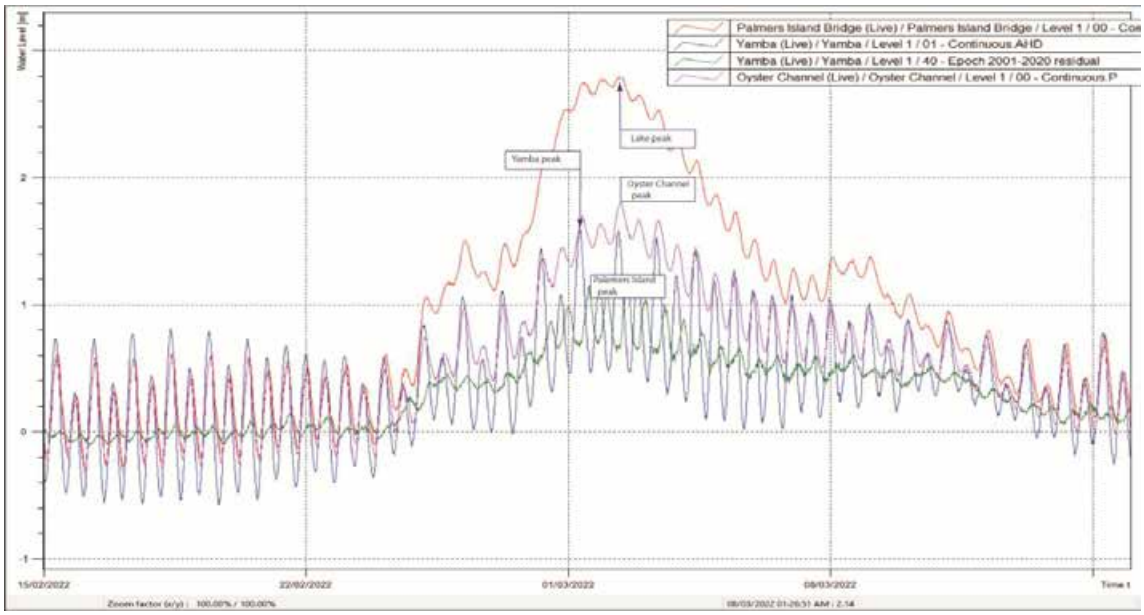


Image 56. Extract- NSW North Coast Flood Summary Report MHL2880

Table 8.1 illustrates the peak at the Ocean Boundary (Yamba) 28 hours before the arrival of the Riverine peak

8.1 Clarence River region – water level

The peak observed water levels for the Clarence River region are listed in **Table 8.1**. **Table**

Table 8.1 Clarence River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Yamba	204454	DPE BCD	AHD	1.60	**01/03/2022 07:30**
Palmers Island Bridge	204426	DPE BCD	AHD	2.79	**02/03/2022 07:45**
Oyster Channel	204451	DPE BCD	AHD	1.80	**02/03/2022 09:30**
Lake Wooloweyah	204485	DPE BCD	AHD	1.73	**02/03/2022 11:30**

Table 8.1 Clarence River region – water level[72]

h) The "Knowledge for Productivity Phase I - Lake Wooloweyah" report details that Lake Wooloweyah has a highly attenuated and complex tidal regime, with significantly reduced tidal ranges and mean sea levels that vary throughout the year. This attenuation is particularly pronounced around the Oyster Channel bridge, affecting the water level percentiles used for analysis. It is suggested that the percentile-based tidal planes show minor changes beyond the flood tide delta, causing Lake Wooloweyah to behave like a bathtub, with no further modification of the tidal planes, which could make it difficult to align with the Yamba gauge.

[72] NSW North Coast Flood Summary Report MHL2880 pg 162 - https://www.mhlservices.net/apps/library/request_access.php?reportnumber=2880

i) Flow passing over Yamba Road and into West Yamba is limited to the duration of the peak of the tide and so resulting flood levels are lower than for areas elsewhere in Yamba where there is no overtopping constraint.[73]

Summary West Yamba's design flood levels limitation

- As per 2022 Council Model setup, the design flood levels in West Yamba and the WYURA developments are determined by assuming coincidental occurrence of flood peak and storm tide peak in accordance with OEH (2015) guidelines.[74]
- The Yamba gauge at the Ocean Boundary does not capture and record the riverine catchment peak
- The Ocean boundary peaked prior to the arrival of Riverine peak
- Flood waters continued to rise for (27.5+hours) prior to the arrival of Riverine peak
- Flood waters continued to rise pass the Ocean Boundary peak
- The Ocean Boundary is higher than the lake boundary, typically the modelled lake boundary is higher than the Ocean Boundary
- The rise in lake flood water levels does not relate to the gauge at the Ocean Boundary
- Riverine flow between the lake and the river is restricted
- The increased lake flood water level of 733mm is greater than the modelled 2% AEP, 1% AEP, 0.5% AE, 1% AEP (CC1) and a 1% AEP (CC2) Peak Design Flood Levels.
- the Yamba peak is not linearly related to Palmers Island, Oyster Cove and Wooloweyah riverine peak (meaning they do not change together at a constant rate)
- is not increased by the Riverine peak.
- The Yamba river gauge fails to accurately capture riverine peak levels from the catchment
- Flood water levels in West Yamba do not relate directly to the Lake Wooloweyah gauge
- Floodwater built up in the lake exposes the riverine peak to three high tides, Image 51
- Lake Wooloweyah to behaves like a bathtub

Addressing Flood Modelling Uncertainties in Clarence Valley

I request detailed information pertaining to flood risk management, modelling strategies, and the integration of ocean boundary conditions, specifically related to the synchronisation issues between the Yamba river gauge and Lake Wooloweyah, Oyster Channel, and Palmers Island. This information is sought to understand the potential errors in flood modelling and to enhance flood risk assessments and mitigation strategies in the Clarence Valley region.

Comprehensive Information Sought Includes:

91) Flood Modelling Methodology:
   a) Detailed methodology and assumptions used in setting ocean boundary conditions based on the Yamba river gauge recordings.
   b) Explanation of how flood modelling accounts for the asynchronous peak levels at Lake Wooloweyah, Oyster Channel, and Palmers Island.

92) Model Calibration and Validation Data:
   a) Calibration and validation data that highlight the temporal alignment or misalignment of peak flood levels between different locations.
   b) Any studies or assessments undertaken to understand the backwater effects in connected water bodies and their impact on flood modelling accuracy.

[73] West Yamba Urban Release Area Flood Impact Assessment 2018
[74] 120 Carrs Drive Yamba Flood Impact and Risk Assessment pg19

93) Infrastructure and Hydrodynamic Analysis:

a) Information on how flood defense infrastructure (levees, embankments) and local hydrodynamics (specific to Lake Wooloweyah, Oyster Channel, Palmers Island) are represented in the flood model.

b) Details of any model adjustments or revisions made to better capture the unique hydrodynamic conditions of the area.

94) Impact of Climate Change Scenarios:

Documentation on how climate change projections (increased rainfall intensity and sea level rise) have been incorporated into flood risk assessments and modelling, considering the synchronisation issues identified.

95) Flood Risk Management Strategies and Adaptation Measures:

Descriptions of flood risk management strategies and adaptation measures developed based on the current flood modelling practices.
Insights into how potential errors identified in flood modelling are addressed in the planning and implementation of flood mitigation measures.

96) Review and Revision Processes:

Details of any ongoing or planned review and revision processes aimed at improving flood model accuracy, including stakeholder involvement and expert consultations.

This request is made in the interest of enhancing the reliability and accuracy of flood risk assessments in the Clarence Valley region, ensuring that flood mitigation strategies are informed by the most current and comprehensive modelling practices. The information sought is crucial for the development of informed and effective flood risk management plans, contributing to the resilience and safety of our communities against future flood events.

Flood Modelling Discrepancies and Flow Direction Contradictions in Yamba

The section addresses inconsistencies in flood modelling for Yamba, highlighting contrasting flow directions from the Clarence River and Lake Wooloweyah in various scenarios, aiming to refine flood risk management by reconciling these discrepancies.

Council animation information

- "As the gauges were used for model calibration the modelling (and hence the animation) is the same as the gauges - the raw gauge data (which was used in the model calibration and which we accessed directly from MHL and provided to BMT) is in EST"[75]
- "The modelling animation, which was viewed by the Floodplain Risk Management Committee and Councillors, shows northward flow from Lake Wooloweyah from about 11:00am on 28/02.[76]
- "The animations, available on Council's website, are based on updated hydrology modelling that incorporates data from the 2022 floods.
- The modelling includes the latest estimates of climate change impacts.
- The computer simulated models demonstrate the behaviour of potential flooding – what areas are impacted, and the time taken for floodwater to rise and fall. Impacts of tides are included.

Flooding from the South

a) Flooding from Lake Wooloweyah, in the South, submerges south Golding street and continues to flow north.

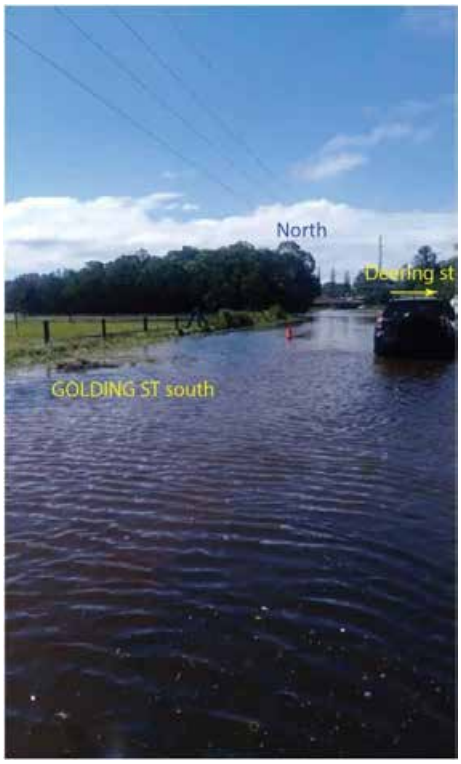


Image 57. south Golding st submerged

Image 58. Golding st – flowing

[75] email exchange Greg Mashiah 11-1-2024.pdf
[76] email exchange Greg Mashiah 11-1-2024.pdf

c) March 2022 flood event – The animation, shows dominant flooding coming from the south, and is based on data indicating that the primary source of flooding comes from the south, as informed by readings from the Lake Wooloweyah gauge.
Note: North Golding Street is dry and that the floodwater originates in the south.

Image 59. March 2022 flood event Animation still

Flooding from the North

d) Image 60 #1, water enters through the culverts under Yamba road at Image 60 and flows through the water course and flows to the surrounding streets.
Flood waters store on WYURA as shown in Image 60 #2, water overtops Yamba road as the river rises.

Image 60. Flooding from the North submerges north Golding street

e) Note: North Golding St submerged as per Image 61, indicating floodwater originating from the north

Image 61. Flooding from the Clarence River in the North

f) 1% AEP event – This animation illustrates flooding originating in the North, informed by data that identifies the North as the first flood source, as informed by readings from the Yamba river gauge.
Note: North Golding Street is submerged as per Image 60.

Image 62. 1% AEP Animation still 17 hours in

Flooding from the North and the South

g) 1% AEP event – This animation, 42 hours in, displays flooding from the North and the South
This animation illustrates flooding from the North, informed by data that identifies the North as the flood source, as informed by readings from the Yamba river gauge and it shows flooding coming from the south, and is based on data indicating that the source of flooding comes from the south, as informed by readings from the Lake Wooloweyah gauge.

Note: Yamab road is inundated or 'over topped'.

Image 63. 1% AEP Animation still 42 hours in

Summary

- Flooding from the South: Lake Wooloweyah, situated in the South, causes flooding that submerges south Golding Street and progresses northward. The March 2022 flood animation corroborates this direction, with Lake Wooloweyah gauge readings indicating the South as the primary flood source. Notably, North Golding Street remains dry during this event.

- Flooding from the North: Flooding initiates from the North, with water entering through culverts under Yamba Road, spreading to surrounding streets and causing significant water accumulation on WYURA. As the river rises, water overtops Yamba Road, submerging north Golding Street. This is supported by images and animations, including the 1% Annual Exceedance Probability (AEP) event, highlighting North as the initial flood source based on Yamba river gauge readings.

- Combined Flooding Dynamics: During a 1% AEP event, animations 42 hours in reveal simultaneous flooding from both North and South, with significant inundation including the overtopping of Yamba Road. This scenario combines data and observations from both Lake Wooloweyah and Yamba river gauges, illustrating the complex flood behaviour affecting the area from both directions.
- Out of five flood animations, only one is derived from actual events, specifically using data from the Lake Wooloweyah Gauge.

The flood modelling primarily relies on the Yamba River Gauge located at the ocean boundary. However, this gauge does not synchronise with the Lake Wooloweyah Gauge, leading to potential discrepancies in modelling and interpretation.

I request access to information regarding the flood modelling discrepancies, particularly focusing on the synchronisation issues between the Lake Wooloweyah Gauge and the Yamba River Gauge at the ocean boundary, and the inclusion of data in the WYURA Flood Impact and Risk Assessment (FIRA).
It has been noted that of the five flood animations provided, only one is based on actual events, specifically utilising data from the Lake Wooloweyah Gauge. Given the flood model's primary reliance on the Yamba River Gauge, coupled with the non-synchronisation of this gauge with the Lake Wooloweyah Gauge, it raises several pertinent questions about the accuracy of the flood models and their implications for flood risk management, especially as the WYURA FIRA does not depict flooding from the lake. In light of these observations, I seek information on the following:

97) Flooding Dynamics and Threshold Assessments: I seek detailed information on the assessments of velocity and depth thresholds that may have been conducted or identified in relation to flooding from the South via Lake Wooloweyah, flooding from the North, and combined flooding dynamics during significant flood events, including the 1% Annual Exceedance Probability (AEP) scenario.

98) Hydrological and Hydraulic Assessments: Any hydrological and hydraulic modelling studies that include analysis of flooding from Lake Wooloweyah, culvert performance under Yamba Road, and the combined flooding dynamics for 1% Annual Exceedance Probability (AEP) events and other significant AEP thresholds.

99) Explanation of Discrepancies and Non-synchronisation: Please provide detailed explanations of the discrepancies observed between the Lake Wooloweyah Gauge data and the Yamba River Gauge data. This includes an analysis of how these differences impact the accuracy of flood modelling and animation, particularly focusing on the synchronisation issues and their implications for flood risk assessments.

100) Calibration and Data Synchronisation Techniques:
   a) details of specific measures that are in place to ensure the flood model accurately reflects real Lake Wooloweyah heights and synchronises with the Yamba River Gauge data
   b) details of challenges that have been encountered in achieving data harmony between these gauges

101) Impact on Flood Risk Management and WYURA FIRA: Reports or assessments detailing the impact of discrepancies and synchronisation issues affect flood risk management strategies and the depiction of flood risks in the WYURA FIRA. This includes concerns regarding the absence of complete flood maps from Lake Wooloweyah in the flood impact and risk assessment

102) Flood Risk Management Plans and Strategies: Documents outlining proposed or implemented flood risk management strategies for WYURA, focusing on addressing flooding from both the South and North directions, and combined flooding scenarios. This includes plans for enhancing existing infrastructure or implementing new flood mitigation measures.

103) Addressing the Discrepancies: Details of methodologies or technological solutions currently being explored or utilised to rectify these discrepancies and improve the accuracy and reliability of flood risk assessments, including the integration of lake flooding scenarios into the WYURA FIRA. This should cover the integration of lake flooding scenarios into the WYURA FIRA and any potential updates or revisions to the flood modelling approach to include both gauge data synchronously.

This request is aimed at obtaining a holistic understanding of the flood risk, the technical challenges involved in flood modelling, and the strategies being employed to ensure that flood risk management in the WYURA is based on accurate, comprehensive, and synchronised data.

FIRA Flood Level Mapping Discrepancies in West Yamba/WYURA

Flood Impact Risk Assessments

The WYURA FIRA that is based in the LCFM 2022 does not provide explicit directional data for flow velocities. Typically, flow velocity maps generated from flood modelling software like TUFLOW, as used in this assessment, depict the speed and direction of water flow across the modelled area for different flood events.

Flow velocities are crucial for understanding how floodwaters move through an area, which can impact flood risk management, emergency planning, and development designs.

BMT Flood Impact Assessments are based on the 'Clarence Valley Council's adopted flood model'
"The Flood Impact Assessments compare the peak flood levels between baseline and developed case models to determine if there are any changes in peak flood levels resulting from the development.
The impacts assessed are in relation to Clarence River (and storm surge) events."[77]

AEP Comparison Base Case Flood Behaviour

a) River higher; The Peak Flood Level 5% AEP Event Base case scenario from FIRA (Project A12497), indicates a river height of 1.96 mAHD and a Lake height of 1.48 - 1.55 mAHD. 15 September 2023

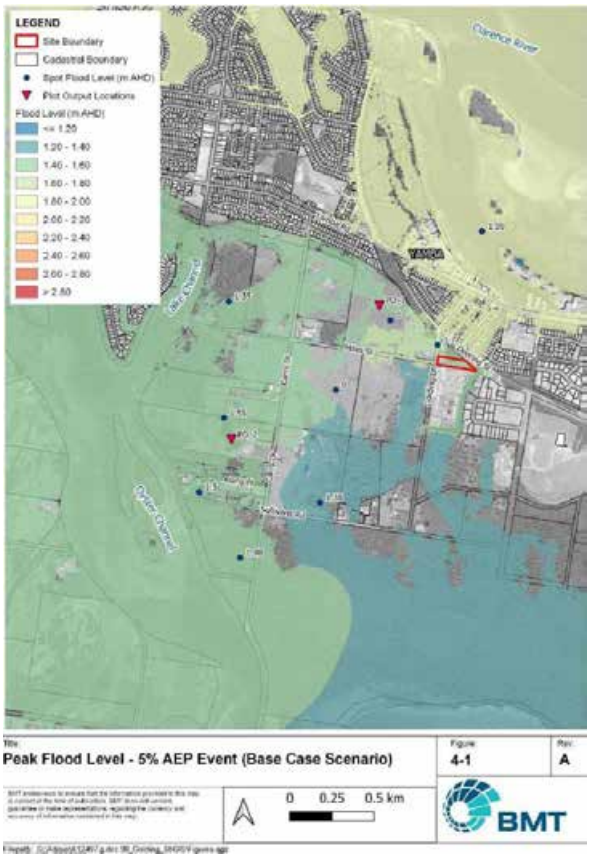


Image 64. Page 16 From Exhibition copy FIRA A12497 report [78]

[77] Regional Flood Impact Assessment Project No A12497 15 September 2023 - Exhibition copy Flood risk management report.pdf pg 19
[78] Regional Flood Impact Assessment Project No A12497 15 September 2023 - Exhibition copy Flood risk management report.pdf pg 16

b) River higher; the 5% AEP Peak Flood Level Pre-development Scenario from FIRA (Project 003044) indicates a river height of 1.45 mAHD and a Lake height of 1.35 mAHD. 30 October 2023

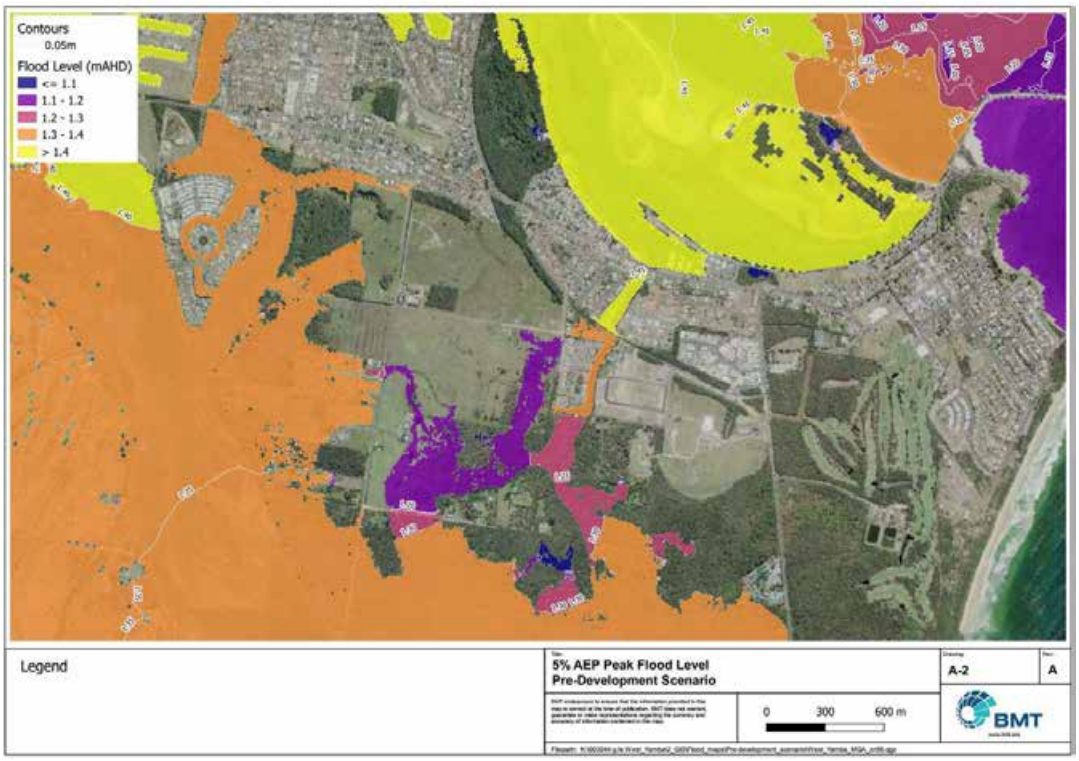


Image 65

c) Lake higher; The 5% AEP peak in animation. The animations, available on Council's website, are based on updated hydrology modelling that incorporates data from the 2022 floods. 2023

Image 66

d) The 5% AEP Peak Flow Velocity Pre-Development from FIRA (Project A12497) does not indicate the direction of low.

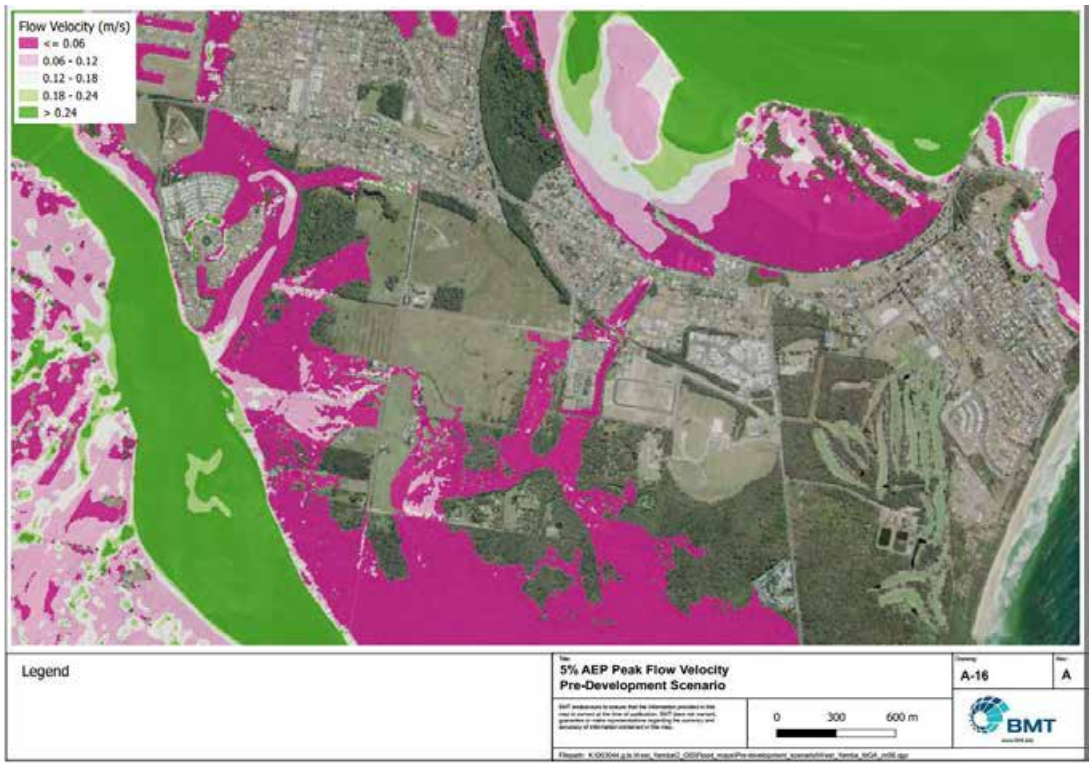


Image 67 5% AEP Peak Flow Velocity Pre-Development Scenario A12497 30 Golding Street

e) River higher; The Peak Flood Level 1% AEP Event Base case scenario from FIRA (Project A12497), indicates a river height of 2.42mAHD and a Lake height of 1.97 mAHD. 24 March 2023 55

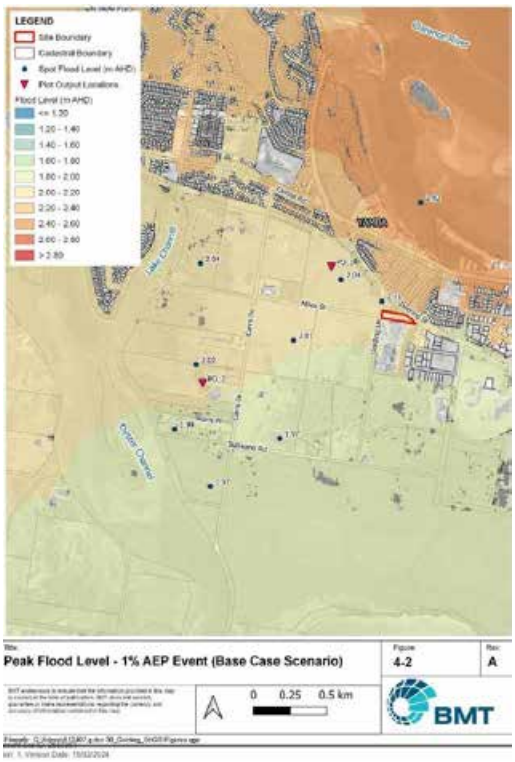


Image 68.Page 17 From Yamba, Regional Flood Impact Assessment[79] 15 September 2023

[79] Regional Flood Impact Assessment Project No A12497 15 September 2023 - Exhibition copy Flood risk management report.pdf pg 17

f) Lake higher; the 1% AEP Peak Flood Level Pre-development Scenario from FIRA (Project 003044) indicates a river height of 1.95 mAHD and a Lake height of 2.05 mAHD. 30 October 2023

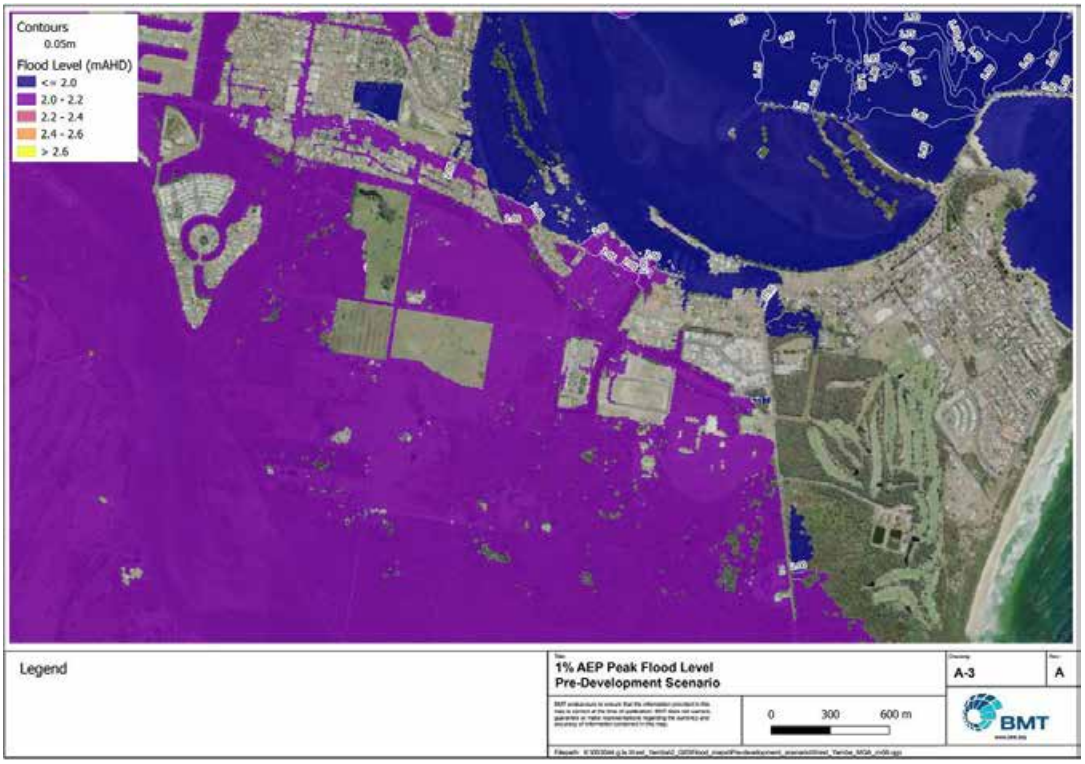


Image 69. 1% AEP Peak Flood Level Pre-Development Scenario[80]

Summary:

Differences in River and Lake Heights for the 5% AEP Event:

- FIRA A12497 reports a higher river height of 1.96 mAHD and lake heights between 1.48 - 1.55 mAHD.
- FIRA 003044 shows a lower river height of 1.45 mAHD and a lake height of 1.35 mAHD.
  These differences suggest variations in baseline conditions or modelling assumptions between the two assessments.

Lack of Flow Direction Information for 5% AEP Peak Flow Velocity:

- The reports do not indicate the direction of flow for the AEP Peak Flow Velocity Pre-Development, which is a crucial aspect for understanding flood behaviour and potential impacts.

Contrasting River and Lake Heights for the 1% AEP Event:

- FIRA A12497's base case for the 1% AEP event shows a river height of 2.42 mAHD and a lake height of 1.97 mAHD, indicating the river is higher than the lake.
- FIRA 003044, however, reports a lake height of 2.05 mAHD exceeding the river height of 1.95 mAHD for the same event, reversing the dynamic observed in FIRA A12497.

[80] Exhibition copy Flood Risk Management Report003044.pdf

These conflicting points highlight the complexity of flood modelling and the importance of consistent methodologies and data sources to accurately assess the impact of development on flood behaviour. The differences in river and lake heights between the two assessments for similar AEP events and the absence of flow direction information point towards potential gaps in the data or variations in the modelling approach, which are crucial for making informed decisions regarding development and flood risk management.

Request for Information on Flow Direction in Flood Velocity Maps for West Yamba/WYURA

Without specific directional data from the flow velocity maps included in the annexes or main body of the FIRA documents provided, it's challenging to precisely describe the direction of water flow for each scenario. To obtain detailed insights into the direction of flow velocities across the West Yamba area for the modelled flood events, one would need to review the actual velocity maps included in the assessment's annexes or supplementary materials, which typically include graphical representations of flow directions.

I hereby request information relating to the flood velocity mapping and flood risk management for the West Yamba Urban Release Area (WYURA), specifically focusing on the integration and comprehensive representation of flood velocities across identified flooding scenarios and directions. This request underscores the importance of adhering to the principles of flood risk management which emphasise understanding flood behaviour and constraints, making flood information available, and effectively managing flood risk. These principles are crucial for detailed flood velocity mapping across various scenarios, facilitating informed decision-making and enhancing flood risk management strategies.

However, it appears that comprehensive flood velocity maps, essential for a full understanding of flood dynamics within the area, may not have been fully addressed or included in the Flood Impact and Risk Assessment (FIRA). Additionally, considering the discrepancy between the Yamba River gauge and other gauges, like Lake Wooloweyah and Oyster Channel, this raises significant concerns about the integration and reliability of data in flood risk assessments and models. Understanding the specific data, methodologies, and assumptions used in developing these models is critical. Accurate flood modelling is essential for planning, risk management, and community safety, especially given the complex dynamics of the catchment area.

This request aims to gain insights into the flood risk management and modelling specifically related to WYURA, to ensure that flood models accurately reflect the dynamics of the catchment area, thereby enhancing the effectiveness of flood risk management strategies and ensuring community safety and preparedness.

104) Hydraulic Modelling Methodologies:
Detailed descriptions of the modelling methodologies, assumptions, and hydrological data sources used in the Lower Clarence Flood Model and associated FIRAs, specifically for simulations of the Clarence River and storm surge events.

105) River and Lake Heights Data:
Data on river and lake heights for 5% and 1% AEP events as reported, including any post-2022 flooding revisions or updates.

106) Flow Velocity and Direction:
Comprehensive information on the assessment of floodwater velocities, including direction for all AEP events and scenarios covered by the Lower Clarence Flood Model and associated FIRAs, with a focus on missing details for Project A12497.

107) Comparative Analysis and Impact Assessments:
Documentation comparing peak flood levels and flow velocities between baseline and developed cases across all projects.
Impact assessments related to emergency management and safe community planning principles, emphasising considerations of all flood sources for safe evacuation and access.

108) Technical Documentation and Methodological Discussions:
Technical reports, model outputs, and any discussions outlining methodologies applied in assessing floodwater velocities.
Any methodological changes or updates made in response to new data, community feedback, or observed flood behaviour discrepancies.

109) Communications and Decision-making Processes:
All correspondences that discuss flood velocity assessments, challenges, and adjustments within the Lower Clarence Flood Model and FIRAs context.
Documents detailing how velocity data informed flood risk management decisions, infrastructure planning, and safety measures.

110) Flood Velocity Mapping and Analysis:
Documentation detailing flood velocity mapping undertaken for WYURA, including rationale behind the selection or omission of specific maps and efforts to improve flood risk management through these analyses.

111) Gauge Data Clarification and Discrepancies:
Detailed information on the gauge data used for model calibration for each specified map, explaining discrepancies or modelling assumptions, particularly concerning flood directions and interactions between riverine and oceanic conditions.

The impact of gauge data selection on flood risk assessments, especially under different AEP scenarios.

112) Comprehensive Flood Model Data and FIRA Methodology:
Complete methodologies, data sources, and assumptions underpinning the flood model, including evidence or analyses justifying the exclusion or inclusion of flooding from specific directions.
The full FIRA report for WYURA, detailing the integration of flood model findings into impact assessments and records of any model or FIRA adjustments based on new data or feedback.

This consolidated list aims to provide a comprehensive overview of the requested information, focusing on understanding the flood modelling and impact assessment processes, with an emphasis on flood velocities, methodological approaches, and decision-making rationales within the Lower Clarence flood risk management context.

Riverine Catchment Peak Velocity

a) Lake Wooloweyah recorded a historical peak of 1.732m AHD on March 2, 2022, at 10:30 EST[81]
The images captured on March 2, 2022, at 14:50 EST at the corner of Deering and Golding Streets, as referenced in Image 70, stand as the unique visual records permitting the assessment of surge floodwater height, the Australian Height Datum (AHD) during the record peak of riverine catchment flooding, and potential velocity, supported by metadata for verification.

[81] LakeWooloweyah.Level1.csv (cell A444680)

Image 70. Northerly view Golding st

Image 71. Water flowing towards the north

Video:
https://yambafloods.au/march2022flood/GoldingDeering1457pm020322.mp4

b) Image information

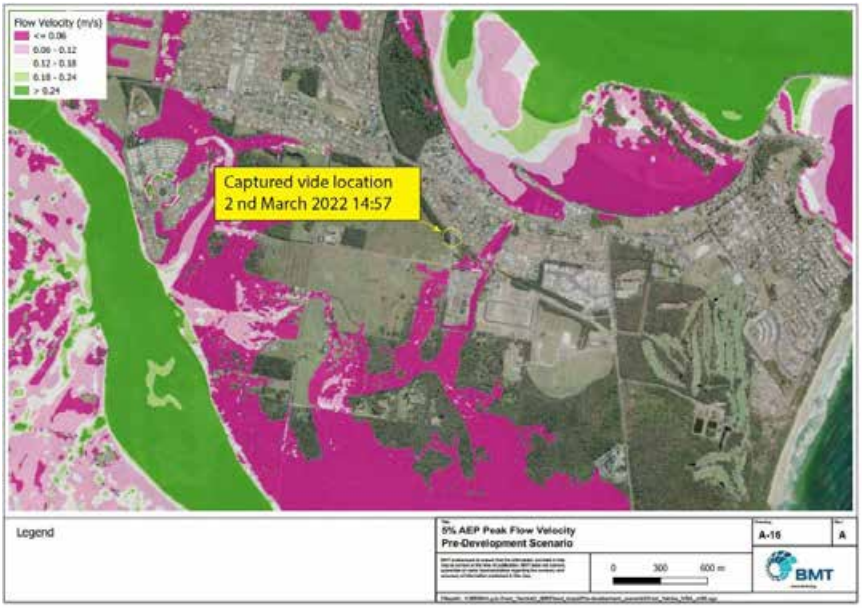


Image 72 Image Capture Location

Image 73 metadata for images

I am seeking detailed information pertaining to the significant flood event on March 2, 2022. This request specifically concerns the historic peak of 1.732m AHD recorded at Lake Wooloweyah at 11:30 EST and the corresponding visual documentation captured at 14:50 EST at the corner of Deering and Golding Streets, as shown in Image 73. These records are crucial for assessing the flood's impact, including surge floodwater height, the Australian Height Datum (AHD) during this record peak, and potential velocity, all of which are supported by metadata for verification.

Information Sought:

113) **Estimated Modelled Height and Velocity:** Detailed information on the estimated modelled height and velocity of the floodwaters during the record peak, including any documentation or reports that contain these estimates. This data is essential for understanding the full impact of the flood surge and its significance in relation to riverine catchment flooding.

114) **Council's Follow-Up Actions:** Documentation or communications detailing any follow-up actions or investigations undertaken by the council in response to this record flooding event. Specifically, I seek to understand why this significant event, crucial for validating modelled heights and velocities, has not been pursued further by the council for analytical or mitigation planning purposes.

Rationale for Request: The March 2, 2022, flood event represents a critical data point for flood risk management within the Clarence Valley area. The record height recorded at Lake Wooloweyah and the unique visual documentation captured on the same day are invaluable for validating flood risk models and for planning future flood mitigation efforts. Understanding the estimated modelled height and velocity of this event is not only vital for accurate risk assessment but also for enhancing the community's resilience to future flooding events. Furthermore, insights into the council's response to this event will help gauge the current effectiveness of flood risk management strategies and identify potential areas for improvement.

Backwater Storm Surge Barrier

a) The increase in river height increases the pressure to push water into the lake.

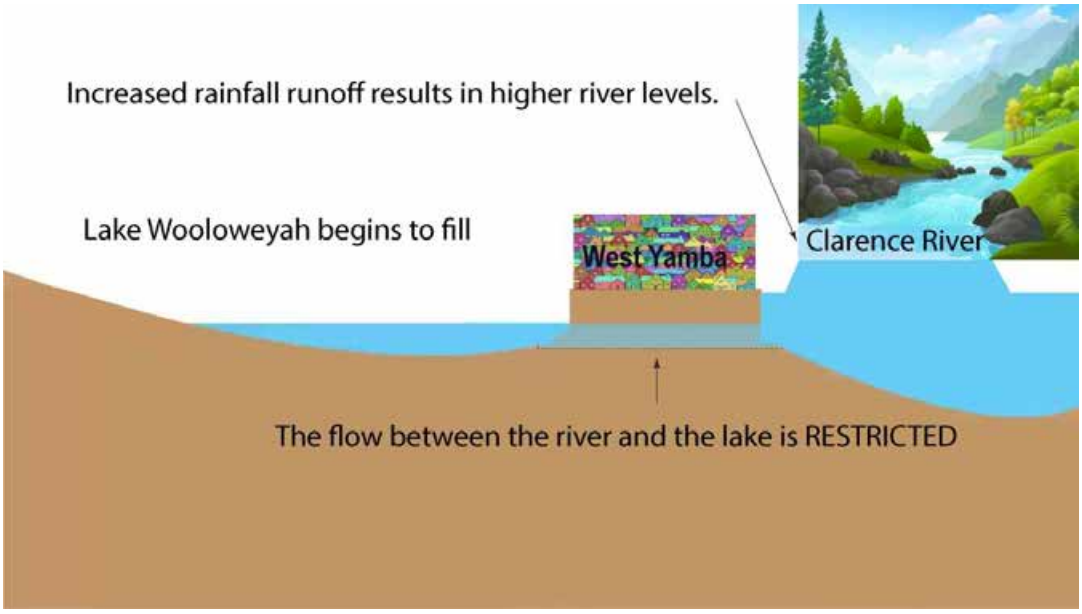


Image 74

b) The tide and storm surge merge, forming a heightened Backwater Storm Surge Barrier.
A backwater storm surge barrier forms when the rising tide and incoming storm surge converge at the mouth of a river or estuary.
This convergence creates an elevated mass of water that can no longer flow freely into the sea due to the increased sea level from the storm surge and the high tide.

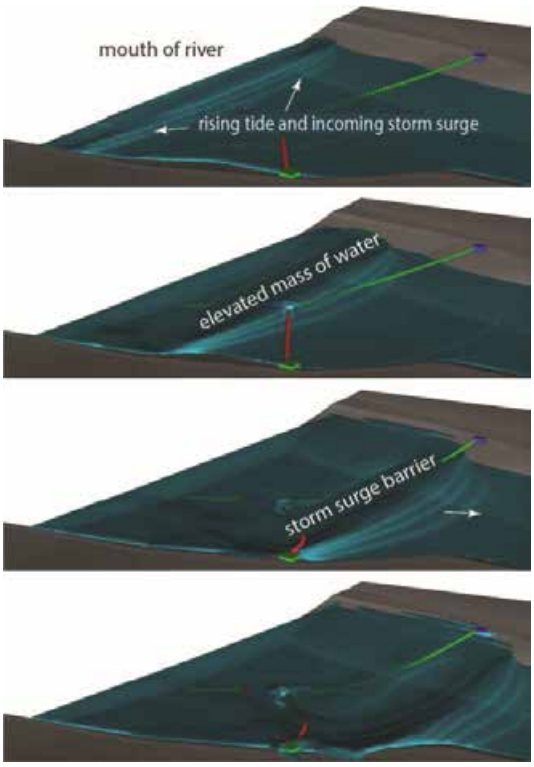


Image 75

c) As a result, this mass of water begins to move upstream, against the natural flow of the river.

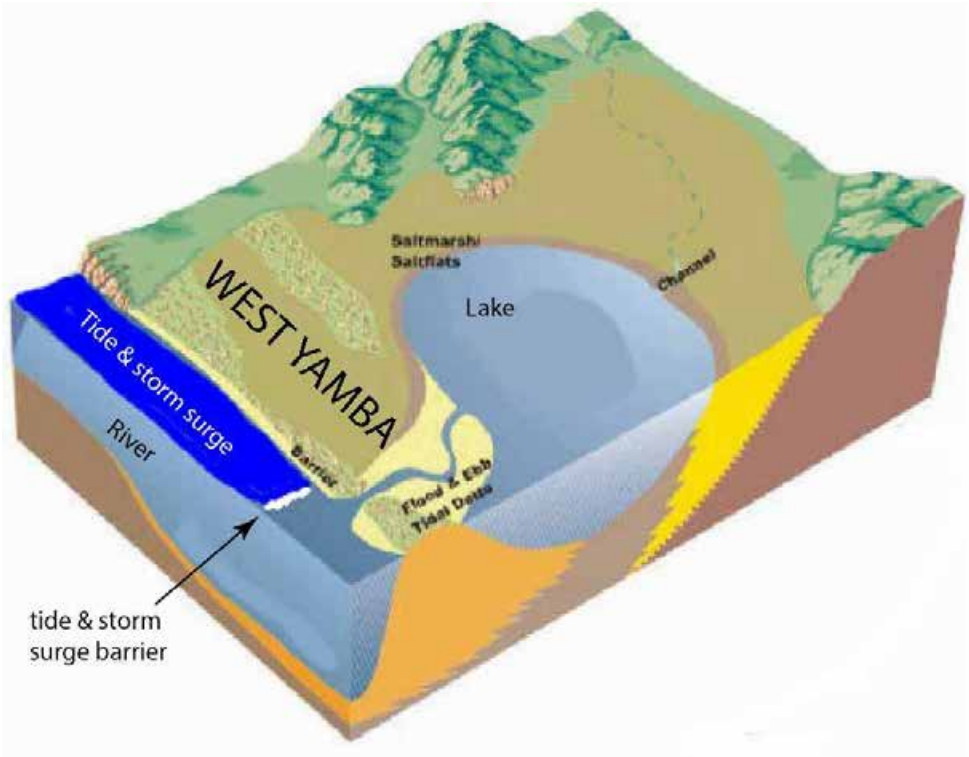


Image 76

d) Lake Woolweyah flood level gets 'pumped' by the pressure from the convergence riverine flooding and the storm surge barrier

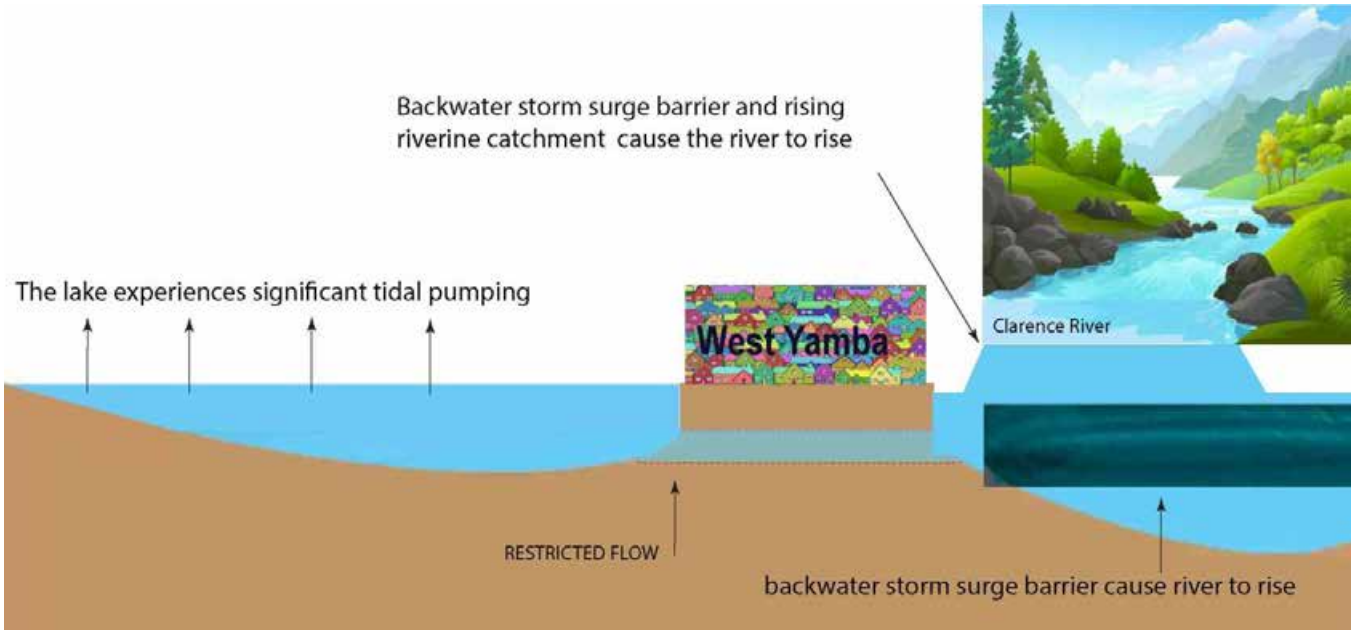


Image 77

e) Causing prolonged elevate flood waters

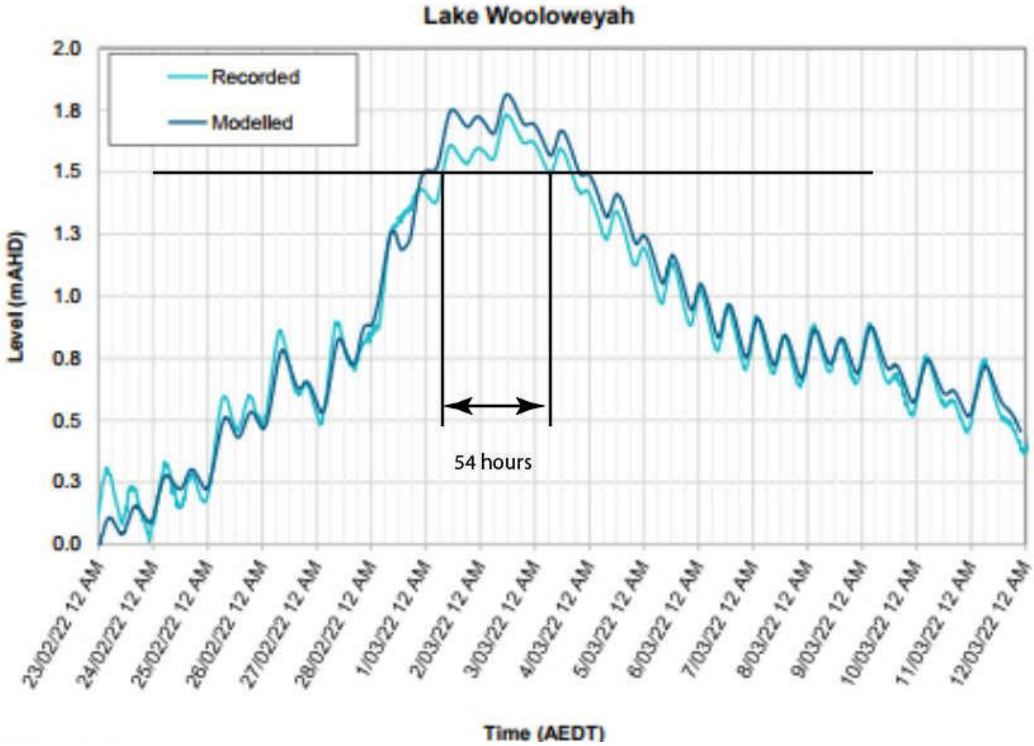


Image 78

f) Height discrepancies

Table 6.4 Peak Design Flood Levels at Gauges (mAHD)

Gauge	20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.2% AEP	Extreme	1% AEP (CC1)	1% AEP (CC2)
Grafton (Prince St)	6.27	8.11	8.38	8.44	8.87	9.39	13.58	8.78	9.05
Ulmarra	5.08	6.15	6.38	6.42	6.77	7.53	12.71	6.73	7.11
Brushgrove	4.24	5.14	5.40	5.66	6.35	7.21	12.50	6.31	6.78
Tyndale	3.91	4.61	5.25	5.50	6.14	6.99	12.34	6.11	6.59
Lawrence	3.51	4.65	4.89	5.14	5.81	6.69	12.10	5.79	6.29
Maclean	2.41	3.18	3.41	3.55	3.98	4.59	8.56	4.07	4.46
Palmers Island Bridge	1.96	2.59	2.86	2.99	3.37	3.93	7.77	3.56	3.95
Oyster Channel	1.08	1.41	1.94	2.07	2.55	3.21	7.17	2.99	3.45
Lake Wooloweyah	0.88	1.32	1.92	2.08	2.58	3.25	7.20	3.01	3.47
Yamba	1.17	1.34	1.79	1.85	2.06	2.47	6.07	2.65	3.05

gauge	1% AEP	0.2% AEP	1% AEP (CC1)	1% AEP (CC2)
Yamba	1.85	2.47	2.65	3.05
Lake Wooloweyah	2.08	3.25	3.01	3.47

Image 79. Extract Table 6.4 Peak Design Flood Levels at Gauges (mAHD)

Summary:

For Lake Wooloweyah Peak Design Flood Levels, when the flood waters increase at the Yamba ocean boundary from 2.47 to 2.65, the Lake Wooloweyah flood water decreases by 0.18m

When comparing the 1% AEP (CC1) to a 0.2% AEP event the flood water decreases in Lake Wooloweyah by 0.18m, however it increases

Request for Detailed Information on Flood Modelling and Components Influencing Lake Wooloweyah's Flood Levels

I request access to information regarding the flood modelling and specific factors influencing flood levels in Lake Wooloweyah, particularly in relation to 1% AEP, 0.2% AEP, and 1% AEP under Climate Change Scenario 1 (CC1). Information Sought:

115) Detailed Analysis for Peak Design Flood Levels: For Lake Wooloweyah, I seek information on how an increase at the Yamba ocean boundary from 2.47 to 2.65 mAHD leads to a decrease in Lake Wooloweyah flood water by 0.18m, especially under conditions comparing 1% AEP (CC1) to a 0.2% AEP event.

116) Backwater Storm Surge Barrier Formation and Impact: An explanation of how the increased river height and the convergence of tide and storm surge create an elevated backwater storm surge barrier. Specifically, how this barrier forms, moves upstream, and its effect on "pumping" Lake Wooloweyah's flood level, resulting in prolonged elevated floodwaters.

117) Component Analysis for Various AEP Events: For each of the events (1% AEP, 0.2% AEP, and 1% AEP CC1) in Lake Wooloweyah, I request the component breakdown (in meters) of the storm tide, riverine catchment contribution, sea level rise, backwater storm surge barrier, and the additional 12% rainfall.

118) Impact of CC1 Height Increase on Backwater Storm Surge Barrier: Information on how the height increase for the CC1 scenario has been factored into the calculation of the Backwater Storm Surge Barrier and its relationship with Lake Wooloweyah's peak design levels.

119) Frequency Impact Due to Sea Level Rise and Backwater Storm Surge Barrier: Insights into how the increase in sea level rise and the formation of the Backwater Storm Surge Barrier have affected the frequency of flooding events, specifically regarding the backwater effect on Lake Wooloweyah.

120) Hydraulic Connectivity and Network Analysis:Information on the hydraulic connectivity and network analysis between Lake Wooloweyah, the Yamba ocean boundary, and the surrounding catchment. Specifically, how the interconnectivity influences flood level dynamics during storm surge events.

Rationale for Request:
Understanding the dynamics between various flood contributors under different scenarios is crucial for comprehensive flood risk management and for ensuring the resilience of communities around Lake Wooloweyah. This information will aid in assessing the adequacy of current models and in planning future flood mitigation strategies.

WYURA FIRA Impact Results

Flood impact maps show "the changes in flood extent, level, flow velocity, flood hazard category and duration of inundation between the pre- and post-development scenario for all the analysed design flood events."

Impact Results summary:

- No adverse flood impacts on residential properties were identified in any of the analysed flood events.
- No increase in flood extent were observed in any of the analysed flood events
- No changes in 10% AEP flood level were observed in any adjacent properties.
- No changes in 5% AEP flood level were observed in any adjacent properties.
- No changes in flood level affected any residential properties in the 1% and 0.5% AEP events
- No changes in flow velocity were observed in the 10% and 5% AEP events.
- No changes in flood hazard category were observed in the 10% and 5% AEP events.
- A reduction in flood hazard category from H3 to H2 was observed in some sections of Miles Street in the 0.5% and 0.2% AEP events.
- A reduction in flood hazard category from H4 to H3 was observed in a section of Miles Street in the 1% AEP CC1 event.
- No changes in frequency of inundation were observed throughout the study area.

I am requesting detailed information regarding the flood modelling and Flood Impact and Risk Assessment (FIRA) conducted for the West Yamba Urban Release Area (WYURA). The existing flood model and subsequent FIRA may not fully account for flooding from both northern and southern directions, potentially overlooking crucial aspects of flood risk for the area.
Information Requested:

121) Comprehensive Flood Model Data:
   a) Detailed methodologies, data sources, and assumptions underpinning the flood model used for WYURA, specifically regarding its consideration (or omission) of floodwater coming from the north and the south. FIRA Methodology and Impact Results:
   b) The complete FIRA report for WYURA, highlighting how the flood model's findings were integrated into the impact assessment, especially concerning the summary of impact results provided.

122) Assessment of Flood Directions:
Evidence or analyses within the flood modelling process that justify the exclusion or inclusion of flooding from specific directions for each analysed design flood event.

123) Adjustments Based on Flood Model Findings:
Records of any adjustments or updates made to the flood model or FIRA in response to new data, community feedback, or observed discrepancies in flood behaviour, specifically related to directional flooding
.

Uncertainty of West Yamba's design flood levels

The design flood levels in West Yamba carry notable uncertainty due to dependencies on the historically deficient Yamba river gauge data and statistical analyses of historical records. This uncertainty is compounded by the critical need for extensive calibration of hydrologic and hydraulic models.

- Ocean boundary: Conditions were defined using recorded tide data at Yamba supplied by Manly Hydraulics Laboratory.- LCFM
- All design floods levels are based on statistical analyses of historical records.
- The LCF Model relies upon the historical record from the Yamba river gauge.
- The Yamba river gauge does not capture riverine peaks, hence historical catchment peak data is deficient.
- The accuracy of the hydrologic and hydraulic computer models is dependent on the amount and range of reliable rainfall and flood level recordings for model calibration. An uncalibrated model's results have a greater error margin than a calibrated model.[82]

I am requesting access to information and documents related to the modelling of design flood levels in West Yamba. This request specifically concerns the uncertainties arising from reliance on historical data from the Yamba river gauge, the statistical analyses of historical records, and the calibration of hydrologic and hydraulic models, alongside the implications of using recorded tide data for defining ocean boundary conditions.

The accuracy of flood risk management is pivotal for community safety and urban planning in West Yamba. Therefore, detailed understanding is sought on several fronts, including:

124) Documentation on the LCF Model's use of historical records from the Yamba river gauge, especially concerning the inadequacies in capturing riverine peaks for accurate storm surge modelling.

125) Information regarding the methodologies and data sets employed in the statistical analysis of historical records to establish design flood levels.

126) Procedures and methodologies related to the calibration of hydrologic and hydraulic computer models, highlighting the selection and application of reliable rainfall and flood level recordings.

127) Documentation detailing the definition of ocean boundary conditions using tide data supplied by Manly Hydraulics Laboratory, and its impact on flood risk modelling outcomes.

This information is essential for assessing the limitations and reliability of the flood risk modelling for West

[82] Lower Clarence Flood Model Update 2013 pg77

Yamba, which underpins current flood risk management strategies and future planning efforts.

Assessment of Gauge Data Reliance in Flood Risk Modelling for Yamba and Lake Wooloweyah

I am requesting information pertaining to the flood risk assessments and modelling conducted for the region encompassing Yamba and Lake Wooloweyah. Specifically, my request focuses on the reliance upon data from the Yamba river gauge in contrast to the exclusion of data from the Lake Wooloweyah gauge in evaluating flood risks and predicting flood water levels.

In the 2022 flood event, notable discrepancies were observed between the peak levels recorded at the Yamba river gauge (1.6 mAHD) and those at the Lake Wooloweyah gauge (1.73 mAHD), which recorded a higher peak 28 hours later. This raises concerns regarding the adequacy and accuracy of relying predominantly on the Yamba river gauge data for flood risk assessments, especially considering the gauge's apparent limitations in capturing critical riverine catchment peaks and the direct impact on flood water levels in West Yamba.

Accordingly, I seek access to the following information:

128) Rationale and Methodological Justification: Detailed explanation on the decision-making process that led to the reliance on Yamba river gauge data over the Lake Wooloweyah gauge data in flood risk assessments and modelling.

129) Analysis of Gauge Data Accuracy: Any assessments or reports evaluating the accuracy and representativeness of the Yamba river gauge data, including its limitations in capturing riverine catchment peaks.

130) Impact on Flood Risk Assessments: Information on how the choice of gauge data impacts flood risk assessments, particularly regarding the adequacy of flood protection measures and planning in areas prone to flooding from different sources.

Validation and Calibration of the flood model

The calibration and validation of the models are essential procedures in flood modelling to make sure that the models appropriately reflect the behaviour of floods. While validation entails contrasting model outputs with independent observations to judge the models' correctness, calibration entails changing model parameters to fit the observed data. However, because to the scarcity of observed data, the difficulty in gathering precise flood data, and the complexity of the physical processes involved in floods, calibrating and validating flood models may be difficult. It is essential to calibrate and test the models using a range of observational data, such as historical flood data, satellite data, and in-situ observations, in order to solve these concerns. Additionally, it is crucial to combine data from many sources and use statistical techniques such as sensitivity analysis to determine the degree of uncertainty in the models"[83]

[83] Comprehensive Overview of Flood Modelling Approaches: A Review of Recent Advances - https://www.scribd.com/document/709285533/VVI-CASESTUDY-hydrology-10-00141-v2

I am seeking comprehensive information regarding the calibration and validation of the flood model developed in response to the March 2022 flooding event. My inquiry is grounded in the necessity to ensure the accuracy, comprehensiveness, and reliability of flood risk assessments by incorporating a multifaceted approach that extends beyond traditional methods. This request is directly informed by the methodologies and validation techniques advocated in the "Flood Risk Management Guide",
which includes but is not limited to:

131) Historical Flood Events: Data and analyses on how the model's predictions align with observed flood levels, inundation areas, and flow paths from past events, utilising high-water marks, photographs, and eyewitness accounts.

132) Physical Structure Checks - Built Environment: Specifics on the representation of physical structures within the model, such as bridges, culverts, and buildings, and any verification conducted to confirm their accuracy.

133) Natural Features Representation: Insights into how natural landscape features are accounted for within the model, including riverbed profiles and vegetation, alongside any field studies undertaken to validate these aspects.

Furthermore, the "Flood Risk Management Guide" underscores the significance of employing various validation strategies to evaluate modelled flood heights against physical realities. Please provide details of:

134) Use of Permanent Survey Marks: For elevation referencing and comparison with modelled outcomes.

135) Assessment against Flood Damage Reports and Historical Data: To examine the model's depiction of flood extents and impacts through documented effects on infrastructure.

136) Verification with High-Water Marks: Employing empirical evidence of past flood levels as a critical model accuracy check.

137) Observations of the Built Environment's Response: To flooding, providing real-world validation for model predictions.

Given the critical role of accurate flood modelling in flood risk management, community safety, and the formulation of mitigation strategies, it is essential to understand the specific data, methodologies, and assumptions underpinning the development and refinement of flood models. This request aligns with the principles of flood risk management and community participation, emphasising the importance of a transparent, informed, and community-participatory approach to managing flood risks effectively.

Post flood data collection

CVC Manager Technical Services advised "*Substantial post flood data collection coordinated by Public Works Advisory was used in the Flood Study update*."[84]

I am seeking information concerning the lack of comprehensive post-flood data collection subsequent to the recent significant flooding event. This request is predicated on the obligations and recommendations stipulated within the Environmental Planning and Assessment Act 1979, principles of flood risk management, and the Community Participation Plan which underscore the critical nature of such activities for the enhancement of flood models and flood risk management strategies.

Information Requested:

138) Details of the "Substantial post flood data collection coordinated by Public Works Advisory was used in the Flood Study update," indentifying its source, location and application within the study.

139) Post-Flood Data Collection Strategy:
Documentation of any strategies or protocols for collecting post-flood data as advocated by the principles for flood risk managementand the Environmental Planning and Assessment Act 1979, particularly in relation to understanding and managing flood behaviours and constraints.

140) Explanation for Data Collection Omission: Official records or communications detailing the rationale behind the absence of post-flood data collection efforts, referencing the legislative and regulatory frameworks governing such activities, including any relevant sections of the Environmental Planning and Assessment Act 1979.

141) Impact Evaluations: Any evaluations, impact assessments, or reports addressing the implications of not undertaking post-flood data collection on the reliability of flood models and the efficacy of flood risk management plans, aligning with the continuous improvement directive of flood risk management principles.

142) Community Engagement Efforts: Records pertaining to efforts made towards community engagement for post-flood data collection, or documents explaining the lack thereof, in line with the Community Participation Plan requirements.

143) Forward-Looking Data Collection Initiatives: Details on planned or proposed initiatives to collect post-flood data and update flood risk management frameworks, consistent with the principles of ongoing enhancement in flood risk management.

This request is made in the spirit of fostering public understanding and involvement in flood risk management, promoting transparency, and ensuring compliance with established legislative mandates and best practices in environmental planning and community engagement.

[84] Flood Study concerns response - Craigh McNeill 230623.pdf

Request for Information on Flood Modelling and Infrastructure Assessments in Flood Risk Management

I am seeking access to documents and information related to the council's flood modelling and the assessment of flood heights against infrastructure, beyond just river gauge data, in the context of flood risk management and planning. This request is driven by the need to ensure comprehensive and accurate flood risk assessments, in line with council obligations under various legislative frameworks and guidelines.

The information sought includes, but is not limited to:

144) Documentation and data supporting the council's methodologies and practices in modelling flood heights and assessing these against a range of infrastructures such as buildings, roads, bridges, and levees, to ensure a broad and accurate understanding of flood behaviour and impacts.

145) Records of how the council has integrated various data sources in flood risk management efforts, including the assessment of modelled flood heights against physical infrastructures, as part of a comprehensive approach to flood risk management.

146) Information on the council's adherence to and implementation of the obligations and guidelines outlined in the Principles for Flood Risk Management, State Environmental Planning Policy Amendment (Flood Planning) 2021, and any relevant provisions under the Local Government Amendment Act 2021, which support the integration of diverse data sources in flood risk assessments and planning.

147) Any related correspondence, reports, or studies that detail the council's efforts and strategies in incorporating infrastructure assessments into flood risk management and planning, ensuring the accuracy and effectiveness of flood risk mitigation plans.

This request aims to gather information on the council's approaches and obligations in conducting flood risk assessments that accurately reflect real-world scenarios and potential impacts on the community and infrastructure. Such information is crucial for evaluating the comprehensiveness and reliability of flood risk management strategies currently in place

Inquiry on Area Inclusion and Exclusion within the Lower Clarence Flood Model Update 2023

I clarification and documentation of the detailed rationale and criteria behind the inclusion and exclusion of certain areas within the flood model, which is pivotal for community planning and flood risk management.

Specific Information Sought:

148) Documentation on Area Selection Criteria:
Please provide any documents or internal communications that detail the criteria or decision-making processes used to include specific areas within the Lower Clarence Flood Model. This request particularly focuses on the criteria applied to natural and developed landscapes, This includes, but not limited to, any maps, diagrams, or textual descriptions that explicitly delineate the geographical extent covered by the flood model update.

149) Exclusion Justifications:
I request detailed explanations or documentation justifying the exclusion of areas from the flood model study. This should include information on geographical, technical, policy, or other considerations that influenced these decisions.

150) Impact Assessments of Excluded Areas: If available, please share any impact assessments or studies conducted on areas excluded from the model, particularly focusing on how their exclusion affects overall flood risk management and planning within the Lower Clarence region.

151) Ground and Land Surveys Relevant to Area Delineation: Copies of all surveys that were instrumental in delineating the included and excluded areas within the flood model. This includes LiDAR, ground surveys, and any specific surveys conducted within the West Yamba Urban Release Area.

152) Rationale for the Request: Understanding the scope and boundaries of the flood model update is crucial for effective community engagement, development planning, and risk mitigation strategies. Detailed knowledge of how and why certain areas were included or excluded will enhance transparency and aid in future flood preparedness initiatives.

Request for Specific Flood Risk Management Documents and Communications

I am seeking access to specific documents and communications that are crucial for understanding and evaluating flood risk management strategies and decisions within the Clarence Valley Council area, particularly related to the West Yamba Urban Release Area (WYURA).

Information Sought:

153) Risk Frontiers (2021) Physical Climate Risk Assessment - Coastal Flood and Sea Level Rise, Supplementary Report S6:
This document is vital for understanding the baseline and projected impacts of climate change on coastal flood risks and sea level rise, informing community preparedness and response strategies.

154) Copy of the Study Brief for the Lower Clarence Flood Model Update 2022:

The brief outlines the scope, objectives, and methodology of the flood model update, providing insights into the Council's approach to flood risk assessment and management.

155) I request the Terms and Conditions for the "Risk Frontiers Coastal Flood and Sea Level Rise report" by Risk Frontiers. This inquiry seeks to uncover how constraints and stipulations may affect the flood model's public safety and land use planning applications. Given the model's identified inaccuracies and the potential for significant public impact, there is an overriding public interest in disclosing these terms to ensure informed community engagement and effective flood risk management.

156) Copy of the Contract Detailing Ownership of the Study Information:

Understanding the terms, especially regarding the ownership and dissemination of study information, is critical for assessing the transparency and accessibility of flood risk management data to the public.

157) Flood Frequency Analysis (FFA) Data: The FFA underpinning the main Clarence River inflow predictions has been updated. Detailed FFA results, methodologies, rating curves, and the analysis output files from TUFLOW-FLIKE software could shed light on the statistical basis for flood predictions and design flood levels.

158) Design Event Simulation Data: Information on the simulated design flood events, including model inflow datasets, storm tide boundary conditions, and assumptions made for each AEP level and climate change scenarios, would be critical for understanding the range of flood risks considered in the study.

159) WBNM Model Files and Data: The report indicates the use of a separate WBNM hydrologic model for lower floodplain inflows. Access to the WBNM model files, inputs, and results would allow for a detailed review of hydrologic assumptions across the floodplain.

Reasoning for Request: The provision of these documents is necessary to address concerns raised in previous submissions regarding irregularities in flood risk management and the application of the Lower Clarence Flood Model. Access to this information will enhance community understanding, enable informed discussions on flood preparedness, and support collaborative efforts towards sustainable flood risk management. It aligns with the principles of transparency, accountability, and community engagement as emphasised in the Local Government Act 1993 and the Flood Risk Management Manual 2023.

This request specifically targets critical documents and communications to enhance understanding and transparency around flood risk management in the context of the WYURA, addressing the concerns outlined in your original GIPA request document.

160) All Communications between BMT Commercial Australia Pty Ltd and Clarence Valley Council regarding the Lower Clarence Flood Model Update 2022 following the 'Flood Surge 2nd March 2022'submission to the Council on 18/04/2023:

These communications are essential for understanding the dialogue and decision-making process following significant flood events, ensuring that such events are accurately reflected in flood modelling and risk management plans.

Reasoning for the request of "All Communications between BMT Commercial Australia Pty Ltd and Clarence Valley Council regarding the Lower Clarence Flood Model Update 2022 following the 'Flood Surge 2nd March 2022' submission to the Council on 18/04/2023," with references to specific legislation and principles:

Establish Sustainable Governance Arrangements: The request is aligned with the principle of establishing sustainable governance arrangements for flood risk management (FRM) as outlined in the "Principles for Flood Risk Management" document. This principle is crucial for ensuring effective oversight and management of flood risks within the Clarence Valley LGA, supporting the consideration of flood risk in decisions within and beyond government, as mandated by the Environmental Planning and Assessment Act 1979 (the Act).

Think and Plan Strategically: Access to communications is essential for evaluating the strategic approach to flood risk management, especially in response to significant flood events. This supports the strategic management principle under the FRM framework, facilitating informed planning and prioritisation efforts to enhance flood risk management across the LGA, which is a core objective of the Act and further emphasised in the Clarence Valley Council Local Strategic Planning Statement 2020.

Be Consultative and Make Information Available: Reflecting the principles of being consultative and making flood information available, this request underpins the importance of community engagement and access to information, as stipulated by the Community Participation Plan and the principles supporting it. The Act encourages ongoing partnerships with the community to provide meaningful opportunities for participation in planning, aligning with this request's aim to ensure transparency and foster an informed and engaged community.

Understand Flood Behaviour and Constraints: Gaining insights from communications between BMT and the Council is directly linked to understanding flood behaviour and constraints, a principle vital for effective FRM. This aligns with the Act's mandate for informed decision-making based on the best available information, ensuring that flood risk management strategies are underpinned by comprehensive and current data.

Community Participation and Engagement: Advocating for community participation and engagement, this request emphasises the community's legal right to be informed about planning matters affecting them, as enshrined in the Act and detailed in the Community Participation Plan. Providing access to these communications is a testament to the Council's commitment to an open, transparent, and participatory planning process.

Legal and Policy Frameworks Compliance: Requesting these communications underscores the necessity for compliance with the legal and policy frameworks governing environmental planning and assessment in NSW, including the Act, State Environmental Planning Policies (SEPPs), and Local Environmental Plans (LEPs). It highlights the imperative for transparency and community involvement in environmental planning and assessment processes, ensuring decisions are made in an open and accountable manner.

By referencing the Environmental Planning and Assessment Act 1979, the Community Participation Plan, and the principles for flood risk management, this request not only aligns with legal obligations but also embodies the council's commitment to effective, transparent, and consultative flood risk management.

Request for Study area boundaries of the Lower Clarence Flood Model Update.

I request information specifically to the recent flood model update for the Lower Clarence Valley, as detailed in the "Lower Clarence Flood Model Update 2023 Final Report."

161) I seek access to specific documents or records that define the study area boundaries of the Lower Clarence Flood Model Update. This includes any maps, diagrams, or textual descriptions that explicitly delineate the geographical extent covered by the flood model update.

162) Additionally, I request any related documents that describe the rationale or methodology used in determining these boundaries, including considerations of geographical features, historical flood data, or other relevant factors.

Purpose:
The purpose of this request is to gain a clear understanding of the extent of the study area involved in the flood model update. This information is crucial for my research on flood risk management and mitigation strategies within the Lower Clarence Valley.

Request for Information on JBP Review of the Lower Clarence Flood Model Update 2022

Jeremy Benn Pacific (JBP) have completed a high level review and validation of the Lower Clarence Flood Model Update 2022 (2022 Flood Model), and following concurrence from the Department of Planning & Environment (DPE), Council is advised, that the review did not significantly alter the model. Accordingly, the 2022 Flood Model has been adopted and placed on Council's website in accordance with Point 2 of Council resolution 06.23.009 at the 27 June 2023 meeting.

I request information regarding the Jeremy Benn Pacific (JBP) review and validation of the Lower Clarence Flood Model Update 2022. This review is of significant public interest, as it pertains to the assessment of flood risk management in the Lower Clarence Valley—a matter of crucial importance to community safety, land use planning, and environmental conservation.
Given the critical role of accurate flood modelling in informing flood risk management strategies and community preparedness initiatives, the outcomes of this review are essential for public transparency, informed decision-making, and fostering a culture of community engagement and resilience.

To this end, I kindly request the following information:

163) A copy of the review: Given the importance of this review in informing the public concerning flood planning, access to the full document will enable a thorough understanding of its findings, recommendations, and potential impacts on West Yamba.

164) Review Findings: A comprehensive summary of the JBP review findings, including key observations, recommendations, and identified areas for improvement in the 2022 Flood Model.

165) Validation Process: Details on the methodologies and criteria used by JBP in the validation of the Lower Clarence Flood Model Update 2022, including any benchmarks or standards applied.

166) Public Implications: Information on the implications of the review findings for public safety, land use planning, and flood risk management practices in the Lower Clarence Valley.

167) Details of the Concurrence: details from the Department of Planning & Environment that the high level peer review and validation of the Lower Clarence Flood Model 2022 Update did not significantly alter the model. As per the ORDINARY COUNCIL MEETING MINUTES ITEM 07.23.159 26 SEPTEMBER 2023

This request is made in the spirit of ensuring that critical information on flood risk management is not only accessible to relevant stakeholders but also communicated in a manner that enables active community participation, enhances public understanding, and supports the collective resilience of the Lower Clarence Valley community.

Identification, analysis and evaluation of risks

It will be necessary for a number of residents in Yamba to evacuate their homes in a major flood or ocean event. Whilst not all will have their house floors inundated, it is likely that their power, gas, water and sewerage systems will be affected.[85]

a) 'Evacuation to high ground in Yamba is the preferred strategy'

b) A key issue with Yamba is the lack of emergency access and thus difficulties with evacuation to high ground within Yamba. Yamba Road is the sole access into the township and it becomes inundated in approximately the 10y ARI or greater events.[86]

c) The Local Flood Emergency Sub Plan identifies;

General Strategy

- Evacuation of at risk population
- Establishment of an Assembly Area/Evacuation Centre at the Yamba Bowling Club Wooli Street Yamba.

Key Risks / Consequences;

- Potential loss of life from rapid and potentially high velocity flooding inundation.
- Potential isolation of thousands of people estimated to be for a number of days.

Method of Evacuation;

- At risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.

Evacuation Centre/Assembly Point;

- Yamba Bowling Club, Wooli Street, Yamba

Large scale evacuations;

- In the event that large scale evacuations are required residents will be transported to where an Assembly Area/evacuation centre will be established.

Resupply;

- The Coles supermarket will be resupplied if required; this will ensure that Yamba residents are continually provided with essential food items.

d) Considering the 1% AEP 2100 Climate Change Scenario 1, as defined in Council's flood model, illustrates flood levels above 2.9m AHD are to be expected, the majority of homes, businesses and shops will need to evacuate to safety.

e) Identifying the flood affected area
To address the impacts of Climate Change on the environment and communities, The NSW government require assessment be mad on the 1% Annual Exceedance Probability (AEP) considering Climate Change Scenario 1 (CC1).

[85] 2008 yamba-floodplain-risk-management-study.pdf pg 21
[86] YambaFRMStudyAdoptedOct2008.pdf

Opting for "CC1 1% AEP" over just "1% AEP" reflects a commitment to integrating the latest scientific understanding of climate change into practical applications. This approach not only enhances resilience and safety in the face of increasing flood risks but also aligns with broader sustainability and environmental protection goals. It represents a paradigm shift in how flood risks are calculated, interpreted, and managed, ensuring that communities are preparing for the climate realities of the future rather than solely responding to the climate patterns of the past.

f) Identifying the flood affected population based on the current Local Flood Emergency Sub Plan

- EXCLUDES Climate Change
- lists Yamba population as 7428 and 4484 dwellings
- includes Wooloweyah, Angourie and Islands west of Yamba
- assesses flooding on the 1% AEP flood[87] this does not account for Climate Change
- 37.6% of people are over 65 years of age
- uncertainty exists about the effects of a combination of a severe flood and storm surge conditions in the Crystal Waters area

g) Integrating climate change projections into flood evacuation planning

Incorporating climate change projections into flood evacuation planning is critical for addressing the evolving flood risk landscape effectively. This necessity is grounded in the foundational principles outlined in key strategic documents, including the "NSW Government's Floodplain Risk Management Guideline" and the "State Environmental Planning Policy Amendment (Flood Planning) 2021", as well as local strategic planning statements like the "Clarence Valley Council Local Strategic Planning Statement 2020". The "Principles for Flood Risk Management" document further supports this approach by providing a framework for integrating climate projections into flood risk management (FRM) practices.

Importance of these considerations:

Anticipating Future Flood Risks: Acknowledging the likelihood of increased frequency and severity of flood events due to climate change underscores the need for evacuation strategies that can handle future scenarios beyond historical patterns.

Enhanced Preparedness and Resilience: Emphasises a proactive strategy to enhance community resilience, adapting evacuation plans to changing flood patterns as predicted by climate change projections.

Informed Decision-Making: Utilising climate change projections in flood evacuation planning enables targeted resource allocation and mitigation strategies, informed by an understanding of potential future flood risks.

Sustainability and Long-term Planning: Advocates for incorporating long-term climate considerations into current planning efforts, ensuring sustainable practices and minimising the need for future adjustments.

Community Safety and Economic Security: Highlights the role of climate projections in safeguarding communities and economic assets from flood damage, supporting continuity and reducing recovery costs.

Regulatory Compliance and Best Practices: Aligns with evolving regulatory requirements that mandate consideration of climate impacts in planning, demonstrating a commitment to public safety and environmental stewardship.

Understanding Flood Risk and Changes Over Time: Calls for a recognition of how flood risks evolve with climate change, stressing the incorporation of future scenarios into FRM for effective risk management ("Principles for Flood Risk Management", Principle 6).

[87] Sub Plan of the Local Emergency Management Plan pg 73

Considering Variability and Uncertainty: Acknowledges the variability and uncertainty introduced by climate change, necessitating adaptable and robust evacuation plans ("Principles for Flood Risk Management", Principle 7).

Maintaining Natural Flood Functions: Points to the importance of preserving natural flood functions in the face of climate change, ensuring FRM plans align with ecological sustainability principles ("Principles for Flood Risk Management", Principle 8).

Effective Management of Flood Risk: Underlines the necessity of strategic flood risk management through understanding potential changes and incorporating climate projections ("Principles for Flood Risk Management", Principle 9).

Strategic Planning and Governance: Advocates for sustainable governance and strategic planning based on climate projections, ensuring FRM measures are responsive to future flood risks ("Principles for Flood Risk Management", Principle 1 and 2).

Community Consultation and Engagement: Stresses engaging with communities on future flood risks, supporting the development of widely supported FRM and evacuation plans ("Principles for Flood Risk Management", Principle 3).

Making Flood Information Available: Emphasises the need for accessible, updated flood risk information, including climate projections, for informed decision-making ("Principles for Flood Risk Management", Principle 4).

Improving Management of Flood Risk Continually: Highlights ongoing improvement in FRM, adapting to new information and the dynamic nature of climate change ("Principles for Flood Risk Management", Principle 10).

In summary, integrating climate change projections into flood evacuation planning, as guided by the principles laid out in the "Principles for Flood Risk Management" and supported by strategic policy documents, is essential for developing dynamic, evidence-based strategies that ensure community safety, sustainability, and resilience against changing flood risks.

Identifying the flood-affected population, guided and supported by strategic policy documents, based on ABS data and climate change projections.

Climate Change-Affected Flood Area

The NSW Government's Planning Portal identifies flood affect areas.

h) The 1% AEP Climate Change 1 event as shown on Clarence online mapping[88]
The majority of homes, businesses and shops within the blue area are built at or below 2.50 mAHD.
The 1% AEP CC1 Peak Design Flood Level for Lake Wooloweyah / West Yamba is 2.9 - 3.0m AHD as shown in image 80.

[88] https://maps.clarence.nsw.gov.au/intramaps910/

Image 80. The 1% AEP CC1 Peak Flood Levels in blue- NSW Planning Portal Spatial Viewer [89]

i) The 1% AEP Climate Change 1 flood event as shown on WYURA Flood Impact and Risk Assessment

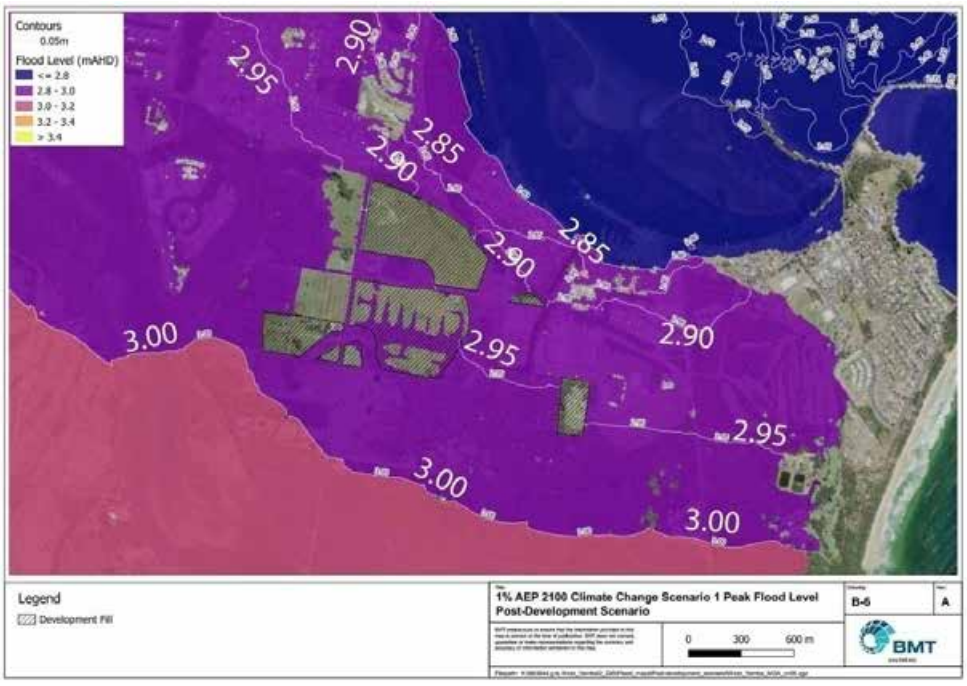


Image 81. 1% AEP 2100 Climate Change Scenario 1 Peak Flood Level

[89] https://maps.clarence.nsw.gov.au/intramaps910/

j) Identifying the flood-affected population with Yamba

The Australian Bureau of Statistics (ABS) lists populations by the recognised boundaries of suburbs. The Suburbs and Localities (SALs) are an approximation of the officially recognised boundaries of suburbs.[90]

For the Yamba flood-affected area, the ABS code is SAL14476, with the ABS identifying 6,405 people and 4,054 dwellings.

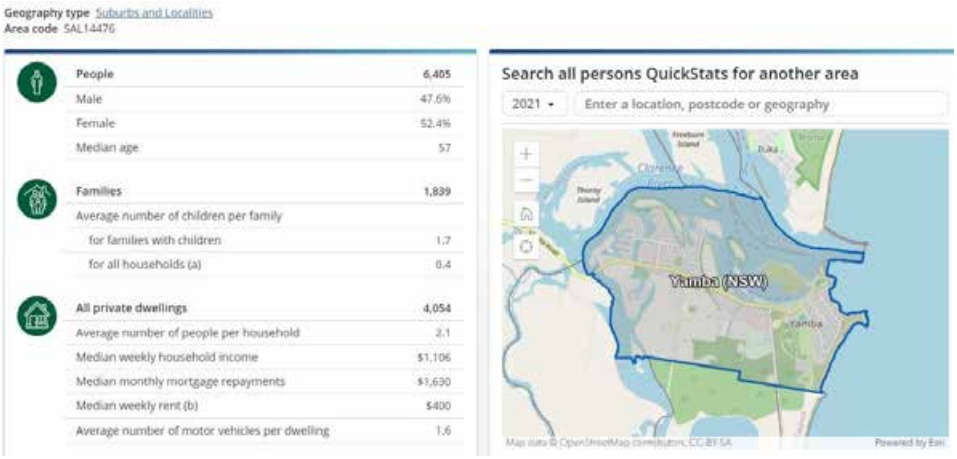


Image 82. ABS[91]

k) To identify people and dwellings affected by climate change-induced flooding, subtract the population and dwellings in the Statistical Areas that are unaffected from those in the affected area;

Image 83. Subsections of SAL14476

[90] https://www.abs.gov.au/census/guide-census-data/geography/census-geography-glossary#suburbs-and-localities-sal-

[91] https://abs.gov.au/census/find-census-data/quickstats/2021/10401108229

ABS 2021 Census Statistics		
Section	People	All private dwellings
Yamba (SAL14476)	6,405	4,054
Sub Section		
10401108227	446	384
10401108228	290	411
10401108229	362	244
10401108243	410	451
10401108201	32	8
sum subsections	804	703
affected by 1% AEP CC1 event	5,601	3,351

Image 84. Summary ABS Statistics

In Yamba up to 5,601 people and 3,351 dwellings will be potentially affected by the 1% AEP CC1 flood event

l) The number of people and dwellings affected excludes an Extreme - Probable Maximum Flood (PMF), in which affected numbers would increase.

Image 85. Probable Maximum Flood – CVC

m) It will be necessary for a number of residents in Yamba to evacuate their homes in a major flood or ocean event. Whilst not all will have their house floors inundated, it is likely that their power, gas, water and sewerage systems will be affected.[92]

[92] 2008 yamba-floodplain-risk-management-study.pdf pg 21

Evacuation hazards

n) There is no available data indicting the time required to evacuate to higher ground. Evacuation timings can vary significantly based on numerous factors, including the severity and speed of the floodwaters, the specific area within Yamba being evacuated and road conditions

o) Evacuation needs to occur before road access to and from Yamba is cut at Clover Leaf/Harwood Bridge 2.1m on the Maclean gauge (204410-558022)[93]

p) At 2.4m at the Maclean gauge, Yamba is completely isolated[94].

Image 86. Westerly view of Yamba road towards Maclean March 2022

q) "The Yamba road to Pacific Highway on and off ramps close at 2.47m on the Maclean gauge"[95]

Image 87.

[93] clarence-valley-lfp-july-2023-endorsed.pdf pg 107 pg 45

[94] Clarence Valley Council Flood Emergency Sub Plan - clarence-valley-lfp-july-2023-endorsed.pdf pg 74

r) Potential flood, could trap evacuees

Should residents attempt to evacuate from Yamba, close to the 2.1 m level on the Maclean gauge, they risk being trapped by flood waters to the north, south and west.

Image 88

s) Access to Yamba hill will be blocked at 1.4m AHD

Local flooding in Yamba closing roads was not reported until Tuesday 1 March (Yamba Road at Angourie Road roundabout

The road into Yamba town, Yamba road, gets cut with the "lowest point 1.4 mAHD and highest point 2 mAHD"[96]

Image 89

[95] clarence-valley-lfp-july-2023-endorsed.pdf pg 107 pg 62

[96] YambaFRMStudyAdoptedOct2008.pdf

t) The Clarence Valley Flood Emergency Sub Plan (CVFESP) and the Yamba Floodplain Risk Management Plan do not specify unique or specific triggers for warnings exclusively for Yamba.

u) Establishing the Probable Maximum Flood (PMF) as the Safety Benchmark in Flood Evacuation Planning and Refuge Designation

Identifying the Probable Maximum Flood (PMF) as the benchmark for safety in flood evacuation planning and refuge designation is a crucial strategy for ensuring the utmost protection of communities in flood-prone areas. This comprehensive approach to flood risk management is informed by a combination of legislative frameworks, best practices in emergency management, and the latest insights into climate change impacts and flood behaviour. The rationale for utilising the PMF as a safety benchmark encompasses several key considerations:

Enhanced Safety and Accessibility

Designating refuges at or above the PMF level guarantees that, in the face of extreme flooding, these critical safe havens remain accessible and secure. This preparation for the worst-case scenario is paramount in safeguarding lives during catastrophic flood events, ensuring that evacuation and sheltering efforts can be effectively implemented.

Climate Change Consideration

The escalating impacts of climate change, including the anticipated increase in the severity and frequency of extreme weather events, necessitate a forward-looking approach in flood risk management. The PMF, as a theoretical maximum, accounts for these uncertain future conditions, offering a robust benchmark that enhances the resilience and adaptive capacity of communities against evolving flood risks.

Public Confidence and Community Resilience

Community engagement and trust in flood risk management strategies are critical for their success. Planning refuges with the PMF in mind fosters confidence in these preparations, encouraging community cooperation during evacuations and enhancing overall resilience through informed and proactive risk mitigation.

Sustainable Infrastructure and Development

Incorporating the PMF in the planning of infrastructure, including refuges, ensures that these investments are resilient over the long term. This approach minimises the need for costly retrofits and maximises the utility of resources by preventing damage to critical assets and reducing the economic impacts of flood events.

Regulatory and Policy Compliance

While specific documents may not explicitly mandate the consideration of the PMF for refuge elevation, aligning with the PMF as a safety benchmark reflects adherence to high standards of flood risk management and emergency planning. It demonstrates a commitment to best practices and regulatory guidelines aimed at minimising flood risks and protecting communities.

Informed Decision-Making

Utilising the PMF as a benchmark enables informed decision-making in land use, urban planning, and the development of flood evacuation strategies. It provides a consistent and scientifically backed standard for evaluating flood risks and implementing effective flood risk management measures.
The adoption of the PMF as the benchmark for safety in flood evacuation planning and refuge designation is grounded in a multidisciplinary understanding of flood risks, climate science, and community safety needs. This approach ensures that planning and response strategies are equipped to manage the highest level of flood risk, thereby enhancing the safety, resilience, and sustainability of communities in the face of potential flood events.

v) "The Coles supermarket will be resupplied if required; this will ensure that Yamba residents are continually provided with essential food items" - Local Flood Emergency Sub Plan

Images from Coles at Yamba on 3rd March 2022 at 10:25, the entrance road to Yamba was closed for a further 3 days.

Coles supermarket 3rd March 2022

Image 90.Image vegetable shelves

Image 91. bread shelves

Image 92. bakery display

Image 93. Meat display

Image 94. Coles shelf image Metadata

w) 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
This indicates that access between Yamba and Maclean was cut for 6–7 days.

x) In the 2022 floods; 'Major flood levels were exceeded by more than 2 m in several locations including in Lismore'[97]

Request for Information on Flood Risk Management, Evacuation Protocols, and Resilience Planning in Yamba

I am submitting this request under the Government Information (Public Access) Act 2009 for detailed information regarding the flood management, evacuation strategies, and public health considerations in Yamba, focusing on the enhanced preparedness and resilience against flooding events, especially concerning the elderly population and those in flood-prone zones like the Crystal Waters area. This request aims to gather expansive details to understand the actions, planning, and provisions set forth by the council and relevant authorities:

168) Addressing Identified Flood and Storm Surge Uncertainties: Specific measures, studies, and infrastructure projects undertaken to directly address and mitigate the documented uncertainties regarding severe flood and storm surge conditions in the Crystal Waters area.

[97] Characterisation of the 2022 floods in the Northern Rivers https://nema.gov.au/sites/default/files/inline-files/Characterisation%20of%20the%202022%20floods%20in%20the%20Northern%20Rivers%20region.pdf

169) Flood Prediction and Evacuation Timing Analytical Frameworks: Insights into the analytical models, criteria, and decision-making frameworks used to predict flood events and determine optimal evacuation timings, including technological tools, early warning systems, and inter-agency communication channels.
Models and criteria for predicting flood events and determining evacuation timings, including lead times for community mobilisation.

170) Flood Prediction and Evacuation Timing Strategies: Insights into the predictive models and criteria used to determine the timing for evacuation orders, including the lead time required to effectively mobilize the community and emergency services.

171) Evacuation Timings Relative to Road Access Cut-off: Timeframe from warning issuance to road access cut-off at critical points, to facilitate timely evacuation

172) Evacuation Orders and Communication: Details on the protocol for issuing evacuation orders, including the designated authority responsible for making such decisions, the criteria used to determine when evacuations should be advised, the methods for communicating orders to residents and businesses, and any specific instructions provided.

173) Evacuation Destinations for Residents: Detailed plans or strategies outlining how and where the estimated 5,601 people potentially requiring evacuation in the event of a flood would be relocated. This should include information on temporary shelters, high ground locations, and any arrangements with neighbouring communities or facilities.

174) Evacuation Centre Accessibility Under Flood Conditions: Detailed logistical and transportation plans to facilitate evacuee access to the designated assembly area, the Yamba Bowling Club on Wooli Street when primary access routes, such as Yamba Road, are inundated. This should include alternate routes, modes of transport, and any arrangements with local transportation services.

175) Alternative Evacuation Locations and Capacity Planning: Information on contingency plans and alternate evacuation sites identified for accommodating 'thousands of people' if primary evacuation centres like the Yamba Bowling Club become inaccessible, including capacity, facilities available, and arrangements for pets and service animals.

176) Special Considerations for Seniors: Given that 37.6% of the population in the area is over 65 years of age, request information on any additional evacuation needs that have been assessed for this demographic. This includes special accommodations, transportation assistance, and medical care provisions during evacuations.

177) Medical Evacuation Plans for Elderly Residents: specific strategies and logistical plans for safely evacuating the elderly population (37.6% of flood-affected individuals) when evacuation routes are compromised, including provisions for those with mobility issues, chronic health conditions, and requiring regular medication or medical support. This request seeks details on coordination with healthcare facilities, special transportation means, and pre-emptive healthcare measures.

178) 'At Risk' Resident Support Plans: Comprehensive plans specifically addressing the needs of 'At risk' residents among the 5,601 potentially affected individuals, including detailed identification criteria, personalised support strategies, emergency communication systems, and physical assistance provisions.

179) Large-Scale Evacuation Logistics and Planning: Comprehensive plans and protocols for the mass evacuation and sheltering of potentially 5,601 affected residents, considering scenarios of complete road access impairment due to floodwaters. This includes transport logistics, temporary shelter management, and inter-agency coordination efforts.

180) Public Health and Evacuation Centre Amenities: Detailed plans for major evacuation centres, addressing public health considerations such as sanitation, space requirements, and medical services, as outlined in "GL2018_002 - Major Evacuation Centres: Public Health Considerations."

181) Formal Agreements with Evacuation Centre Facilities: Copies of formal agreements or letters of intent with facilities like the Yamba Bowling Club designated as evacuation centres, detailing the responsibilities, expectations, and capacities agreed upon between the council and facility management.

182) Personnel Allocation for Door-to-Door Risk Assessments: Insights into the predictive models and details on the criteria used to determine evacuation timing, number of personnel allocated for conducting door-to-door risk assessments and evacuations, training provided, coordination with emergency services, including the lead time required to effectively mobilise the community and emergency services.

183) Vehicle Parking Strategy During Flooding: Information on strategies and plans for designated parking areas for the 5,601 individuals potentially affected during a 1% AEP CC1 flood event in Yamba, considering the elevation and capacity to accommodate vehicles.

184) Road Closure Duration Projections for 1% AEP CC1 Flood Events: Analytical projections or studies estimating the duration of road closures in the event of a 1% AEP CC1 flood, based on hydrological models, past flood data, and current infrastructural capacities. This should also include contingency planning for prolonged isolation periods.

185) Resupply Strategies During Flood Events: Detailed plans for ensuring continuous supply of essential goods and services to the affected population, especially considering the rapid depletion of fresh food supplies observed in previous events like the 2022 flood, where fresh food shelves were emptied three days before roads reopened. Strategies should include coordination efforts with local businesses addressing logistical challenges, potential airlift operations and partnerships with commercial suppliers.

186) Population Growth and Resupply Projections: Evaluation of how resupply strategies and evacuation plans are being adapted to accommodate Yamba's projected population increase, ensuring sustainability of resources and facilities.

187) Number of Properties Affected: Detailed statistics on the number of residential, commercial, and industrial properties in the Yamba sector whose floor levels are below the design flood levels, including the 1% AEP CC1 event.

188) Business Asset Evacuation:Information on recommendations or plans for businesses within the flood-affected area regarding the evacuation of their assets. This request seeks guidance provided to businesses on safeguarding equipment, inventory, and critical documents during a flood event.

189) Strategic Frameworks and Guidelines: Copies of any strategic frameworks, guidelines, or principles that have been adopted by the Clarence Valley Council specifically for the purpose of incorporating climate change projections into FRM and flood evacuation planning activities.

190) Application of 1% AEP CC1 in Planning:
Clarification on why the 1% Annual Exceedance Probability considering Climate Change Scenario 1 (AEP CC1) was not applied or referenced in the Local Flood Emergency Sub Plan, despite prior council adoption of updated flood levels. This inquiry aims to understand the decision-making process behind the flood risk assessments used in local planning.

191) Detailed Implementation Plans: Including timelines, milestones, and identification of responsible parties involved in the strategic incorporation of climate change projections into flood evacuation planning efforts.

192) Policy Documents and Guidelines: Copies of current policies, guidelines, or frameworks that detail the use of the PMF as a benchmark for safety in flood evacuation planning and refuge designation.

193) Emergency Management Strategies: Any emergency management strategies, plans, or protocols that detail the operationalisation of PMF considerations in real-world flood response scenarios.

194) Analysis at Various Flood Heights: Analysis of the number of dwellings affected at different flood heights, including 2% AEP, 1% AEP, and 1% CC1 scenarios, and the flood level data for homes in flood-prone areas.

195) Property Flood Risk Estimates: An estimate from Clarence Valley Council on the number of properties that may be flooded in a 1% AEP considering CC1 event. This request seeks insights into the council's projections and assessments regarding property vulnerability under this specific flood scenario.

196) Justification for Additional Residency on Floodplain: Request for the rationale behind permitting further residential development on the floodplain. This includes an explanation of how adequate resources are ensured and safety standards are maintained, especially considering the existing evacuation challenges.

Addressing Public Health Considerations for Thousands of Evacuees in Emergency Situations

I am seeking information on how Clarence Valley Council ensures compliance with the public health considerations outlined in GL2018_002 - "Major Evacuation Centres: Public Health Considerations" within major evacuation centres. This includes specific measures, facilities, and services provided to meet the standards for sanitation, hygiene, living conditions, and health services during emergencies. My request focuses on:

197) Sanitation Facilities: Detailed information on the planning and provision of toilet facilities, ensuring a ratio of one toilet per 20 people in the initial phases of an emergency, and the adjustments made to accommodate up to 50 people per toilet until additional facilities are available.

198) Shower Facilities:The arrangements for providing shower facilities at a ratio of one per 50 people in temperate weather and one per 30 people in hot weather.

199) Hand-washing Stations: Plans for setting up adequate hand-washing facilities near toilets and meal areas, including the provision of soap, water, and disposable hand towels, with a minimum of one basin per 100 people.

200) Living Space Requirements: Measures taken to ensure a minimum of 3.5 square meters of covered living space per person for privacy, safety, and health.

201) Waste Management and Cleaning: The waste management protocols employed, including the regular and timely removal of garbage and the supervised cleaning of toilets and living areas to maintain hygiene and prevent the spread of infection.

202) Water and Food Safety: Strategies for ensuring the availability of 7.5-15 liters of water per day per individual for drinking, basic hygiene practices, and cooking needs, along with maintaining clean kitchen areas for safe food handling and storage.

203) Health and Medical Services: Information on the availability of medical and counselling services onsite or via arrangements, including the setup of isolation areas for individuals with infectious diseases and strategies for controlling communicable diseases.

204) Accommodation of Companion Animals: Guidelines and provisions for the accommodation of pets and companion animals within evacuation centres, ensuring the balance between comfort and public health risks.

This request is made in the interest of public safety and the wellbeing of community members during emergency evacuations.

The Yamba Floodplain Risk Management Plan Recommendations

The current Yamba Floodplain Risk Management Plan (FRMP), adopted by the Council in 2009 and produced by Webb, McKeown & Associates Pty Ltd, made several recommendations.

Recommendations

1. Plans for Detailed Hydraulic Modelling for West Yamba Rezoning

Recommendations Summary:

The plan suggests the need for further detailed hydraulic modelling to assess the effects of fill and the viability of a floodway between Golding and Freeburn Streets, particularly in relation to the proposed rezoning at West Yamba. This modelling is crucial for understanding how proposed developments could alter flood behaviour, ensuring that rezoning decisions do not exacerbate existing flood risks.

Importance:

Accurate hydraulic modelling is fundamental to safe and sustainable urban planning. It ensures that any new development in flood-prone areas like West Yamba is compatible with the flood hazard, minimising potential impacts on flood behaviour and protecting both new and existing developments from flood risks.

2. Wave Runup Study for Yamba

Recommendations Summary:

The plan identifies the need for a study on wave runup at Yamba to evaluate the magnitude, likelihood, and potential damage, along with mitigation measures. This is due to wave runup's potential to cause significant damage along the foreshore.

Importance:

Understanding wave runup risks is vital for coastal towns like Yamba. Such studies inform coastal defense strategies and land-use planning, ensuring that developments are resilient to both flooding and coastal erosion, thus safeguarding lives and properties.

3. Update of the Flood Evacuation Plan for Yamba - Council's Role

Recommendations Summary:

A key recommendation is preparing a flood evacuation plan for Yamba, emphasising the need for safe evacuation routes to high ground. The council is tasked with updating flood-related development controls and implementing a flood awareness program.

Importance:

Evacuation Planning: The plan emphasises the need for a comprehensive flood evacuation strategy to ensure that all residents, especially those in new developments such as West Yamba, can be safely evacuated to high ground during a flood. This involves not only physical infrastructure improvements but also clear communication and preparedness planning.

Provide Emergency Access: For development intensification within existing urban zoned land, the plan notes the importance of ensuring safe and practical access to high ground is available up to the Flood Planning Level. This includes evaluating the impact of new developments on the town's ability to evacuate residents efficiently during flood events.
These recommendations underscore the intertwined nature of urban planning, flood risk management, and community safety. Implementing these measures is critical for mitigating flood risks in Yamba, ensuring sustainable development that aligns with environmental constraints and enhances the community's resilience to flooding.

Request for Information on Unresolved Recommendations of the Yamba Floodplain Risk Management Plan

I am seeking information regarding the status and implementation of recommendations from the Yamba Floodplain Risk Management Plan, specifically those related to detailed hydraulic modelling for West Yamba rezoning, wave runup studies, and updates to the flood evacuation plan.

Given the significant implications of unresolved recommendations, including increased flood risks, planning and zoning challenges, legal and financial implications, insurance and liability issues, compromised community safety and resilience, negative environmental impacts, and potential deterrents to investment and growth, it is imperative to understand the Council's actions or plans in addressing these issues.

Accordingly, I request the following information:

205) Status Reports: Any status updates, progress reports, or evaluations detailing the Council's efforts to address the aforementioned recommendations.

206) Implementation Plans: Documents outlining planned or ongoing actions to resolve the unresolved recommendations, including timelines and responsible parties.

207) Legal and Financial Documents: Any legal advisories, consultation records, or financial assessments related to the implications of unresolved flood risk management measures.

208) Insurance and Liability Communications: Correspondence with insurance companies regarding coverage policies for high-risk areas in light of the FRMP recommendations.

209) Community Safety Initiatives: Documents detailing efforts to update the flood evacuation plan, including community consultation processes.

210) Environmental Impact Analyses: Assessments of the environmental impacts resulting from unresolved floodplain management issues as identified in the FRMP.

211) Investment and Development Studies: Studies or reports analysing the impact of unresolved flood risk management issues on local economic growth, investment, and development prospects.

212) Council Discussions or Decisions: Minutes from council meetings or internal communications discussing the absence of wave runup studies and strategies or plans to address this gap within the context of flood risk management for Yamba.

213) Consultation with Experts: Records of consultations or engagements with coastal engineering experts or consultants tasked with evaluating wave runup risks and their potential impact on Yamba, including any proposals for conducting such studies.

214) Interim Risk Management Measures: Documentation of any interim measures or policies the council has implemented to mitigate the potential risks associated with wave runup in the absence of comprehensive studies.

215) Impact Assessments: Any assessments or reports evaluating the impact of not having completed wave runup studies on current and future development projects in Yamba, particularly in flood-prone areas.

216) Funding and Planning for Future Studies: Information on plans, including budget allocations or funding applications, for conducting wave runup studies or incorporating their findings into flood risk management strategies for Yamba.

Understanding how the council has addressed the lack of wave runup studies is crucial for assessing the adequacy of current flood risk management efforts and ensuring the safety and resilience of the Yamba community. Please advise if there are any costs associated with processing this request, and if specific documents are publicly available, guidance on how to access them would be appreciated.

I am seeking detailed information pertaining to several key flood risk management initiatives and studies as outlined in the Yamba Floodplain Risk Management Plan, February 2009, prepared by Webb McKeown & Associates. These inquiries focus on the proposed rezoning at West Yamba, including detailed hydraulic modelling and associated flood risk management measures.
Information Sought:

217) Detailed Hydraulic Modelling for West Yamba Rezoning:

Documents, reports, and outcomes of the detailed hydraulic modelling required to assess the effects of fill and the viability of a floodway between Golding and Freeburn Streets.
Information on practical evacuation methods approved by the State Emergency Service (SES) and the development of a Master Plan addressing water-related cumulative issues for the proposed rezoning area.

218) Update of the Flood Evacuation Plan for Yamba: Documents including but not limited to updated flood evacuation plans post the adoption of the Yamba Floodplain Risk Management Plan adopted in February 2009, stakeholder consultation records, implementation strategies, and revisions based on recent flood risk assessments.

I am requesting access to information that might shed light on the actions—or lack thereof—taken by the Clarence Valley Council in response to the recommendations outlined in the “Yamba Floodplain Risk Management Plan" and subsequent legislative requirements. Given the time elapsed since the study's publication, this request aims to understand the council's compliance status and any steps planned or taken to address identified non-compliance issues.

Specifically, I seek documents that include but are not limited to:

219) Compliance Reviews and Audits: Any internal or external reviews, audits, or assessments of the council's actions or inactions concerning the recommendations of the 2009 study, especially in relation to flood management and rezoning plans for Yamba.

220) Council Meeting Minutes: Minutes of council meetings where non-compliance with the 2009 study recommendations or related legislative requirements were discussed, including any decisions or resolutions made in response.

221) Action Plans: Any action plans, strategies, or policy documents developed to address non-compliance issues, including timelines for implementation and responsible parties.

222) Public Communications: Any public notices, updates, or communications issued by the council related to its efforts to comply with legislative requirements following the 2009 study.

223) Correspondence: Correspondence between the council and state regulatory bodies or agencies regarding the council's compliance status and any directives or recommendations received to rectify non-compliance.

224) Legal Advisories or Consultations: Documents related to legal advisories or consultations sought by the council regarding the implications of non-compliance and potential remedial actions.

This request is motivated by a concern for public safety, environmental sustainability, and the importance of adhering to legislative frameworks designed to mitigate flood risks and guide responsible development in flood-prone areas. Understanding the council's response to non-compliance issues is crucial for public transparency and accountability.

I request access to documents or information concerning the financial risk assessment performed by Clarence Valley Council in light of Sect 733 of the Local Government Act 1993, specifically in relation to potential liability issues arising from unresolved recommendations of the Yamba Floodplain Risk Management Plan.

Considering Sect 733's provision on councils' exemption from liability for flood liable lands under certain conditions, this request seeks to uncover how the Council plans to manage potential financial risks to ratepayers, especially in light of potential failures to comply with critical flood management recommendations.

Specifically, I am interested in the following:

225) Assessments or reports evaluating the financial implications to the Council and ratepayers if recommendations regarding detailed hydraulic modelling for West Yamba rezoning, wave runup studies, and flood evacuation plan updates remain unaddressed.

226) Documents or correspondence discussing potential liability issues for the Council concerning flood risk management and compliance with Sect 733 of the Local Government Act 1993.

227) Minutes or records from Council meetings or communications with the Independent Pricing and Regulatory Tribunal that discuss the Council's approach to flood risk management, including any discussions on financial risk assessments.

228) Any written advisories or opinions from legal counsel regarding the Council's liability and compliance with flood management policies and legislation, including but not limited to the Environmental Planning and Assessment Act 1979 and the Local Government Amendment Act 2021.

This information is sought to understand the Council's approach to mitigating financial risks associated with flood management and ensuring the safety and well-being of the community in accordance with current legislation and flood management practices.

Public Accessibility and Engagement on Flood Risk Management Information

Ensuring that flood information is easily read and understood by the public involves clear communication strategies and frameworks, as outlined in various documents related to flood risk management, community participation, and planning regulations. Here's a synthesis of how these principles are integrated across documents, with specific references to section numbers or titles and subtitles where applicable:

1. Principles for Flood Risk Management:

Within the "Principles for flood risk management", the document emphasises the need to make flood information available, underscoring the significance of understanding flood behaviour, constraints, and maintaining natural flood functions to inform and engage the community effectively.

2. Community Participation Plan:

The Community Participation Plan highlights the necessity for planning information to be presented in plain language, be easily accessible, and in forms that facilitate community participation, especially regarding planning matters that affect the community, as discussed under sections like "Introduction" and "Principles and commitments". This plan is designed to encourage meaningful opportunities for community participation in planning processes.

3. NSW Legislation:
The Environmental Planning and Assessment Act 1979 provides the legal basis for the inclusion of flood risk management in planning and development assessments. This act, through its amendments and regulations, mandates the consideration of flood risks in strategic planning and development assessment processes, reinforcing the need for accessible and understandable flood information.

To make flood information easily understood and accessible, these documents advocate for:

Plain Language and Clarity: Ensuring communication is straightforward and avoids technical jargon to facilitate broader understanding.

Visual Aids and Accessibility: Using maps, diagrams, and other visual tools to depict flood risks and planning considerations, making this information accessible through various means including online platforms and public meetings.

Engagement and Education: Engaging with the community through workshops, public exhibitions, and providing educational materials to build a deeper understanding of flood risks and management strategies.

By referencing these sections and utilising the outlined communication and engagement strategies, flood information can be disseminated in a manner that is both accessible and comprehensible to the public, fostering informed community participation in flood risk management and planning decisions.

Strategy for Ongoing Community Engagement: Information on strategies or plans for continuing community engagement and feedback post-adoption of the flood model, ensuring ongoing transparency and adaptability of the model to community needs.

Plain Language and Clarity

a) Inaccessible river gauge

BMT Flood Impact Assessment's reference Harwood
"This is illustrated in Figure 3.2 where the 100 year ARI (1% AEP) design flood level is plotted for Harwood. Harwood was selected, as the riverine flood peak is clearly distinguishable."

There is no publicly accessible river gauge at Harwood

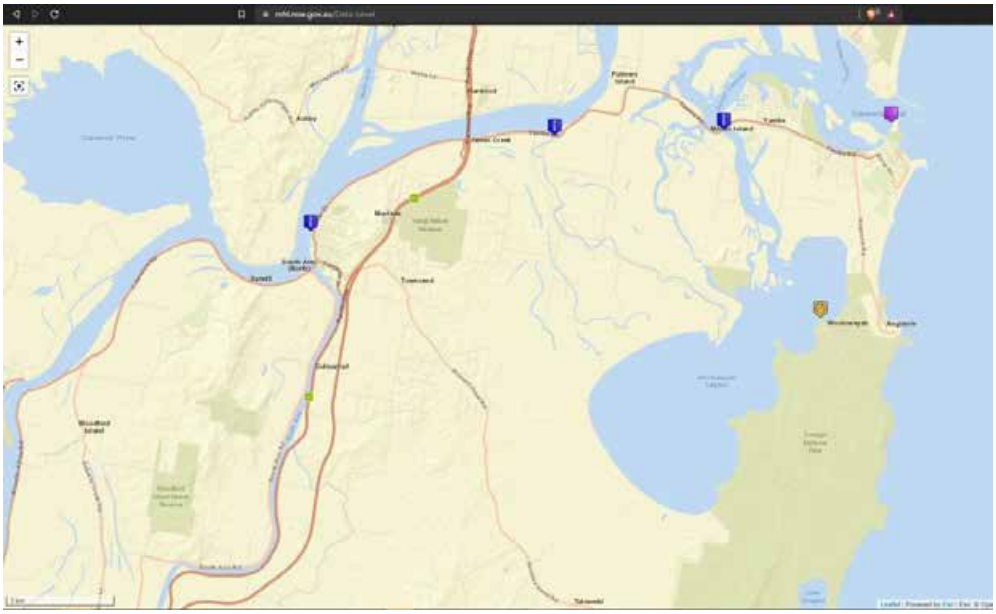


Image 95. MHL river gauge map

229) Accessibility of Information: Information on measures taken or planned to enhance the accessibility of flood risk information, including efforts to present information in non-digital formats or through visual aids that are accessible to various community segments, especially those with limited internet access or digital literacy

230) Public Education and Outreach: Details on any public education or outreach programs designed to inform the community about flood risks, flood model updates, and flood risk management strategies in a manner that is accessible and understandable to all community members.

231) The location of the Harwood Gauge:
The Flood Impact Risk Assessments refer to the 'Harwood' gauge, please provide location.

232) Rationale for Harwood Gauge inclusion: If the Harwood Gauge does not exist, please provide the council's rationale, including any legislative, logistical, or other considerations that influenced the Harwood Gauge as a significant reference point.

This request is made in the spirit of ensuring that vital flood risk management information is communicated effectively to all members of the Lower Clarence Valley community, fostering informed community participation and enhancing public safety and awareness.

Accessibility Issues in the Lower Clarence Flood Model Update 2022

The Lower Clarence Flood Model Update 2022 provides review of flood modelling improvements, recalibrations, and updated data incorporation for the Lower Clarence Valley. However, evaluating its accessibility and readability for the general public against the principles outlined in the referenced documents, including the flood manual, community participation plan, flood planning orders and policies, as well as local environmental planning (LEP) and NSW legislation requirements, highlights areas where the document may not fully meet principles or legislation focused on public comprehension and engagement:

Complexity and Technical Language:
The document is highly technical, employing specialised terminology and modelling details that might be challenging for the general public to understand. This complexity could make it difficult for non-experts to grasp the implications of the flood model updates, potentially not meeting the principle of making flood information understandable and accessible, as emphasised in the Clarence Valley Council Community Participation Plan" and the "Principles for Flood Risk Management".

Lack of Summary for Non-Technical Audience:
The absence of a simplified executive summary or a section that distills the technical findings into key takeaways that are easily understandable by the public. While the document provides technical details, updates and compliance with flood management guidelines, it might fall short in directly communicating the outcomes, risks, or changes in flood management strategies to the general public, as advocated by principles of community participation and flood risk communication.

Limited Direct Community Engagement Descriptions:
The document, as a technical report, focuses on model updates and calibration against recent flood events without explicitly detailing processes for community engagement or how feedback and concerns from the community have been or will be addressed. This could potentially not align with the principles of community participation and engagement outlined in 'Clarence Valley Council Community Participation Plan', which emphasise involving the community in understanding and responding to flood risks.

Accessibility of Information:

The way flood information is presented, primarily in digital format with extensive use of maps and technical data, may not be easily accessible to all segments of the community. Ensuring accessibility involves not only making information available but also presenting it in formats that various community members can readily access and understand, including non-digital formats for those with limited internet access or digital literacy, as suggested by the accessibility and inclusivity principles in the "Clarence Valley Council Community Participation Plan".

For the purpose of comparison, attached is a copy of the 'Draft Wooli Floodplain Risk Management Study and Plan'.[98]

[98] https://www.clarence.nsw.gov.au/files/assets/public/v/1/council/files/policies/on-exhibition/draft-wooli-floodplain-risk-management-study-and-plan.pdf

High level review and validation

Consultants Jeremy Benn Pacific (JBP) have completed a high level review and validation of the Lower Clarence Flood Model Update 2022 (2022 Flood Model)[99]

a) The peer review by Jeremy Benn Pacific (JBP) suggests that the rainfall increases used in the climate change scenarios (CC1 and CC2) might have been underestimated, potentially affecting the accuracy of future flood risk assessments. This underestimation could lead to insufficient planning and mitigation measures, conflicting with the principles of considering variability and uncertainty as well as managing flood risk effectively as outlined in the FRM Manual 2023.

b) The remodelling undertaken by BMT to address the underestimation of rainfall in climate change scenarios resulted in increased flood levels for CC1 and CC2 scenarios. This adjustment, while necessary, indicates a potential gap in the initial modelling process that could have implications for the reliability of the flood model as a tool for informed decision-making and strategic planning.

c) The report mentions significant increases in the extreme flood (PMF) levels compared to the 2013 Flood Model, which have substantial planning implications. The methodology used to develop the extreme flood scenario and its implications for "sensitive" development on flood-prone land may raise concerns about the adequacy of the model in protecting community safety and property, as well as maintaining natural flood functions.

d) The process of adopting interim flood planning levels based on the updated flood model and its alignment with the Flood Risk Management Manual 2023 requires careful consideration of the full range of floods and how flood behaviour impacts vary. The reliance on an interim measure before completing a new Floodplain Risk Management Study and Plan may be seen as a temporary solution that does not fully address long-term flood risk management needs.

e) The reliance on Section 733 of the Local Government Act for liability exemption in relation to flood advice and actions taken based on the flood model underscores the importance of ensuring the model's compliance with the latest FRM guidelines and principles. Any deviations or shortcomings in the model or the process of adopting flood planning levels could potentially expose the council to legal challenges, especially if the adopted measures fail to adequately protect against flood risk.

f) The approach to incorporating climate change assumptions in the flood model and planning levels, especially the adoption of the CC1 scenario for establishing residential floor levels, needs to align with best practice standards for flood risk management. Ensuring that these assumptions are robust and reflective of the latest climate science is critical for the long-term effectiveness of flood risk management strategies.

Request for Detailed Evaluation and Documentation on the Lower Clarence Flood Model 2022 Update Processes

I request detailed information and documentation pertaining to the development, peer review, public engagement, and adoption processes of the Lower Clarence Flood Model 2022 Update and the establishment of new flood planning levels. This request aims to address potential issues and concerns raised regarding the model's compliance with Flood Risk Management (FRM) policies or guidelines, accuracy in flood risk assessments, and effectiveness in community safety and property protection.

[99] ORDINARY COUNCIL MEETING MINUTES 24 OCTOBER 2023- CO_20231024_MIN_2348.pdf

233) Climate Change Scenario Adjustments: Documents detailing the peer review findings by Jeremy Benn Pacific (JBP) regarding underestimation in rainfall increases for climate change scenarios CC1 and CC2, including any correspondence, reports, and the rationale behind the adjustments made in response to these findings.
234) Remodelling Process and Methodology: Information on the remodelling undertaken by BMT to address underestimations in climate change scenarios, including detailed methodologies, assumptions, and the resulting implications for flood level predictions.

235) Probable Maximum Flood (PMF) Analysis: Documentation on the methodology used to develop the extreme flood (PMF) scenario, including how this methodology aligns with current FRM guidelines and its implications for development on flood-prone land.

236) Public Exhibition and Community Feedback: Records of the public exhibition process for the interim flood planning levels, including strategies for community engagement, summaries of feedback received, and how this feedback influenced the final decisions.

237) Adoption of Interim Flood Planning Levels: Documentation regarding the decision-making process for adopting interim flood planning levels, including discussions on their alignment with the Flood Risk Management Manual 2023 and considerations of long-term flood risk management needs.

238) Legal and Risk Management Considerations: Any assessments or advisories regarding the council's reliance on Section 733 of the Local Government Act for liability exemption, specifically in relation to actions taken based on the flood model. This includes any discussions on potential legal challenges and strategies for mitigating risk.

239) Climate Change Assumptions Incorporation: Detailed justification for the choice of climate change scenario (CC1) for establishing residential floor levels, including how these assumptions were derived and their alignment with the latest climate science and FRM best practices.

This request seeks to ensure transparency in the flood model's development and application processes, its adherence to FRM principles, and the council's engagement with and protection of the community in flood risk management efforts. Please advise on any costs associated with processing this request.

Adoption of the Lower Clarence Flood Model 2022

24 October 2023, Council Minutes note 'the 2022 Flood Model has been adopted and placed on Council's website'

Request for Accessible Flood Risk Information

I request information concerning the Lower Clarence Flood Model Update 2022 and the pre-adoption processes for the Lower Clarence Flood Model 2023 by Clarence Valley Council (CVC). These documents are pivotal for flood risk management in the Lower Clarence Valley, reflecting substantial updates, recalibrations, and the incorporation of new data into the flood modelling framework.

Concerns have been raised about the accessibility of this information to the general public and the extent of community engagement conducted prior to the model's adoption. The detailed technical nature of these documents, combined with specialised terminology, the absence of non-technical summaries, limited descriptions of community engagement processes, and primarily digital information dissemination, may not fully adhere to the principles of making flood information understandable, accessible, and inclusive as emphasised in both the Clarence Valley Council Community Participation Plan and the Principles for Flood Risk Management.

specifically, this request seeks detailed documentation and clarification on:

The extent of community consultation and engagement activities conducted before adopting the Lower Clarence Flood Model 2023, focusing on how these actions complied with Principles 3 (Be Consultative), 4 (Make flood information available), and 5 (Understand flood behaviour and constraints) as outlined in the Flood Risk Management Manual 2023. This includes an inquiry into the methods employed to facilitate public access to flood risk information and incorporate community feedback into the final model.

The strategies employed by CVC to enhance the accessibility and comprehension of the Lower Clarence Flood Model Update 2022 to the general public. Information on efforts or plans to provide non-technical summaries, public education, or outreach programs designed to inform the community about flood risks, model updates, and flood risk management strategies in accessible and understandable formats.

240) Non-Technical Summaries: Information on any efforts or plans to provide non-technical summaries of the Lower Clarence Flood Model Update 2022 to distill technical findings into easily understandable key takeaways for the public.

241) Strategies & Initiatives: Please provide records of implemented strategies or initiatives to gather a wide range of community views on the flood model study.
Explanations for any absence of such initiatives, particularly regarding engaging with diverse community segments.

242) Documentation of Community Consultation and Engagement Activities: Please provide records of any community consultation sessions, workshops, public meetings, or other engagement activities undertaken to inform and involve the community in understanding and discussing the flood model study. This should include how these activities were designed to meet the "Be Consultative" principle and facilitated access to knowledge of historic floods and development of FRM plans (Referencing Flood Risk Management Manual 2023, Section 2, Principle 3), dates, time in hours, material presented, attendance, and outcomes.
If no such consultations were held, please explain the rationale behind this decision and how the council intends to involve the community moving forward.

243) Business Engagement Initiatives: Records of business consultations, workshops, or forums held to discuss the flood model study, including dates, time in hours, attendance, and outcomes.

244) Documentation and Content of the Presentation to Businesses: Copies of the PowerPoint presentation(s) provided to the business community, including any supplementary materials or documents that were distributed during these sessions.

245) Rationale for Selective Engagement: An explanation of the decision-making process that led to the presentation being made exclusively to the business community, including any considerations given to broader community engagement.

246) Plans for Wider Community Engagement: Information on any upcoming plans or initiatives by the Clarence Valley Council to disseminate this crucial flood model update information to the wider public, ensuring that all segments of the community have access to and can understand the implications of these updates.

247) Community Engagement Initiatives: Details of ongoing or planned community engagement initiatives that aim to involve the community in understanding and responding to flood risks, as well as mechanisms for community feedback on the flood model update.

248) Community Engagement Initiatives: Explanations for any absence of such initiatives, particularly regarding engaging with diverse community segments

249) Public Access to Flood Information: Information on how the council made flood risk data and information accessible to the public, ensuring that stakeholders could make informed decisions. Please include details on the mechanisms used for information dissemination and how they align with the "Make flood information available" principle (Referencing Flood Risk Management Manual 2023, Section 2, Principle 4).

250) Plain Language Communication: Efforts made to communicate the flood model study findings in plain language to the community. Any documents, summaries, or communication strategies developed for this purpose, or an explanation if such efforts were not undertaken.

251) Integration of Community Views in Decision-making: Documents that demonstrate how the council considered community views and feedback in the decision-making process regarding the flood model study. This should reflect the engagement framework as detailed in the "Flood Risk Management Process" (Referencing Flood Risk Management Manual 2023, Section 4.4).

252) Rationale for Community Engagement Strategy: If comprehensive community engagement as described was not conducted, please provide the council's rationale, including any legislative, logistical, or other considerations that influenced this approach.

Your assistance in providing this information is crucial for understanding the council's commitment to engaging with and involving the community in critical flood risk management decisions. This transparency is not only a legal requirement but is essential for building trust and ensuring that flood risk management efforts are both effective and reflective of community needs and insights.

This GIPA request seeks to ensure that the council's processes are transparent and accountable, especially in matters of significant public interest like flood risk management. It asks for concrete evidence of the council's efforts or explanations for the absence of such efforts, directly referencing the guidelines and principles that should govern these activities.

Amendment of the Clarence Valley Local Environmental Plan 2011

I information concerning the recent amendments to the Clarence Valley Local Environmental Plan 2011. My request specifically pertains to the legislative framework and principles guiding these amendments, community participation in the amendment process, and the incorporation of flood planning policies and guidelines.

253) Legislative Framework and Principles:
Copies of any documents, reports, or communications related to the application of the Environmental Planning and Assessment Act 1979 and the Standard Instrument (Local Environmental Plans) Amendment (Flood Planning) Order 2021 in the context of the amendments.
Detailed information on the principles for flood risk management considered during the amendments, as outlined in the document discussing flood risk management principles.

254) Community Participation Plan:
Details on community engagement activities, including formal exhibitions of draft plans, policies, or documents related to the LEP amendments, as specified in the Community Participation Plan.
A summary of community feedback received during the engagement process and its impact on the final decisions regarding the LEP amendments.

255) Strategic Planning and Development Assessment:
Information on the strategic planning process used for the LEP amendments, including criteria considered for strategic planning framework applications and community input integration.
Assessment reports or summaries detailing how specific proposals arising from the LEP amendments were evaluated against the Act's criteria.

256) Adherence to Legislative and Policy Frameworks: Evidence of compliance with the Environmental Planning and Assessment Act 1979, particularly in relation to community participation requirements as mandated by the Act and the principles outlined in the Community Participation Plan adopted by Clarence Valley Council on 17 December 2019 and effective from 17 January 2020.

257) Public Notices and Communications: Copies of all public notices, announcements, and communications issued to facilitate community awareness and participation in the amendment process.

258) Reports and Summaries of Public Feedback: Comprehensive reports or summaries compiling community feedback, including how such input influenced the final decision to amend the Clarence Valley Local Environmental Plan 2011.

259) Consultative Processes and Strategies: Detailed descriptions of the consultative strategies employed, in line with the "Community Participation Plan," which outlines Clarence Valley Council's approach to engaging with the community on planning matters.

260) Flood Planning Policies and Orders: Documentation on how the flood planning amendments, specifically those outlined in the Flood Planning Order 2021 and the State Environmental Planning Policy Amendment (Flood Planning) 2021, were integrated into the LEP amendments.

261) Notification and Advertisement: Records of notifications and advertisements issued for development applications related to the LEP amendments, including methods and timeframes for community notification as outlined in the Community Participation Plan.

262) Pursuant to the Government Information (Public Access) Act 2009, I am seeking information regarding the email[100] I sent to Laura Black and Adam Cameron on 6 June 2023. In this email, I requested details of the community consultation process to be undertaken before the consideration and making of a proposed environmental planning instrument, as outlined in Division 3.4 of the Environmental Planning and Assessment Act 1979 No 203. I have not received a response. Could you please provide any records, correspondence, planning proposals, or documents that detail this consultation process, including how community feedback was solicited and integrated into the planning proposal.

This request aims to assess the extent and effectiveness of community engagement prior to the legislative amendments, ensuring transparency and accountability in the planning and decision-making process as per the Government Information (Public Access) Act 2009.

Community Engagement

Community engagement in flood risk management is crucial for several key reasons, drawing from the principles and mandates outlined in various legislative documents and guidelines. Each point below is supported by specific references to these documents, highlighting the legal and practical importance of community involvement:

Informed Decision-Making and Compliance with Legislative Requirements:

Environmental Planning and Assessment Act 1979 (EPA Act 1979) outlines the framework for involving communities in the planning process, emphasising the need for public participation in environmental planning and assessment (Part 2, Division 2.6, Sections 2.23-2.25).

State Environmental Planning Policy Amendment (Flood Planning) 2021 specifies requirements for incorporating community feedback in flood planning processes to ensure that flood risk management strategies are both effective and reflective of community needs (Introduction and Objectives).

Increased Public Awareness and Preparedness:

Floodplain Risk Management Guide (Section on Community Awareness and Education) underlines the significance of educating communities about flood risks and preparedness measures, facilitating better individual and collective responses to flood events.

Building Trust and Transparency:

Community Participation Plan by Clarence Valley Council highlights the approach to engaging with the community on planning matters, providing a framework for making planning processes transparent and building trust through active and meaningful community participation (Principles and Commitments section).

Adherence to Legal and Policy Frameworks:

Local Government Amendment Act 2021 and the EPA Act 1979 mandate community consultation in the development of local environmental plans and policies, reinforcing the legal requirement for transparent and inclusive planning processes that consider community inputs (Sections relevant to community participation and planning).

Enhanced Social Cohesion and Collaboration:

[100] Email to Laura Black and Adam Cameron 6-6-2023.pdf

The Community Participation Plan outlines mechanisms for community engagement, fostering collaboration among various stakeholders to develop comprehensive flood risk management strategies (Engagement Strategies section).

Recognition of Diverse Needs and Vulnerabilities:

State Environmental Planning Policy (Flood Planning) 2021 and the Floodplain Risk Management Guide stress the importance of considering the specific needs and vulnerabilities of different community groups in flood risk management planning, ensuring that strategies are inclusive and equitable (Policy Objectives and Management Process sections).

Feedback Mechanism for Continuous Improvement:

The Flood Risk Management Manual 2023 (Principles for Flood Risk Management, Principle 10) emphasises the importance of ongoing improvement in flood risk management, advocating for regular review and adaptation of strategies based on community feedback and evolving conditions.

These references underline the legal and practical foundations for engaging communities in flood risk management. They highlight the multifaceted benefits of such engagement, including improved decision-making, increased awareness and preparedness, enhanced trust and transparency, adherence to legislative and policy frameworks, social cohesion, the recognition of diverse needs, and the establishment of a feedback mechanism for continuous improvement.

Request for Detailed Information on Community Engagement Practices in Flood Risk Management for the Lower Clarence Flood Model Update 2022

I hereby request detailed information pertaining to community engagement practices employed by the Clarence Valley Council in the development, review, and implementation of the Lower Clarence Flood Model Update 2022 and associated flood risk management strategies.

263) Flood Risk Management Manual 2023: Specifically, Section 2, Principles 3 (Be Consultative), 4 (Make Flood Information Available), and 5 (Understand Flood Behaviour and Constraints), and Section 4.4 "Flood Risk Management Process". I seek documents detailing how the Council implemented these principles, especially Principle 3, which emphasises the significance of community involvement in flood risk management processes

264) Local Government Act 1993: Sections related to community consultation and participation, with a particular focus on how the Council adhered to these provisions during the flood model update process. I am interested in any documentation that demonstrates the Council's compliance with the Act's mandates for community engagement, including any strategies or activities undertaken to consult with the community about flood risk management plans and decisions.

265) Documentation of Community Engagement Plans: Detailed plans outlining strategies for community engagement specific to the flood model update, including objectives, targeted community groups, methodologies, and timelines. Reference to sections in the "Community Participation Plan" and any adherence to principles outlined in the "Flood Risk Management Manual 2023" would be pertinent.

266) Community Participation Plan: I request information on how the Council's Community Participation Plan was applied in the context of the flood model update, including detailed accounts of public consultations, workshops, feedback mechanisms, and how community input influenced decision-making processes.

267) Summary of Engagement Activities and Outcomes: A comprehensive summary of all engagement activities conducted, including public meetings, workshops, surveys, and any online platforms used for public consultation. Details on how these activities align with the "Community Participation Plan" and legislative requirements under the "Local Government Act 1993" and the "Environmental Planning and Assessment Act 1979".

268) Feedback Incorporation: Documentation demonstrating how community feedback was collected, analysed, and incorporated into the flood risk management planning and the flood model update. This includes any revisions made to the model or strategies based on public input.

269) Transparency and Information Accessibility: Evidence of efforts made to ensure transparency and accessibility of flood risk information to the public, in line with the "Flood Risk Management Manual 2023" Principle 4: "Make flood information available". Details on the formats and channels used to disseminate information would be relevant.

Follow-up Actions and Community Feedback Loop: Information on follow-up actions taken by the council post-engagement activities, including how ongoing feedback is managed and the mechanisms in place for addressing community concerns and queries over time.

270) Evaluation of Engagement Effectiveness: Any documents or reports assessing the effectiveness of community engagement efforts in meeting objectives, including challenges faced, lessons learned, and plans for improvement in future flood risk management activities.

This request is motivated by a commitment to ensuring that flood risk management in the Clarence Valley is conducted transparently, inclusively, and in a manner that genuinely incorporates community perspectives and concerns. Please advise on any costs associated with processing this request.

Request for Information on Community Engagement Practices in Flood Risk Management

I seek detailed insights into the Clarence Valley Council's adherence to mandated community engagement practices in flood risk management, with a focus on the development and application of the Lower Clarence Flood Model 2022 Update. This inquiry is grounded in the foundational requirements set forth in the Flood Risk Management Manual 2023, the Local Government Act 1993, the Environmental Planning and Assessment Act 1979, the Community Participation Plan, and relevant State Environmental Planning Policies (SEPP).

Information Requested:

271) Community Engagement Frameworks and Outcomes:
Reference: Flood Risk Management Manual 2023, Section 2 (Principles 3: Be Consultative, 4: Make Flood Information Available, 5: Understand Flood Behaviour and Constraints), and Section 4.4 "Flood Risk Management Process."

Request: Documentation detailing the framework and execution of community engagement processes, including methodologies, outcomes, and how feedback influenced flood risk management strategies.

272) Compliance with Legislative and Policy Directives:
Reference: Local Government Act 1993, Sections pertaining to public consultation; Environmental Planning and Assessment Act 1979, Sections related to community participation in planning processes; Community Participation Plan, specifically its Principles and Commitments section.

Request: Evidence demonstrating adherence to these legislative and policy directives, highlighting the council's efforts to engage the community transparently and inclusively.

273) Records of Public Consultation Activities:
Reference: Community Participation Plan, "Strategies for Community Engagement" subsection.

Request: Summaries and records of public consultations, workshops, and feedback mechanisms utilised in discussing flood risk management plans, focusing on the inclusivity and accessibility of these activities.

274) Assessment of Engagement Effectiveness :
Reference: Flood Risk Management Manual 2023, "Managing Flood Risk" Section 4, emphasising community engagement's role in FRM planning.

Request: Evaluations or reports assessing the effectiveness of community engagement efforts, including challenges, successes, and future plans for enhancing public involvement.

275) Accessibility of Flood Risk Information to the Public:
Reference: Environmental Planning and Assessment Act 1979, provisions for public access to information; Flood Risk Management Manual 2023, Principle 4.

Request: Details on measures taken to ensure flood risk information, including updates from the Lower Clarence Flood Model 2022, is accessible and understandable to the community, covering formats and channels used.

Rationale: Emphasising the indispensable role of community engagement in effective flood risk management, this request aims to scrutinise the Clarence Valley Council's commitment to involving the public in meaningful ways. Transparent, inclusive, and informative engagement practices are crucial for fostering community resilience, informed decision-making, and collective action in flood preparedness and response.

Request for Information on Potential Liability Exposure under Section 733 of the Local Government Act 1993

I hereby request detailed information from Clarence Valley Council regarding any assessments, discussions, or advisories that have been undertaken or received concerning potential exposure to liability under Section 733 of the Local Government Act 1993. This section relates to the exemption from liability for advice given in good faith by councils concerning flood liable land, land subject to the risk of bush fire, and land in the coastal zone.

The request is aimed at understanding how the council navigates the complex interplay between providing flood risk management advice, implementing flood mitigation strategies, and ensuring compliance with legislative protections against liability. This is especially pertinent in light of the council's adoption and application of flood models and Flood Impact Risk Assessments (FIRA), which are fundamental components of local flood risk management strategies.

Specifically, I am seeking:

276) Rationale for Actions Taken Under Section 733: Documents or correspondence that explain the Council's rationale for specific flood risk management decisions, including the selection of flood models and FIRAs, in the context of Section 733's liability exemptions. This request aims to uncover the Council's understanding and application of "good faith" in the context of flood risk management.

277) Community Engagement Records: Given the importance of acting in good faith and based on competent information, I seek documentation of the Council's efforts to engage with the community regarding flood risk management strategies and decisions. This includes how the Council communicates flood risks, mitigation measures, and any limitations or uncertainties associated with flood data or models.

278) Community Engagement and Information Disclosure: Evidence of how the council communicates the limitations or uncertainties associated with flood risk advice to the public, aiming to mitigate potential misunderstandings that could lead to liability. This includes public notices, guidance documents, and engagement strategies that highlight the council's adherence to good faith requirements.

279) Risk Management and Legal Advisories: Copies of any legal advisories, risk management assessments, or consultations undertaken by the Council regarding its obligations and protections under Section 733, especially as they pertain to flood risk management and the dissemination of flood risk information to the public and developers.

280) Discussions of Liability Exposure: Minutes from council meetings, internal communications, or correspondence with external agencies where potential liabilities under Section 733 have been discussed. This request seeks insights into the council's awareness and management of liability risks associated with flood risk advice and decisions.

281) Risk Assessments and Legal Opinions:
Documents detailing any risk assessments or legal opinions regarding the council's potential liability under Section 733 for flood risk management actions. This includes analysis on how the adoption of the Lower Clarence Flood Model 2022 Update and subsequent flood planning levels might impact council's exposure to legal challenges.

282) Documentation of Council Actions and Decisions:
Records of council actions and decisions related to flood risk management that demonstrate compliance with the good faith exemptions under Section 733. Specifically, documentation showing due diligence, reliance on expert advice, and adherence to statutory requirements in flood risk management practices

This request is driven by a commitment to ensuring that Clarence Valley Council's flood risk management practices are not only effective in protecting the community but also align with legal requirements to minimise the council's exposure to liability. Transparency in how the council assesses and manages these liabilities is crucial for public trust and accountability.

Councils' Duty to Disclose Flood Risk Information

Sustainable Governance and Planning:
Councils must establish sustainable governance arrangements that enable effective oversight and management of flood risk. This involves a partnership across all levels of government, with local councils playing a primary role in flood risk management (FRM) within their Local Government Areas (LGAs). The frameworks emphasise the need for councils to think and plan strategically, taking into account the full range of flood behaviour and constraints, and understanding how flood risk may change over time due to factors like climate change and development.

Consultation and Information Availability:
Consultation with the community, government agencies, and stakeholders is a cornerstone of effective FRM. Councils are required to make flood information readily accessible to the public, ensuring that government stakeholders, the community, and individuals can make informed decisions about managing flood risk, responding to flood threats, and investing in floodplain infrastructure.

Consideration of Flood Risk in Planning Decisions:
Flood risk must be considered in all relevant planning decisions. This includes maintaining natural flood functions and managing flood risk effectively through a flexible, merit-based approach to decision-making.

Councils must integrate flood risk management into their local environmental planning policies (LEP) and development control plans (DCP), making sure new developments are compatible with flood risk and do not increase risk to existing properties.
Adaptation and Resilience Building:

Councils should work towards building resilience to flooding through appropriate land use planning, development controls, and infrastructure investment, taking into account future changes such as sea-level rise and climate change.

Community Participation and Engagement:
The Clarence Valley Council Community Participation Plan highlights the importance of engaging with the community on planning matters, including flood risk management. It outlines the principles supporting community participation, emphasising the right of the community to be informed and involved in planning decisions that affect them, especially those related to flood risk management.

Legal and Policy Frameworks:

Documents like the State Environmental Planning Policy, LEPs, and the Environmental Planning and Assessment Act provide a legal and policy framework for councils to manage flood risk. These documents mandate the inclusion of flood risk considerations in planning instruments and decisions, ensuring that developments within flood-prone areas are appropriately assessed and managed to mitigate flood risk.
In summary, councils are obligated to manage flood risks through a comprehensive approach that involves strategic planning, public consultation, making flood information accessible, considering flood risk in planning decisions, building resilience, and adhering to legal and policy frameworks. This ensures that flood risks are effectively managed to protect communities and properties from the impacts of flooding.

Addressing Implications of Flood Model Report Disclaimer

The disclaimer by BMT Commercial Australia Pty Ltd regarding their flood model report carries significant implications for various stakeholders involved in flood risk management, urban planning, and development in the affected area. Here are some further potential implications of such a statement:

1. Reliability and Accountability
The disclaimer explicitly limits the reliability of the report for parties other than the direct client (likely the council or a specific entity commissioning the report). This positions BMT away from any accountability for inaccuracies or misinterpretations by third parties, including property owners, developers, and even government entities that did not commission the work directly.
2. Use in Decision-Making
Stakeholders might be cautious in using the report's findings for critical decision-making processes without conducting independent verifications or seeking additional expert opinions. This could increase the cost and complexity of planning and development due to the need for further consultations.
3. Impact on Development Projects
Developers using the report to inform the design and implementation of projects might face risks if relying solely on its contents without independent assessment. This could affect the viability of projects, particularly if future flood events exceed the modelled predictions.
4. Insurance and Financing

Insurers and financiers may view the disclaimer as a red flag, potentially affecting the availability and terms of insurance and financing for projects within the flood model area. They may require additional assurances or independent evaluations before providing coverage or funds.

5. Legal and Ethical Considerations

The disclaimer raises ethical concerns about the responsibility of consultants in providing critical information that impacts public safety and property. It also poses legal questions about the extent of liability for professionals and the council in cases where reliance on the report leads to adverse outcomes.

6. Public Trust and Transparency

Such disclaimers could impact public trust in the flood risk management process, especially if the community perceives that the models and reports cannot be relied upon for personal and public safety planning. This could undermine efforts to engage the community in flood preparedness and resilience-building activities.

7. Regulatory and Policy Implications

For regulatory bodies and policymakers, the disclaimer emphasises the need for stringent standards in the acceptance and use of external reports and models in the planning process. It could lead to the development of guidelines that require additional oversight, validation, or transparency in the use of such reports.

8. Future Litigations

In the event of flood damage that stakeholders believe was inadequately predicted or mitigated based on the model's advice, the disclaimer could be a central point in legal disputes. The delineation of liability could significantly impact the outcomes of such litigations.

9. Professional Due Diligence

This disclaimer may prompt professionals in the field to exercise higher levels of due diligence when using third-party reports. They might need to verify the underlying data and assumptions more thoroughly or rely on a broader range of sources for flood risk assessment.

10. Need for Continuous Monitoring and Updates

Acknowledging the limitations and conditional reliability of such reports underscores the necessity for continuous monitoring of flood risks, including the impact of climate change, urban development, and other dynamic factors that could alter flood patterns beyond the scope of the original model.

In summary, the disclaimer by BMT serves as a reminder of the complexities and uncertainties inherent in flood risk modelling. It underscores the necessity for a multi-faceted approach to flood risk management that includes independent verification, continuous data updating, and broad stakeholder engagement to ensure the safety and resilience of communities.

Request for Information -Flood Model Report Implications and Accountability

I request information under the Government Information (Public Access) Act 2009 concerning the the Lower Clarence Flood Model 2022 update developed by BMT Commercial Australia Pty Ltd for the council's use in flood risk management and planning within the Clarence Valley.

Given the disclaimer issued by BMT, which limits the report's reliability and accountability to third parties, and explicitly disclaims liability for the completeness, accuracy, and implementation of the information and advice contained therein, there are significant implications for various stakeholders involved in flood risk management, urban planning, development, and community safety within the council area.

Information Requested:

283) Verification Processes: Documentation detailing the council's verification processes for the flood model report's data, methodologies, and conclusions, including any independent assessments or peer reviews commissioned by the council.

284) Usage Guidelines: Any guidelines or policies developed by the council regarding the use of the flood model report in decision-making processes, especially in urban planning, development approvals, and community safety initiatives.

285) Stakeholder Communication: Records of communications between the council and stakeholders,

including property owners, developers, insurers, and financiers, about the limitations and appropriate use of the flood model report.

286) Legal and Ethical Considerations: Documents reflecting the council's consideration of legal and ethical implications associated with the use of the flood model report, including measures taken to mitigate potential liabilities and ethical concerns.

287) Public Trust and Transparency: Information on initiatives undertaken by the council to maintain public trust and transparency in flood risk management, particularly in light of the report's disclaimer. This includes public engagement efforts and information dissemination strategies.

288) Regulatory and Policy Implications: Documentation on any discussions or decisions within the council to develop or revise regulatory guidelines, standards, or policies in response to the disclaimer and the inherent uncertainties in flood risk modelling.

289) Future Litigations: Any assessments or legal advisories regarding the potential for future litigation related to reliance on the flood model report, and strategies developed to minimise the council's exposure to such risks.

290) Professional Due Diligence: Records of professional due diligence practices recommended or required by the council for staff and external consultants in using the flood model report.

291) Continuous Monitoring and Updates: Information on the council's plans or ongoing efforts for continuous monitoring, data updating, and model recalibration to address evolving flood risks and ensure the accuracy and relevance of flood risk assessments.

The requested information is crucial for understanding the council's approach to addressing the significant implications arising from the BMT report's disclaimer. It will help assess the council's commitment to rigorous flood risk management, accountability, and the safeguarding of community interests.

Addressing Flood Risk Management and Predictive Uncertainties

Clarence Valley Council's Floodplain Management web page states;
"It is not possible to accurately predict exact future flood levels for any location." "A qualified consultant and/or surveyor should be engaged to assess the potential impact of the relevant design flood level against the relevant ground or floor levels for any particular property before making any decision to purchase, sell or do anything on, at or to that property."[101]

The statement by Clarence Valley Council highlights a fundamental challenge in flood risk management: the inherent uncertainty in predicting exact future flood levels. This acknowledgment has several implications for the council, community members, developers, and various stakeholders involved in land use planning, property transactions, and flood risk mitigation efforts.

Potential implications of this statement:

[101] https://www.clarence.nsw.gov.au/Council/Our-performance/Plans-and-strategies/Floodplain-Management-plans-flood-studies-and-animations

1. Limitation in Flood Prediction Accuracy
The statement underlines the technical limitations in flood modelling and forecasting, emphasising that despite advances in technology and methodologies, predicting exact flood levels remains a complex challenge due to the dynamic nature of weather systems, climate change, and land use changes.

2. Need for Specialised Assessment
It suggests that property owners or prospective buyers should not solely rely on general flood maps or historical data but should seek detailed, site-specific flood risk assessments from qualified professionals. This ensures that decisions are informed by the most current and comprehensive data available.

3. Implications for Property Owners and Buyers
The council's advice implicitly warns that ownership decisions should consider flood risks, potentially affecting property values, insurance premiums, and the feasibility of development or renovations on flood-prone land.

4. Liability and Responsibility
By advising engagement with qualified professionals, the council may be aiming to delineate its liability, indicating that while it can provide general flood risk information, the responsibility for making informed decisions about specific properties lies with individual property owners and professionals they hire.

5. Enhanced Due Diligence
The statement encourages enhanced due diligence by stakeholders, highlighting the importance of incorporating flood risk assessment into planning and development processes. This is particularly critical for developers and planners in ensuring that new constructions or developments are resilient to flood impacts.

6. Community Preparedness and Resilience
Acknowledging the limitations in flood prediction underscores the need for comprehensive community preparedness and resilience planning. It highlights the importance of emergency planning, community education on flood risks, and the development of adaptive and flexible flood management strategies.

7. Policy and Planning
This acknowledgment may influence local planning policies and development standards, encouraging the adoption of conservative approaches to zoning, land use planning, and building codes to account for uncertainty in flood risk projections.

8. Insurance Implications
Insurance companies may use such statements to adjust coverage policies, premiums, and requirements for flood insurance, potentially affecting the affordability and availability of flood insurance for property owners.

9. Investment in Flood Mitigation and Infrastructure
Finally, recognising the unpredictability of flood levels highlights the need for ongoing investment in flood mitigation infrastructure, such as levees, floodwalls, and drainage improvements, as well as the incorporation of natural flood management techniques to reduce the impact of flooding events.

Overall, the statement from Clarence Valley Council is a pragmatic acknowledgment of the complexities involved in flood risk management. It reflects a balanced approach to managing expectations, promoting individual responsibility, and underscoring the need for collective efforts in building flood-resilient communities.

Request - Flood Risk Management, Predictive Uncertainties, and Legislative Compliance

I request detailed information regarding the Clarence Valley Council's strategies, methodologies, and legislative compliance in managing flood risk and addressing the inherent uncertainties in flood prediction, as highlighted in the council's public statements. The complexities of flood risk management necessitate a balanced approach that aligns with legislative mandates and ensures the welfare of the community.

Information Sought:

292) Flood Prediction Methodologies: Documentation on the methodologies and technologies utilised for flood forecasting and modelling. Please include references to any limitations acknowledged by these methods, pursuant to Environmental Planning and Assessment Act 1979, Section 4.15 which mandates consideration of natural hazards in the assessment of development applications.

293) Guidance for Specialised Flood Risk Assessments: Policies or guidelines issued by the council regarding the engagement of qualified professionals for conducting flood risk assessments, in line with the Local Government Act 1993, Section 733, concerning council's advice on flood liability.

294) Property Owner and Buyer Advisories: Information or advisories provided to stakeholders regarding flood risk implications for property transactions, adhering to the Environmental Planning and Assessment Regulation 2000, Part 6, which discusses the public's right to information on environmental planning instruments.

295) Liability and Public Responsibility Delineation: Documents detailing the council's stance on its liability regarding flood risk information provision and the public's responsibility, as per the Local Government Act 1993, Section 733.

296) Incorporation of Flood Risks in Development Planning: Strategies or policies ensuring flood risk assessments are integral to planning and development, according to State Environmental Planning Policy (Flood Prone Land) 2021.

297) Community Preparedness Initiatives: Details on community preparedness and resilience programs designed by the council, aligning with State Emergency and Rescue Management Act 1989, Section 38B, on local emergency management planning.

298) Planning Policy Influences: Evidence of flood prediction uncertainties influencing local planning policies and development standards, in accordance with State Environmental Planning Policy (Flood Prone Land) 2021.

299) Engagement with the Insurance Sector: Communications with insurance entities regarding flood risk management, highlighting any adjustments in policies or premiums based on flood risk assessments.

300) Flood Mitigation and Infrastructure Investment: Details of investment in flood mitigation infrastructure, following guidelines under State Environmental Planning Policy (Flood Prone Land) 2021.

I formally request detailed information regarding the Clarence Valley Council's (CVC) adoption and application of the Lower Clarence Flood Model 2022 (LCFM 2022) in relation to Flood Impact Risk Assessments for development applications within the West Yamba Urban Release Area (WYURA). This request is aimed at gaining insights into the flood risk management strategies, including the methodologies, decision-making processes, and compliance aspects with flood risk management guidelines and the Local Government Act 1993.

Request for Documentation of Time Allocation:
In addition to the detailed information sought through this GIPA request, I kindly ask for the Council to maintain and subsequently provide a record documenting the time allocated to processing this request. Specifically, I would like the following details to be recorded and included in your response:

Processing Stages:
Breakdown of the stages involved in processing the GIPA request, including initial assessment, information gathering, consultation (if applicable), decision-making, and preparation of the response.

Total Time Spent:
A summary of the total time taken to process this GIPA request, from receipt to final response.

Time Allocation:
For each stage outlined above, please document the approximate time spent, including hours or minutes allocated by Council staff and any external consultation times, if relevant

The request for documenting time allocation is intended to provide transparency and accountability in the processing of GIPA requests, in line with the principles of the GIPA Act and the Local Government Act 1993, which emphasise transparency, accountability, and community engagement in council activities.
I believe that understanding the resources dedicated to addressing GIPA requests, especially those concerning critical community issues such as flood risk management, is crucial for both the Council and the community. This will not only foster trust but also help in evaluating the efficiency and effectiveness of information provision processes.

Images captured by a drone in the March 2022 event, can view here;

Web page
https://yambafloods.au
Yamba rd Flight Path - https://yambafloods.au/2022floodimages/YambardFlightpath.htm

Northern Flight path - https://yambafloods.au/2022floodimages/YambardNorthernFlightpath.htm

Southern Flight path - https://yambafloods.au/2022floodimages/YambardSouthernFlightpath.htm

Or downloaded here;

Link to image pdf files
Yamba rd Flight Path – https://yambafloods.au/2022floodimages/YambardFlightpath.pdf

Northern Flight path – https://yambafloods.au/2022floodimages/YambardNorthernFlightpath.pdf

Southern Flight path - https://yambafloods.au/2022floodimages/YambardSouthernFlightpath.pdf

[redacted]
Craigh McNeill

10/4/2024

Craigh McNeill

[redacted]

RE:

Supplementary information; for Council Reference Number GIPA2024/0012

I wish to provide further information for consideration to Request numbers 41 to 55, title: Request for Information on Flood Modelling and Entrance Conditions, page 55.

The image displays sand shoal restrictions within the breakwalls, outside the breakwalls and inside the breakwalls.

Image 96. Clarence river entrance at Yamba – NSW Government Spatial Services -Six Maps

Thank you

Craigh McNeill

6/5/2024
Craigh McNeill
[redacted]

Supplementary Submission 2 for DA2023-0241 – 120 Carrs Drive, Yamba

Clarence Valley Flood Risk Management and the Clarence Valley Flood Emergency Sub Plan

The Clarence Valley region faces an exceptionally high flood risk that threatens the safety, livelihoods and environment of local communities. The State Disaster Mitigation Plan 2024-2026 ranks the Clarence Valley Local Government Area (LGA) in the top 3[1] highest flood risk areas across social, economic and natural environments in New South Wales. This convergence of compounding flood hazards warrants prioritized attention to bolster the region's resilience through comprehensive disaster adaptation planning.

However, the current Clarence Valley Local Flood Emergency Sub Plan contains critical deficiencies that undermine its ability to effectively prepare for and respond to major flood events. Alarmingly, the plan omits any consideration of climate change impacts[2], despite overwhelming regulatory mandates and policy directives emphasizing the necessity of integrating climate change projections into flood risk assessments and emergency planning frameworks.

Authoritative documents like the NSW Climate Change Adaptation Strategy, Climate Change Policy Framework, Flood Risk Management Manual, Climate Change (Net Zero Future) Act 2023, Environmental Planning and Assessment Act 1979, and State Environmental Planning Policies all explicitly highlight the need to account for climate change in activities ranging from development controls to infrastructure impact assessments to emergency flood response strategies. Failing to incorporate these climate change considerations renders the Sub Plan dangerously out of step with established guidelines and legal requirements.

Beyond this glaring climate omission, the plan also relies on erroneous or outdated flood data, underestimates the number of properties at risk, uses dated census information, lacks specific evacuation details for vulnerable areas like Yamba, and poses a potential flood risk to lives.[3] These shortcomings violate core principles of effective flood planning aimed at safeguarding communities through comprehensive risk assessments, forward-looking adaptation measures, and robust emergency response capabilities.

With an admittedly deficient emergency plan that fails to properly assess evacuation requirements, route vulnerabilities and risk mitigation measures, approving new development in high flood hazard zones could contravene these critical provisions of the Flood Planning Order. Proceeding with approvals without a robust, up-to-date plan in place would jeopardize community safety and undermine the core principles of flood risk minimisation.

[1] State Disaster Mitigation Plan - https://www.nsw.gov.au/sites/default/files/noindex/2024-02/State_Disaster_Mitigation_Plan_Full_Version_0.pdf
[2] SES GIPA request.pdf
[3] SES GIPA request.pdf

Given these glaring gaps, allowing further development approvals in flood-prone areas would be irresponsible and in direct violation of the Flood Planning Order under the Environmental Planning and Assessment Act 1979.

Specifically, clauses 5.21 and 5.22 of the Flood Planning Order establish critical requirements that must be met for development consent to be granted in flood-prone areas.

Under clause 5.21 Flood planning, the objectives are as follows:

> 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:
>
> (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
>
> (d) incorporates appropriate measures to manage risk to life in the event of a flood.

Clause 5.22 Special flood considerations further states that development consent must not be granted unless the consent authority is satisfied that the development will not increase the potential flood hazard or risk to life or property.

Given the identified deficiencies in the current Clarence Valley Local Flood Emergency Sub Plan, such as reliance on erroneous flood data, lack of specific evacuation planning for vulnerable areas like Yamba, and failure to consider climate change impacts, there are legitimate concerns that approving new development could violate clauses 5.21 and 5.22 of the Flood Planning Order.

Craigh McNeill

26/4/2024

Craigh McNeill
[redacted]

Re: Clarence Valley Flood Emergency Sub Plan

Clarence Valley has the highest flood hazard in NSW

Yamba is a 'vulnerable community'

The State Disaster Mitigation Plan

In 2023:

- The LGAs with the highest **flood hazard** are the Hawkesbury, equal for Clarence Valley, Ballina and Coonamble.
- The LGAs with the highest **flood risk** to the built environment are the Clarence Valley, Tweed and Ballina. While Coonamble has a higher flood hazard it has a lower flood risk than Tweed Valley due to the greater number of properties and assets exposed to the hazard in the Tweed Valley.
- The top 3 LGAs with the highest flood risk in the social, economic and natural environment are:

Social environment	Economic environment	Natural environment
> Coonamble	> Ballina	> Hawkesbury
> Clarence Valley	> Clarence Valley	> Clarence Valley
> Hawkesbury	> Lismore	> Coonamble

Figure 1. State Disaster Mitigation Plan 2024-2026

The State Disaster Mitigation Plan 2024-2026 was created to provide a statewide framework and comprehensive approach for reducing the impacts and costs of natural disasters like bushfires, floods, storms and coastal hazards across NSW.

One of the key purposes stated in the plan is to "enable and support the development of place-based, community-centric Disaster Adaptation Plans (DAPs)" (page 9).

The concerning assessment that the Clarence Valley LGA ranks in the top 3 highest flood risk areas across the social, economic and natural environments directly links to and underscores the urgent need for a focused Disaster Adaptation Plan to be developed for this region as intended by the State Mitigation Plan.

Specifically, the State Mitigation Plan highlights that:

The Clarence Valley is the only LGA displaying such widespread high flood exposure impacting all aspects of the community, economy and natural landscapes (page 37).

This convergence of compounding flood risks warrants prioritised attention and resources for comprehensive flood mitigation efforts in the Clarence Valley.

Collaborative disaster adaptation planning involving the local community is crucial to develop a suite of prioritised mitigation options to increase resilience across the social, economic and environmental domains.

Given its outlier status, the Clarence Valley must be a key focus area for accelerated flood risk mitigation action under the state's disaster planning framework.

The State Mitigation Plan's clear identification of the Clarence Valley as an extreme multi-environment flood risk hotspot directly necessitates and justifies the focused development of a tailored Disaster Adaptation Plan for this LGA, as intended by the statewide mitigation framework.

The Plan provides the overarching strategic guidance, risk assessment, and toolkit of potential mitigation measures. But it highlights that detailed, localised adaptation planning is required for areas like the Clarence Valley to apply those tools through a comprehensive, community-driven process to tackle the region's specific compounding flood vulnerabilities head-on.

In essence, the concerning multi-environment flood risk assessment for the Clarence Valley demonstrates precisely why place-based Disaster Adaptation Planning, as enabled by the State Mitigation Plan, is so critically needed in this LGA as an urgent priority.

Given the State Disaster Mitigation Plan 2024-2026 emphasises the need for "place-based, community-centric Disaster Adaptation Plans (DAPs)" and identifies Clarence Valley as a high-risk area for flooding, impacting all community, economic, and natural aspects, under the Government Information (Public Access) Act 2009, I am requesting access to the following information related to how the NSW State Emergency Service (SES) is aligning with and implementing the State Disaster Mitigation Plan 2024-2026 specifically for the Clarence Valley Local Government Area:

1) Details on any actions, plans or processes currently underway or to be initiated by the NSW SES to develop a focused Disaster Adaptation Plan for the Clarence Valley LGA, as recommended and enabled by the State Disaster Mitigation Plan.

2) Information on the prioritisation, resourcing, and timeframes for commencing the development of a Disaster Adaptation Plan for the Clarence Valley region, given its identification as a high flood risk area across social, economic and natural environments in the State Mitigation Plan.

3) Records of any stakeholder engagement, consultation or collaboration undertaken or planned by the NSW SES with the Clarence Valley community, local council, Aboriginal groups and other relevant parties to inform the development of a Disaster Adaptation Plan for this LGA.

4) Copies of any risk assessments, flood mapping, data analysis or other technical information specific to the Clarence Valley LGA that the NSW SES has conducted or relied upon to understand the flood exposure and vulnerabilities requiring mitigation through a Disaster Adaptation Plan.

5) Documentation outlining how the NSW SES intends to apply and prioritise the risk reduction tools and mitigation measures outlined in the State Mitigation Plan within the context of a Disaster Adaptation Plan for the Clarence Valley.

The current Clarence Valley Local Flood Emergency Sub Plan is not fit for purpose

For Yamba, the plan;

(1) omits climate change
(2) relies upon erroneous design flood levels
(3) is based on outdated data
(4) proposes implausible resupply
(5) underestimates the number of Impacted Dwellings
(6) Inconsistent Flood Level Data in Emergency Planning
(7) provides no estimate of the number of people affected by the flood events
(8) has uncertainty in accurate timing for evacuation route closures is unattainable
(9) has uncertainty in predicting evacuation route closures
(10) lacks specific details regarding evacuation for Yamba residents
(11) provides no accurate timing for evacuation route closures
(12) errors pose potential flood risk to lives

Given the Clarence Valley LGA's exceptional exposure to flood risks across the social, economic and environmental spheres, the identified deficiencies in the Clarence Valley Local Flood Sub Plan are of critical concern and must be urgently addressed.

The Sub Plan's failure to adequately consider climate change impacts, reliance on potentially outdated flood data, underestimation of at-risk properties, use of dated census information, and lack of a specific evacuation plan for the highly vulnerable town of Yamba are serious shortcomings that undermine the region's flood preparedness and resilience.

In light of the Clarence Valley being the only LGA in NSW to rank in the top 3 for flood risk across all assessed domains, these plan deficiencies take on added significance. They directly undermine the ability to safeguard the region's communities, economy and environment from the potentially catastrophic impacts of major flooding, which could include widespread displacement, economic disruption, property damage, infrastructure failure and environmental degradation.

Allowing these deficiencies to persist in the face of such an elevated multi-faceted flood threat profile would represent a major failure in disaster risk management obligations and duty of care to the Clarence Valley community. It is imperative that addressing these issues and strengthening the Sub Plan becomes the top priority.

The lives and livelihoods of Clarence Valley residents, the sustainability of key local industries, and the health of vital ecosystems are all at stake. Urgent action is required from the SES and all relevant agencies to review and rectify the Sub Plan's shortcomings, informed by the latest flood risk assessments and in close consultation with the community.

Only by doing so can we hope to mitigate the severe and compounding flood risks faced by this highly exposed region and bolster its resilience against the inevitable future flooding challenges in a changing climate. Inaction or further delay is simply not an option given what is at risk.

Obligations of the SES to Prepare and Review Emergency Sub Plans

Based on the State Emergency and Rescue Management Act 1989, State Emergency Service Act 1989, and the NSW State Emergency Management Plan (EMPLAN), the NSW State Emergency Service (NSW SES) has the following key obligations regarding preparing and reviewing flood emergency sub plans:

Preparing Flood Emergency Sub Plans:

Under the State Emergency Service Act 1989 Section 12, the NSW SES Commissioner has the authority to prepare flood sub plans.

The EMPLAN (Section 501) states that the NSW SES, as the designated Combat Agency for flood, is responsible for preparing flood sub plans as part of a comprehensive planning process.

Reviewing/Maintaining Flood Sub Plans:

The State Emergency and Rescue Management Act 1989 Section 15 requires the NSW SES to review and maintain the State Flood Plan and subordinate plans.

The EMPLAN (Annex B) specifies that the NSW SES is to maintain Flood Sub Plans by:

a) Ensuring all supporting agencies are aware of their roles and responsibilities (EMPLAN Section 113)

b) Conducting exercises to test the plan at least every 5 years (EMPLAN Section 119)

c) Reviewing the plan after floods, changes to land use, or as required by the State Emergency Management Committee (EMPLAN Section 120)

d) Reviewing the plan at least every 5 years (EMPLAN Section 121)

In summary, the NSW SES is legislatively obligated under the State Emergency Service Act 1989 to prepare flood sub plans.

The State Emergency and Rescue Management Act 1989 and EMPLAN require the NSW SES to review and maintain the currency of these plans by engaging with stakeholders, conducting regular exercises, incorporating lessons from events, and conducting periodic comprehensive reviews.

This ensures flood sub plans remain up-to-date and effective in coordinating multi-agency responses to mitigate the impacts of flooding on communities.

Climate Change

The plan omits climate change; including climate change in emergency flood planning is essential due to the increased frequency and severity of flooding resulting from changing weather patterns. It improves risk assessments, enhances community resilience, and ensures public safety by adapting infrastructure and response strategies to handle these evolving threats. This integration also supports economic stability by mitigating flood impacts and aligns with policy requirements, ensuring that planning efforts are comprehensive and proactive. Ultimately, incorporating climate change in flood planning is crucial for protecting lives, property, and the environment as weather events become more extreme.

Regulatory Mandate to Include Climate Change in Emergency Flood Planning

NSW Climate Change Adaptation Strategy

The "NSW Climate Change Adaptation Strategy" extensively addresses the need for considering climate change in emergency flood planning. Key sections that focus on this need include:

Priority 2: Complete Climate Change Risk and Opportunity Assessments - These assessments aim to understand how climate change can impact flood risks, informing necessary adjustments in emergency planning.

Priority 3: Develop and Deliver Adaptation Action Plans - These plans are developed based on the risk assessments to specifically address how to manage and respond to increased flood risks due to climate change.

Priority 4: Embed Climate Change Adaptation in NSW Government Decision-Making - This priority ensures that climate change considerations are integral to decision-making processes, including those related to emergency flood response strategies.

These sections and priorities from the document emphasise the proactive steps NSW is taking to integrate climate change considerations into emergency flood planning, recognising the increasing risks and planning necessary adaptations accordingly.

NSW Climate Change Policy Framework

The "NSW Climate Change Policy Framework" highlights the need to consider climate change in emergency flood planning. Key sections addressing this are:

Section 4.2 "Adaptation to Climate Change" - It emphasises the incorporation of climate change impacts into policy, planning, and decision-making processes across the state. This includes considerations for emergency management and flood planning to enhance resilience.

Section 4.2.2 "Building Resilience" - This section specifies the NSW Government's commitment to build resilience against climate change impacts across communities, industries, and ecosystems. This includes preparing for enhanced flood risks due to climate change.

Flood Risk Management Manual

The Flood Risk Management Manual explicitly recognises the need to consider climate change in flood planning.

Key points from the document relevant to addressing climate change in flood risk management:

Principle 2 states the need to "Think and plan strategically" by understanding "how flooding is managed and gaps in management including FRM measures, EM planning and land-use planning" and "how flooding may change over time considering future scenarios (such as those related to climate change)."

Principle 5 highlights the importance of "Understand[ing] flood behaviour and constraints" by examining "the full range of floods" which provides a basis for understanding projected changes due to factors like climate change.

Principle 6: Understand flood risk and how it may change (Section 2, p. 11 of the manual): This principle emphasises the importance of understanding not only current flood risks but also how these risks may change over time due to various factors, including climate change. This is essential for effective and forward-looking flood risk management.

Principle 7 states the need to "Consider variability and uncertainty" including changes due to "climate change and changes in catchments, development and infrastructure."

Principle 10 notes the importance of "Continually improving the management of flood risk" by adapting to changes like "improved understanding of the impacts of climate change on factors that affect flood behaviour."

Variability and Uncertainty (Section 2, p. 11): The manual highlights the necessity of considering variability and uncertainty in flood behaviour, which includes the impacts of climate change. This principle guides planning to be adaptable and robust against the backdrop of changing climate conditions, which can alter flood frequency, intensity, and patterns.

These sections directly link the manual's guidelines to the broader legislative and policy framework that governs flood risk management, emphasising the integration of climate change considerations as a critical component of strategic and effective planning. This connection ensures that flood risk management in NSW aligns with both state and national priorities for adapting to and mitigating the impacts of climate change on communities and the natural environment.

In multiple principles, the document clearly highlights the need to understand and account for potential changes in flood behaviour, risk, and constraints due to climate change impacts when undertaking flood risk management planning and implementation for local communities.

Climate Change (Net Zero Future) Act 2023

The Climate Change (Net Zero Future) Act 2023 outlines several aspects where climate change is considered in broader planning and policy. Specifically, the Act emphasises the importance of adapting to a changing climate to enhance resilience, which directly impacts how emergency services, including flood management, should plan and respond to increased weather variability and extreme events caused by climate change.

The Act sets objectives for New South Wales to be more resilient to a changing climate, which includes being better prepared for events such as floods. It mandates the development and implementation of strategies, policies, and programs to address the impacts of climate change, including adapting critical infrastructure and emergency response strategies to better handle such events. This is part of a broader framework aimed at reducing greenhouse gas emissions and enhancing the region's capacity to cope with and recover from climate-related disturbances.

Objective for Adaptation to Changing Climate (Section 10): This section establishes that New South Wales aims to be more resilient to a changing climate, which includes enhancing preparedness for and responses to climate-induced events such as floods.

Guiding Principles, Targets, and Objectives (Part 2): This part of the Act discusses the guiding principles for addressing climate change, including taking action to adapt to its adverse impacts and to minimise the cost and adverse impacts of climate change. These principles are fundamental for guiding the development of emergency flood planning and other climate adaptation strategies.

Functions of the Net Zero Commission (Section 15): This section tasks the Net Zero Commission with monitoring and reviewing progress towards adaptation objectives and recommending actions that should be taken to address climate change, including updating emergency planning and response strategies to incorporate climate change considerations.

Advisory Committees (Section 22): The section allows for the establishment of advisory committees that can assist in refining strategies, including those related to emergency flood planning, to ensure they are effective under changing climate conditions.

This legal framework shows a clear recognition that climate change impacts, including increased frequency and severity of floods, must be integrated into emergency planning processes to safeguard communities and ensure a swift and effective response to such natural disasters

Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 provides clear directives for considering the impact of climate change on urban planning, which would include emergency flood planning.

Notable sections include:

Division 3.6 Development control plans (DCPs) (Section 3.41 to 3.46): This section outlines the importance of development control plans, which municipalities use to guide the development of properties in flood-prone areas, incorporating climate change projections to ensure sustainability and safety.

Part 5 Infrastructure and environmental impact assessment (Sections 5.1 to 5.31): This part highlights the need for environmental impact assessments, which must include considerations of how infrastructure projects, including those related to flood control and emergency preparedness, might be affected by climate change.

Protection of the Environment Administration Act 1991 No 60

The "Protection of the Environment Administration Act 1991 No 60" addresses the necessity to consider climate change within environmental protection and emergency planning frameworks.

Key sections of this act include:

Objectives of the Authority (Part 3, Section 6) - Outlines that one of the objectives of the Environment Protection Authority is to take action in relation to climate change. This broad objective serves as a foundational directive to consider climate change impacts across various activities, including emergency response and flood management.

General Responsibilities and Functions of the Authority (Part 4, Sections 7-10) - Specifies the Authority's functions, which include advising on methods to ensure integration of pollution controls with development consents and promoting environmental protection measures that consider climate change impacts. Particularly, Section 10 mandates the Authority to report on the state of the environment every three years, which includes assessments of environmental conditions that impact flood planning.

Advisory Committees (Part 6, Sections 29-31) - Establishes advisory committees to advise the Authority on various matters, potentially including climate change impacts on emergency flood planning.

State Environmental Planning Policy

The "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" provides detailed guidelines for development activities including emergency flood planning, especially in relation to climate change considerations. Here are the relevant sections and parts from the document that specifically mention or imply considerations of climate change:

Part 3 - Housing Code (Section 3.5): This section discusses "Complying development on flood control lots," which directly relates to climate change adaptation by ensuring that developments in flood-prone areas meet specific criteria to handle the potential increases in flood risk due to climate change.

Part 3C - Greenfield Housing Code (Section 3C.6): Similar to the Housing Code, this section addresses complying development on flood control lots, emphasising the need for developments to consider flood risks, which are expected to increase with climate change impacts.

Resilience in NSW

the "Resilience in NSW" document highlights the need to consider climate change impacts in emergency planning, including for flood risks.

Relevant excerpts:

On page 8, it states:

"Climate change is expected to increase the frequency, duration and intensity of extreme weather events due to greater climate variability. This will affect the severity and frequency of natural hazards such as bushfires, floods, storms and heatwaves."

On page 9, under "Resilience Challenges", it mentions:

"Incorporating climate change projections into emergency risk assessments and planning to develop effective adaptation and resilience strategies against increasing natural hazard risks posed by climate change."

Action 31 on page 18 calls for:

"Improving data and methods to assess future hazard risk under climate change."

Action 7 on page 16 proposes:

"Developing a framework for determining tolerable risk levels for different development types considering climate change impacts."

These excerpts clearly indicate that climate change projections and impacts, including increased flood risks from more extreme rainfall events and other factors, need to be accounted for in emergency risk assessments, planning, and overall resilience strategies in NSW.

Incorporating climate change considerations is highlighted as a key challenge and need for enhancing resilience against escalating natural hazards like floods that may be exacerbated by climate change effects.

State Emergency Management Plan

The State Emergency Management Plan (EMPLAN) 2023

recognises in paragraph 111 that "emergency management arrangements will need to consider the impacts of climate change, which is expected to increase the frequency, duration and intensity of extreme weather events."

Bureau of Meteorology Flood Preparedness

The document "Flood Preparedness" from the Australian Emergency Manuals Series identifies the need to consider climate change impacts when developing flood emergency plans.

Specifically, it states in Chapter 1 - "The Need for Flood Emergency Planning":

"Flood emergency planning in Australia needs to note the likelihood that climate change will alter the nature of flood risk. It is becoming accepted that rises in sea level, which have already occurred and which are ongoing, will alter the flood regime in coastal and estuarine areas, making flooding both more frequent there

and more severe in its impacts. Changes in rainfall intensity over much of Australia may also have the effect of making severe flooding a more frequent occurrence (Intergovernmental Panel on Climate Change, 2007)."

The manual highlights that flood emergency planning should account for potential changes to flood behaviour and risks due to climate change impacts like sea level rise and increased rainfall intensities.

The document recommends that flood emergency plans address the full range of potential flood types and severities, including considering effects of climate change that could exacerbate flooding in the future.

Planning System and the Impacts of Climate Change Local Government NSW (LGNSW)

The LGNSW "Planning System and the Impacts of Climate Change" identifies the need to consider climate change impacts in the planning system. Here are the relevant references:

In the Executive Summary, it states:

"This paper outlines the NSW Government's position on how the planning system can address the impacts of climate change."

Section 1 titled "Introduction":

"Climate change is a key issue facing NSW now and into the future. The impacts of climate change have already started to emerge and will continue to increase over time."

Section 2 on "Climate Change Impacts for NSW" states:

"Climate change impacts that need to be considered in land use planning decisions include higher temperatures, more extreme weather events, rising sea levels, disruptions to biodiversity and changes to water availability and agricultural productivity."

Section 4.1 titled "Considering Climate Change in Strategic Planning" advises:

"Climate change impacts need to be considered in strategic planning to ensure land is appropriately zoned and development is located to avoid high risk areas."

Section 4.2 on "Considering Climate Change in Development Assessment" states:

"At the development assessment stage, the consent authority needs to consider the potential impacts of climate change on the proposed development as well as the impacts of the development on climate change."

The document clearly outlines the NSW Government's position that climate change impacts need to be factored into strategic land use planning decisions as well as the assessment of individual development proposals through the planning system.

(1) Climate Change omission

I hereby make a formal access for the following government information:

6) Any analysis, reports, data, models or correspondence that was considered by the NSW SES regarding the potential impacts of climate change on future flood risks and flood behaviour in the Clarence Valley LGA when developing the Clarence Valley Local Flood Emergency Sub Plan endorsed in July 2023.

7) Records detailing the specific reasons, justifications and decision-making process for why projected climate change impacts were not explicitly incorporated into the flood risk assessments, modelling, planning assumptions and provisions of this flood plan.

8) Information on policies, procedures and timeframes for ensuring that future reviews and updates to the Clarence Valley flood plan will properly assess and account for the best available science and projections related to climate change effects on flooding in this LGA.

9) Any other relevant documents, file notes or records that explain the grounds for excluding climate change considerations from this comprehensive flood planning document for the Clarence Valley region.

(2) Erroneous Design Flood Levels

The Clarence Valley Flood Emergency Sub Plan (CVC-FESP) relies upon the Clarence Flood Model Update 2022. The model's 1% AEP CC1 Design Flood Level has been miscalculated and the model is erroneous.

Through the review of the Clarence Flood Model Update 2022, it has come to attention that there exists a significant error in the flood level data used for planning and response strategies:

The 1% AEP (Annual Exceedance Probability) Climate Change Factor 1 (CC1) designates a flood level of 2.65 meters at the ocean boundary in Yamba.

Correspondingly, the flood level at Lake Wooloweyah for the same 1% AEP (CC1) scenario is recorded as 3.01 meters.

These figures present an inconsistency when compared with the 0.5% AEP levels, where the ocean boundary at Yamba is lower at 2.08 meters, yet the lake level at Lake Wooloweyah is higher at 2.58 meters.

Accurate flood data is absolutely critical as it directly influences the effectiveness of flood defences and emergency responses, which are essential for safeguarding lives and property against potentially catastrophic flood events. Without precise data, the entire foundation of flood risk management becomes unreliable, leading to insufficient protective measures and heightened vulnerability for entire communities.

There is a miscalculation of Lake Wooloweyah's height in the 1% AEP CC1 scenario, which was recorded at 3.01 meters. This error leads to an underestimation of the floodwater height in Lake Wooloweyah and West Yamba. The decrease in the lake's floodwater height shows a significant and unexpected decrease compared to Yamba, as shown in the bottom line of Table 6.4. In the flood model:

Gauge	20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.2% AEP	Extreme	1% AEP (CC1)	1% AEP (CC2)
Palmers Island Bridge	1.96	2.59	2.86	2.99	3.37	3.93	7.77	3.56	3.95
Oyster Channel	1.08	1.41	1.94	2.07	2.55	3.21	7.17	2.99	3.45
Lake Wooloweyah	0.88	1.32	1.92	2.08	2.58	3.25	7.20	3.01	3.47
Yamba	1.17	1.34	1.79	1.85	2.08	2.47	6.07	2.65	3.05
Difference between Yamba and the Lake	-0.29	-0.02	0.13	0.23	0.50	0.78	1.13	0.36	0.42

Table 6.4 Peak Design Flood Levels at Gauges (mAHD) extract - Clarence Flood Model Update 2022

There's a clear error in the flood data for Yamba. While the ocean boundary height for the 1% chance flood level is 2.65 meters, resulting in a lake rise of only 0.36 meters, a lower ocean boundary of 2.47 meters for the 0.2% chance flood unexpectedly causes the lake to rise by 0.78 meters. This contradiction in the data points to a likely mistake in the measurements or calculations, which needs to be addressed to ensure accurate flood risk assessment.
In the second scenario, the ocean boundary height is lower (2.47 meters) than in the first scenario (2.65 meters), yet the Resultant Lake height is higher (3.25 meters compared to 3.01 meters). This outcome appears counterintuitive as one would generally expect that a higher ocean boundary height would correlate with a higher lake height, assuming all other factors remain consistent.

The estimated lake height is approximately 0.55 meters higher than the modelled height

Estimation of lake height for an Ocean Boundary of 2.65 mAHD using linear interpolation

Linear interpolation aids in estimating flood levels within models by interpolating between known data points. To calculate the lake height corresponding to an ocean boundary height of 2.65 mAHD, using linear interpolation based on the modelled data points:

Given:

Known Ocean Heights: 2.08 mAHD and 2.47 mAHD.
Corresponding Lake Heights: 2.58 meters and 3.25 meters respectively.

Steps:

a) Calculate the rate of change between ocean and lake heights:

Difference in Ocean Heights: 2.47 - 2.08 = 0.39 meters.

Difference in Lake Heights: 3.25 - 2.58 = 0.67 meters.

Rate of Change: 0.67/0.39 ≈1.72 meters of lake height per meter of ocean height.

b) Calculate the difference between the target ocean height (2.65) and the closest known height (2.08):

Difference in Ocean Heights: 2.65 - 2.08 = 0.57 meters.

Apply the rate of change to estimate the increase in lake height:

Change in Lake Height: 0.57 x 1.72 ≈ 0.979 meters.

c) Calculate the estimated lake height for the new ocean boundary height:

Estimated Lake Height at an Ocean Boundary Height of 2.65 mAHD:
2.58 + 0.979 ≈3.56 meters.

Conclusion:

The estimated lake height corresponding to an ocean boundary height of 2.65 mAHD is approximately 3.56 meters above mean Australian height datum (mAHD), calculated using linear interpolation. This calculation effectively uses the rate of change derived from the known data points to project the lake height at this new ocean boundary height.

I hereby make a formal access application for the following government information related to the Clarence Valley Local Flood Emergency Sub Plan:
Given the significant role that accurate flood modelling plays in emergency planning and community safety, this request includes the following specific information categories:

10) Comprehensive Flood Modelling Documentation:
    - All data, models, calculations, and reports related to the 1% AEP CC1 design flood levels in Yamba and Lake Wooloweyah.
    - Methodological details of the flood modelling process including assumptions
    - Revisions and updates to the flood emergency sub-plans and models prompted by new data or identified errors.

11) Error Analysis and Corrective Actions:
    - Any analysis, technical reviews, or correspondence concerning potential discrepancies or errors in the modelled 1% AEP (CC1) design flood levels.
    - Meeting records and correspondence discussing these discrepancies, including the decision-making processes addressing reported errors.

    - Specific corrective actions taken to address these discrepancies, including implementation timelines.

12) Quality Assurance and Validation Procedures:
    - Documentation of quality assurance processes validating the accuracy of the 1% AEP (CC1) design flood level modelling and mapping outputs.
    - Information on hydrological data sources used in the model, and their verification against historical flood events and scientific research.

13) Impact, Compliance, and Stakeholder Engagement:
    - Impact assessments of the erroneous flood levels on emergency response planning and infrastructure development.
    - Compliance measures with local, state, or federal regulations in the preparation and review of flood risk models and plans.
    - Details of stakeholder engagement processes, especially community feedback integration into flood planning.

14) Climate Change Considerations:
    - How climate change projections are factored into the flood risk modelling and planning, particularly for scenarios with adjusted AEP levels under climate change conditions.

This request focuses on the integrity and accuracy of the flood modelling data used, specifically addressing the discrepancies identified in the flood levels for Yamba and Lake Wooloweyah.

This information is crucial for evaluating the preparedness and response capabilities to flooding risks in the Clarence Valley, ensuring that all measures taken are both current and effective in safeguarding the community.

(3) Evacuation Plan Components Based on Outdated Data

The hazard and risk information for Clarence Valley is outdated; it lists 3,000 properties at risk, which contrasts sharply with the ABS population data of 6,405

Table 232: Potential Periods of Isolation for communities in the Clarence Valley LGA during a Major flood.

Town / Area (River Basin)	Population/ Dwellings	Flood Affect Classification	Approximate period isolation	Days								NOTES
				1	2	3	4	5	6	7	8	
Copmanhurst Sector	1400 properties	High flood island	3- 5 days									Resupply to local service station and hotel (Junction Hill) and general store at Copmanhurst
Lawrence Sector	1100 properties	High flood island	3- 5 days									Resupply to Lawrence general store.
Ulmarra Sector	50 (Tucabia); 4 (Bostock); 2 (Gilletts Ridge) properties	High flood island	3-5 days									Resupplied to Tucabia general store; Remainder of resupply to individual properties
Brushgrove Sector	25 properties (Tyndale); Other rural properties	High flood island	3-5 days									Resupply to Tyndale service station; Some resupply to individual properties
Maclean Sector	2300 properties	High flood island	2-4 days									Resupply to Maclean Base hospital and Spa supermarket; local bakery
Iluka Sector	1100 properties	High flood island	3-5 days									Resupply to local stores by boat from Yamba.
Yamba Sector	3000 properties	High flood island	3-5 days									Resupply supermarkets.
Wooli – Minnie Water Sector	750 properties	High flood islands	3-5 days									Resupply to local stores in Minnie Waters and Wooli.

Image 1. 2023 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

The 2023 data is the same as it was 8 years ago

Table 28: Potential Periods of Isolation for communities in the Clarence Valley LGA during a Major flood.

Town / Area (River Basin)	Population/ Dwellings	Flood Affect Classification	Approximate period isolation	Days								NOTES
				1	2	3	4	5	6	7	8	
Copmanhurst Sector	1400 properties	High flood island	3- 5 days									Resupply to local service station and hotel (Junction Hill) and general store at Copmanhurst
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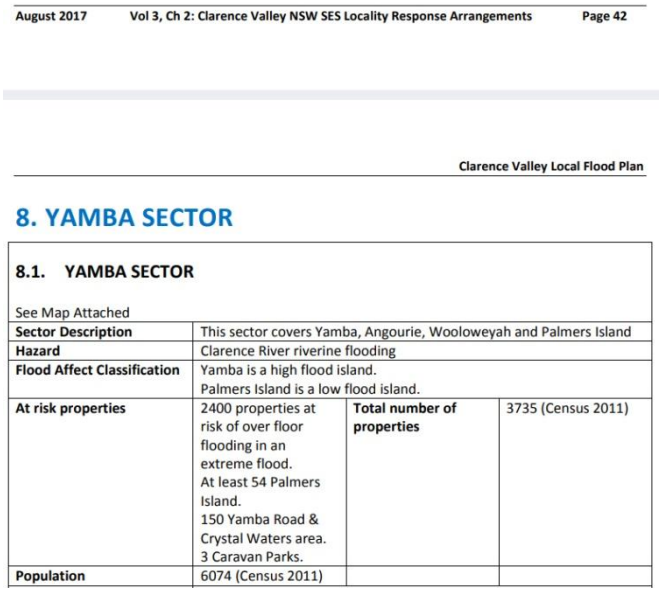
Ulmarra Sector	50 (Tucabia); 4 (Bostock); 2 (Gilletts Ridge) properties	High flood island	3-5 days									Resupplied to Tucabia general store; Remainder of resupply to individual properties
Brushgrove Sector	25 properties (Tyndale); Other rural properties	High flood island	3-5 days									Resupply to Tyndale service station; Some resupply to individual properties
Maclean Sector	2300 properties	High flood island	2-4 days									Resupply to Maclean Base hospital and Spa supermarket; local bakery
Iluka Sector	1100 properties	High flood island	3-5 days									Resupply to local stores by boat from Yamba.
Yamba Sector	3000 properties	High flood island	3-5 days									Resupply supermarkets.
Wooli – Minnie Water Sector	750 properties	High flood islands	3-5 days									Resupply to local stores in Minnie Waters and Wooli.
Coutts Crossing Sector	220 properties including: Middle Creek (30	High flood islands	3-5 days									Resupplied by flood boat to central location

Image2. 2017 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

For the 2023 CVC-FESP Yamba Sector overview, the plan presents;

- data that has not been updated for 12 years pg 212
- a total of 3,735 properties, image 3, a figure that is significantly below current ABS statistics
- 2,400 properties are at risk of over-floor flooding in an extreme flood event. However, this is in stark contrast to Image 12 (page 19) from the Clarence Valley Council Flood Information Mapping, which shows a probable maximum flood (PMF) that would cover almost all of Yamba.
- an outdated population figure of 6,074



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Clarence Valley Local Flood Plan

8. YAMBA SECTOR

8.1. YAMBA SECTOR

See Map Attached

Sector Description	This sector covers Yamba, Angourie, Wooloweyah and Palmers Island		
Hazard	Clarence River riverine flooding		
Flood Affect Classification	Yamba is a high flood island. Palmers Island is a low flood island.		
At risk properties	2400 properties at risk of over floor flooding in an extreme flood. At least 54 Palmers Island. 150 Yamba Road & Crystal Waters area. 3 Caravan Parks.	**Total number of properties**	3735 (Census 2011)
Population	6074 (Census 2011)		

Image 3. YAMBA SECTOR 2023 CVC-FESP

It appears that the hazard and risk information for the Clarence Valley used in the 2023 CVC-FESP Yamba Sector overview has not been updated for 12 years, and still lists 3,000 properties at risk, a figure sharply contrasting with the current Australian Bureau of Statistics (ABS) data indicating a population of 6,405.

Furthermore, the same plan notes a total of 3,735 properties, which is significantly below current ABS statistics. Also noted is that 2,400 properties are at risk of over-floor flooding in an extreme flood event, which starkly contrasts with Image 12 from the Clarence Valley Council Flood Information Mapping that shows a probable maximum flood (PMF) covering almost all of Yamba.

Given the discrepancies noted between the plan and current demographic and geographical data, I am seeking the following information:

15) Updated Hazard and Risk Assessments: Copies of the most recent hazard and risk assessments for the Clarence Valley, particularly for the Yamba Sector.

16) Methodology for Risk Assessment: Detailed descriptions of the methodologies used for determining the properties at risk and the basis for flood risk projections, including any changes in the methodologies used over the last 12 years.

17) Population and Property Data Used: Specific details on the population and property data inputs into the current flood risk assessments, including an explanation for the discrepancies between these figures and the latest ABS data.

18) Flood Risk Mapping: A copy of the Clarence Valley Council Flood Information Mapping and any other relevant flood risk maps used in the latest planning.

19) Review and Update Processes: Information on the schedule for reviewing and updating the hazard and risk information, including any planned updates and the reasons for the 12-year interval since the last update.

20) Stakeholder Engagement: Records of any consultations or engagements with local communities, experts, or other stakeholders regarding the flood risk assessments and emergency planning for the Yamba Sector.

(4) Resupply

The CVC-FESP advises that "The Coles supermarket will be **resupplied if required**; **this will ensure that Yamba residents are continually provided with essential food items**"

The plan's assertion that the Coles supermarket in Yamba will be resupplied as needed to maintain a continuous supply of essential food items contrasts starkly with experiences from the March 2022 flood event During that flood, the supermarket's shelves were stripped within the first few days as shown in images 5-9 .

Additionally, the entrance road to Yamba, Yamba Road, was closed for an additional three days complicating resupply efforts, image 4.

Furthermore, the flood height for a 1% AEP CC1 event ranges from 2.9 to 3.0 mAHD, while the elevation of Yamba Fair, where Coles is located, is only 2.22 mAHD as shown in image 10, indicating that the supermarket is vulnerable to being inundated and cut off during significant flood events.

This situation highlights a potential gap in the emergency response plan concerning the reliability of food supply during floods.

Image 4. Coles - the maximum flood height reached was 1.8 mAHD - Treelands Drive northerly view

Images from March 2022 flood event - Coles at Yamba on 3rd March 2022 at 10:25.

Image 5.Image vegetable shelves

Image 6. bread shelves

Image 7. bakery display

Image 8. Meat display

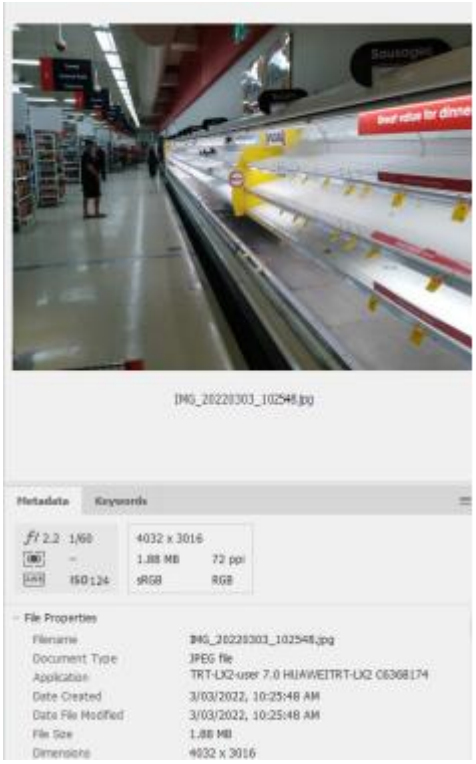


Image 9. Coles image Metadata

The entrance road to Yamba, Yamba Road, remained closed for an additional three days.

Coles will be flooded

The flood height for a 1% AEP CC1 is 2.9 -3.0 mAHD, the height of Yamba Fair, where Coles is located, is 2.22 mAHD

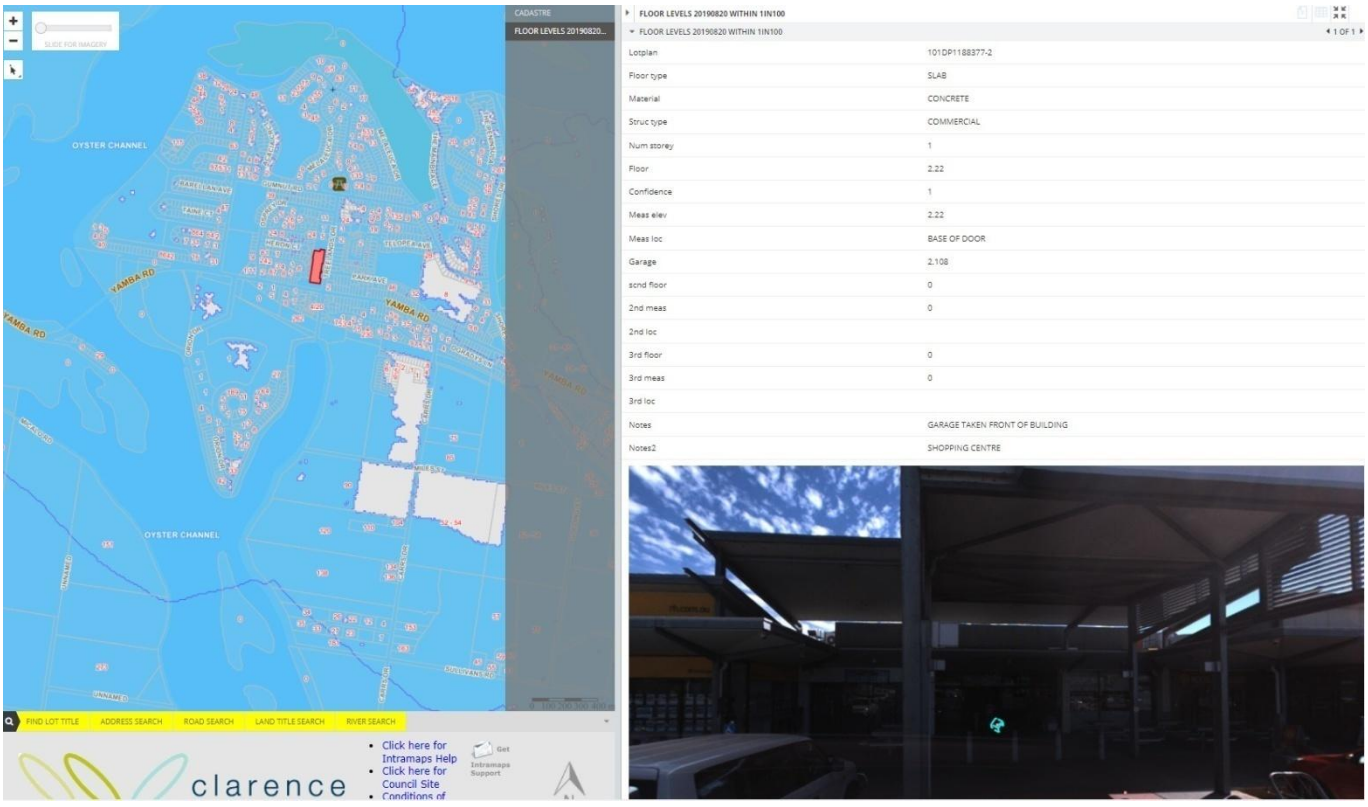


Image 10. Clarence Valley Council Flood Information Mapping

Recent flood events, notably the March 2022 incident, have highlighted significant discrepancies between preparedness plans and actual outcomes, particularly concerning the resupply of essential goods to the Coles supermarket at Yamba Fair. During this event, the supermarket's shelves were emptied within the first few days, and the primary access route to Yamba, Yamba Road, remained closed for an additional three days. This situation was further compounded by the flood level reaching between 2.9 to 3.0 mAHD, which poses a risk of inundation to Yamba Fair, located at an elevation of only 2.22 mAHD.

Given these concerns, I request the following information:

21) Emergency Supply Chain Details: Documentation on the planned resupply chain for essential goods to the Coles supermarket in Yamba Fair during flood events, including contingency plans when main access routes are compromised.

22) Flood Impact Assessments: Recent flood impact assessments for Yamba, specifically addressing the risk to key commercial areas including Yamba Fair.

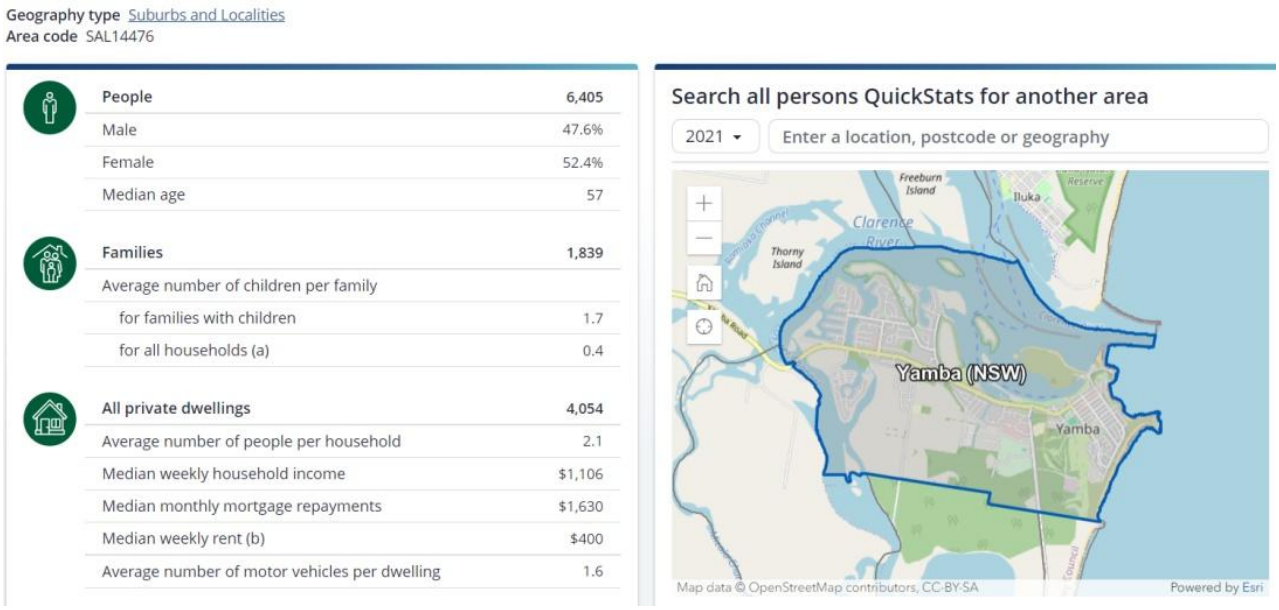
23) Infrastructure and Road Accessibility Reports: Reports or assessments related to the vulnerability of Yamba Road during floods and plans for maintaining or restoring access during emergency conditions.

24) Communication Strategies: Information on how residents are informed about the status of essential services, including food supply availability during and after flood events.

25) Historical Response Data: Any evaluations or debriefs from past flood events, specifically relating to logistics, emergency management, and the effectiveness of the planned responses.

(5) **Underestimation** of Impacted Dwellings in Flood Emergency Sub Plan

The Plan states the population of Yamba is around 6405 and the population of Palmers Island is around 482, corresponding to the Australian Bureau of Statistics (ABS) Area code SAL14476, where it also identifies 4,054 dwellings.



Geography type Suburbs and Localities
Area code SAL14476

People	**6,405**
Male	47.6%
Female	52.4%
Median age	57
Families	**1,839**
Average number of children per family	
for families with children	1.7
for all households (a)	0.4
All private dwellings	**4,054**
Average number of people per household	2.1
Median weekly household income	$1,106
Median monthly mortgage repayments	$1,630
Median weekly rent (b)	$400
Average number of motor vehicles per dwelling	1.6

Image 11. Yamba - Australian Bureau of Statistics 2021

Clarence Valley Council Flood Information Mapping depicting probable maximum flood (PMF).

It is apparent that the majority of the 4,054 dwellings will be inundated during a probable maximum flood.

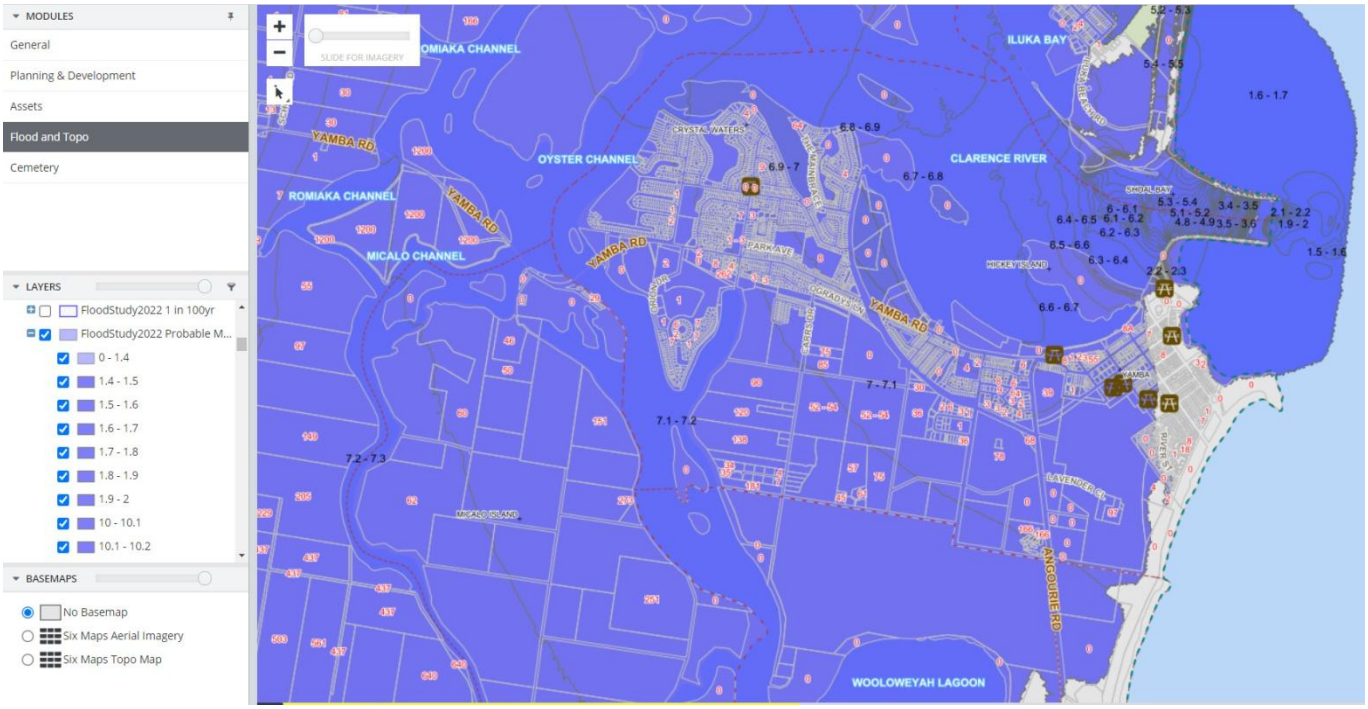


Image 12. Clarence Valley Council Flood Information Mapping depicting a PMF

(6) Inconsistent Flood Level Data in Emergency Planning

There are discrepancies in the reported estimates of properties affected by flooding at different water levels. The Clarence Valley Local Flood Emergency Sub Plan (CVC-FESP) states that only 1,217 properties are below Design Flood levels in Yamba. Vol 2: Hazard and Risk in Clarence Valley.

In the 2017 CVC-FESP, estimates indicated that 2,400 properties in Yamba would be impacted by a flood level of 5.1 mAHD.

Table 25: Estimated number of properties inundated above floor level and over ground in Yamba and Palmers Island related to the Maclean gauge (15)

Maclean Gauge Height (m)	Range of Over Floor Depths (m)	No. Properties with Over floor Flooding in Yamba	No. Properties with Over floor Flooding in Palmers Island
5% AEP (3.1 m)	n/a	0	5
1% AEP (3.6 m)	n/a	1000	30
Extreme (5.1 m)	n/a	2400	60

Figure 2. Extract 2017 CVC-FESP

By 2023, despite an increase in flood levels to 8.56 mAHD—an increase of 3.46 meters—projections showed a significant reduction in the number of affected properties, with only 1,217 properties expected to be impacted.

Table 19: All properties with floors below design flood levels in the Yamba sector on the Maclean gauge (204410-558022) (17)

	All Properties with Floors Below Design Flood Levels					
suburb	PMF- 8.56	1% AEP-3.55	2% AEP-3.41	5% AEP-3.18	20% AEP-2.41	**Totals**
PALMERS ISLAND	126	65	49	39	0	**279**
MICALO ISLAND	23	14	10	8	0	**55**
PALMERS CHANNEL	43	9	7	3	0	**62**
YAMBA	1217	429	182	85	0	**1913**
TOTALS	**1409**	**517**	**248**	**135**	**0**	

Figure 3. Extract 202023 CVC-FESP

For the 2023 Clarence Flood Model flood levels, the 1% AEP of 3.55mAHD at the Maclean gauge corresponds to 1.85mAHD at the Ocean Boundary[1] and 2.08 at Lake Wooloweyah / West Yamba.

It is unclear whether the 2013- 1% AEP or the 2023- 1% AEP has been applied to Yamba flood levels. Specifically, the 2017 estimate indicated that 2,400 properties would be impacted by a flood level of 5.1 mAHD, however the 2023 estimate suggests that only 1,217 properties would be impacted at a higher flood level of 8.56 mAHD.

This reduction in the number of properties affected, despite a significant increase in flood levels, raises questions about the accuracy, integrity and methodology of these estimates.

[1] Clarence Flood Model Update 2022 pg 35 - https://www.clarence.nsw.gov.au/files/assets/public/v/1/council/files/flood-plans/lower-clarence-flood-model-update-2023-final-report-small.pdf

Flood Design Heights

In the 2023 flood plan, the flood design heights from 2017 for Yamba have been incorporated unchanged into the 2023 figures, presenting a deceptive portrayal of stability in flood risk assessments.

The 2023 CVC-FESP design flood levels;

- apply the 2013, 1% AEP for Iluka (Yamba) Figure 4 &5
- apply the 2022 1% AEP for Maclean and other gauges Figure 4 & Table6.4

Flood design heights

j. Gauge heights for various gauges along the Clarence River are shown for a range of design flood levels in Table 4.

Table 4: Clarence River design flood levels (9) (10) (11)

Predicted Flood Frequency	Grafton Gauge 204400-58178 Height (m)	Maclean Gauge 204410-558022 Height (m)	Wooli Gauge 205463 - 558060 Height (m)	Ulmarra Gauge 204480-58188 Height (m)	Brushgrove Gauge 204406-558027 Height (m)	Lawrence Gauge 204409 Height (m)	Glenreagh Gauge 204907-59123 Height (m)	Iluka Gauge Height (m)
20% AEP	6.27	2.41	-	5.08	4.24	3.51	9.28	1.1
5% AEP	8.11	3.18	2.28	6.15	5.14	4.65	11.26	2.0
2% AEP	8.38	3.41	-	6.38	5.40	4.89	-	2.2
1% AEP	8.44	3.55	2.75	6.42	5.66	5.14	12.03	2.5
0.5% AEP	8.87	3.98	-	6.77	6.35	5.81	13.68	-
Extreme (e.g. 3.0 x 1% AEP)	13.58	8.56	4.44	12.71	12.50	12.10	14.85	3.5

2022

2013

Clarence Flood Model 2022

Lower Clarence Flood Model Update 2013

Figure 4

For Iluka the 2013 gauge data from the Lower Clarence Flood Model has been applied in the 2023 CVC-FES Plan.

Table ES- 1 Design Event Results: Regional Reporting Locations

Design Flood Event	Peak Flood Level (mAHD)				
	Prince St Gauge (Grafton)	Ulmarra Gauge (Ulmarra)	Brushgrove Gauge (Brushgrove)	Maclean Gauge (Maclean)	Iluka Gauge (Iluka)
20% AEP	6.1	5.0	4.2	2.4	1.1
5% AEP	7.9	6.1	5.1	3.1	2.0
2% AEP	8.2	6.2	5.5	3.4	2.2
1% AEP	8.3	6.4	5.8	3.6	2.5
Extreme Event	9.7	8.4	8.0	5.1	3.5

Figure 5. Lower Clarence Flood Model Update 2013

For the remaining gauges, the 2022 gauge data from the Lower Clarence Flood Model has been applied

Table 6.4 Peak Design Flood Levels at Gauges (mAHD)

Gauge	20% AEP	5% AEP	2% AEP	1% AEP	0.5% AEP	0.2% AEP	Extreme	1% AEP (CC1)	1% AEP (CC2)
Grafton (Prince St)	6.27	8.11	8.38	8.44	8.87	9.39	13.58	8.78	9.05
Ulmarra	5.08	6.15	6.38	6.42	6.77	7.53	12.71	6.73	7.11
Brushgrove	4.24	5.14	5.40	5.66	6.35	7.21	12.50	6.31	6.78
Tyndale	3.91	4.61	5.25	5.50	6.14	6.99	12.34	6.11	6.59
Lawrence	3.51	4.65	4.89	5.14	5.81	6.69	12.10	5.79	6.29
Maclean	2.41	3.18	3.41	3.55	3.98	4.59	8.56	4.07	4.46
Palmers Island Bridge	1.96	2.59	2.86	2.99	3.37	3.93	7.77	3.56	3.95
Oyster Channel	1.08	1.41	1.94	2.07	2.55	3.21	7.17	2.99	3.45
Lake Wooloweyah	0.88	1.32	1.92	2.08	2.58	3.25	7.20	3.01	3.47
Yamba	1.17	1.34	1.79	1.85	2.08	2.47	6.07	2.65	3.05

Table 6.4 Lower Clarence Flood Model Update 2022

To clarify these estimates and better understand the preparedness plans, I request the following

information:

26) Rationale for Data Usage: Explanation of the decision-making process for using unchanged 2017 flood design heights for Yamba in the 2023 CVC-FESP, including any supporting documents or analyses.

27) Comparison of AEP Metrics: Detailed justification for the application of different AEP metrics (2013 vs. 2022) across different regions within the same emergency plan

28) Detailed Methodology: Comprehensive documentation describing the methodologies used for calculating flood impact estimates in both 2017 and 2023, including methodologies for determining properties below Design Flood levels and inundation estimates for a probable maximum flood.

29) Data Sources: Detailed information about all data sources utilised for these estimates, including hydrological models, historical flood data, topographical surveys, and other relevant data sources used in crafting these estimates.

30) Impact and Risk Assessments: Copies of any reports or assessments that detail the expected impact of flood levels on properties in Yamba for the years 2017 and 2023, and flood risk assessments that detail the analysis and findings regarding the potential impact on the 4,054 dwellings.

31) Expert and Community Consultations: Records of any expert consultations or advisory committee recommendations concerning flood risk assessments, as well as records of community consultations conducted regarding flood risks in Yamba, particularly any that may relate to changes in property impact projections over the years.

32) Amendments and Revisions: Details of any amendments or revisions to the flood risk projections or methodologies since the initial publication of the CVC-FESP.

33) Public Communication: Records of any public notifications or community consultations held regarding flood risks and emergency preparedness in the area."

The CVC-FESP states that only 429 properties in Yamba are below Design Flood levels for a 1% AEP event[2].

The CVC-FESP indicates that only 429 properties in Yamba are below Design Flood levels for a 1% AEP event. However, most homes in Yamba are constructed at or below 2.6 mAHD, and the 1% AEP CC1 flood level, which ranges from 2.9 to 3.0 meters, surpasses the floor heights of the majority of these dwellings.

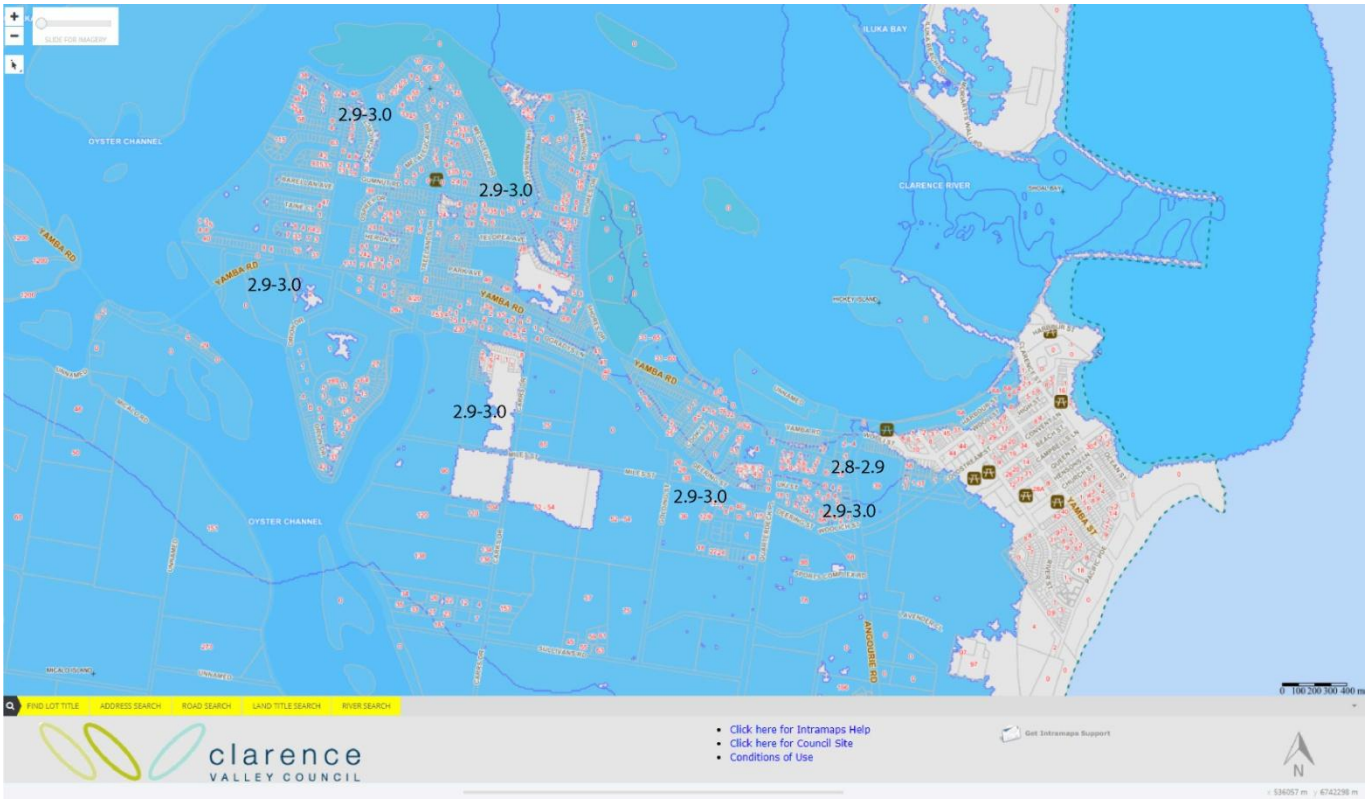


Image 13. Clarence Valley Council Flood Information Mapping depicting a 1% AEP CC1 flood event

These image clearly show that the number of impacted dwellings in the CVC-FESP is inaccurate.

Given these discrepancies, I request access to the following:

34) Complete flood risk assessment reports that detail the determination of properties at risk below the 1% AEP CC1 flood level as stated in the CVC-FESP.

35) Methodologies and data sources used to assess and classify properties at risk in Yamba.
Any recent updates or revisions to the flood risk projections or methodologies that may affect the accuracy of the information provided in the CVC-FESP.

[2] Clarence Valley Local Flood Plan -Vol 2: Hazard and Risk in Clarence Valley pg 73 (106)

(7) Estimate of People Affected by the Flood Event

To represent the flood-affected area, properties east of Anguoire road can be removed as the majoirty of the area is above the 1% AEP.

To address the challenge of identifying the population and dwellings affected by flooding, you can follow a structured approach using geographic and demographic data.

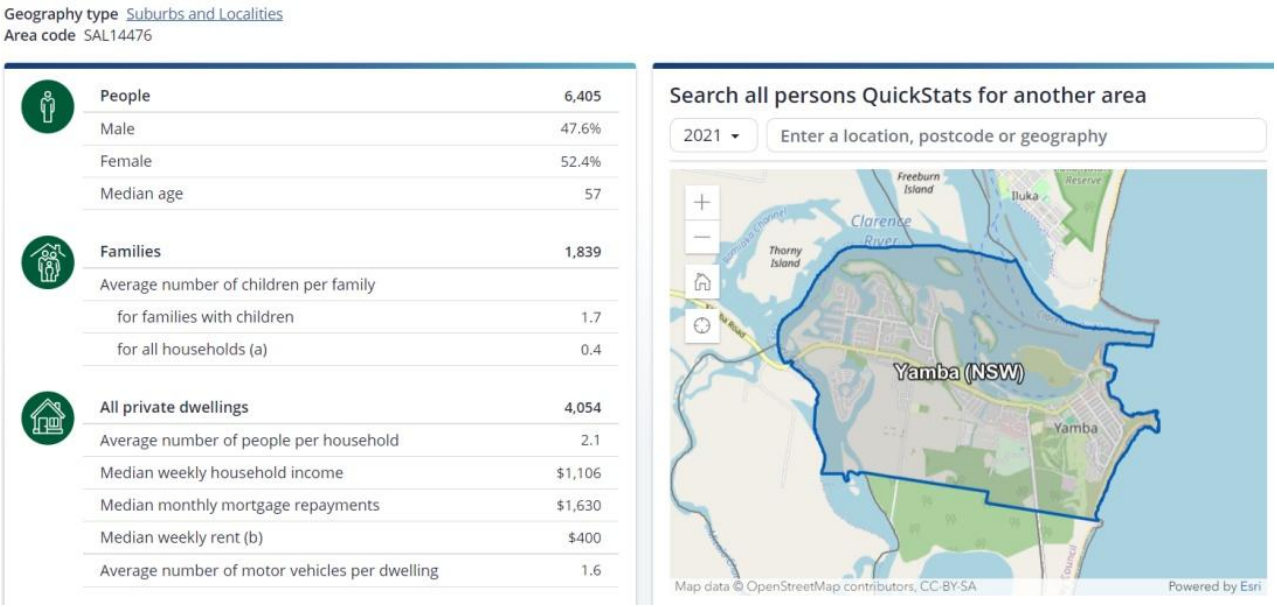


Image 14. Yamba - Australian Bureau of Statistics 2021

Identify the unaffected flood free area and remove it from the totals.

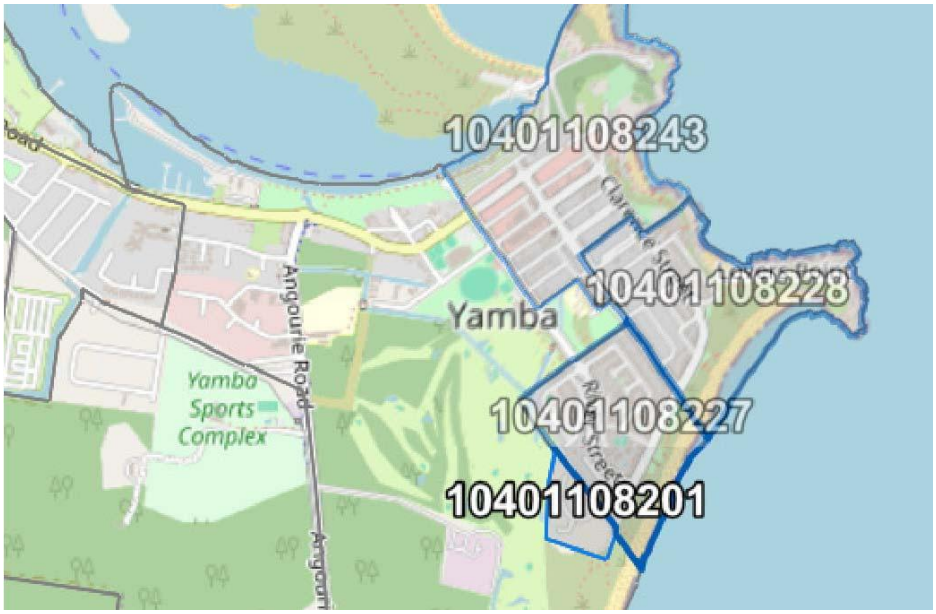


Image 15. 1%AEP flood free subsections of SAL14476

ABS 2021 Census Statistics		
Section	People	All private dwellings
Yamba (SAL14476)	6,405	4,054
Sub Section		
10401108227	446	384
10401108228	290	411
10401108243	410	451
10401108201	32	8
sum subsections	1178	1254
affected by 1% AEP CC1 event	5,227	2,800

Figure 6. Summary ABS Statistics

The Yamba community includes a significant number of older persons making it an aged community

In Yamba potentially up to 5,227 people and 2,800 dwellings will be affected by the 1% AEP CC1 flood event, with 37.6% of the people aged over of 65[3] - 1,965 people.

(8) Accurate timing for evacuation route closures is unattainable.

For the 2023 Clarence Valley Local Flood Plan, the General Strategy is;

- Evacuation of at risk population.
- Self-evacuation to friends/family outside of the impact area.
- Establishment of an Assembly Area/Evacuation Centre at the Yamba Bowling Club Wooli Street Yamba, where evacuees are able to gather while flood situation is monitored

The CVC-FESP states;

- Yamba and Palmers Island - Access to the island cuts early and the village becomes isolated, **evacuation needs to occur before road access to and from Yamba is cut at Clover Leaf/Harwood Bridge (2.1 m on the Maclean gauge, image 16**.
- At 2.4 m on the Maclean gauge Yamba is completely isolated.
- Near the coast, **unusually high tides can produce inundation of land** which is usually dry. Thunderstorm activity, especially when it occurs in conjunction with such tides, can produce significant local ponding in Iluka and Yamba
- **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.**
- Yamba and Palmers Island utilise the Maclean and Yamba gauges. **In these areas riverine flooding can be heavily influenced by high tides and storm surges, image 17.**
  Partly because of variations in flood levels on different tributary streams within the catchment, **travel times of flood peaks can vary significantly from flood to flood**. The **times listed below need to be regarded, therefore, as approximations only**. Particularly **in periods of very severe flooding, it should be noted that flow times may be shorter** than shown here.
- Flow times from Grafton to Maclean can be very variable, **depending largely on ocean conditions and tidal influences.** Times as far apart as 6 and 24 hours have been Recorded
- The Yamba road to Pacific Highway on and off ramps close much earlier at 2.47 on the Maclean gauge
- At 3.18 Maclean gauge (5% AEP) flood event all of Palmers Island would be surrounded by flood water
- In Yamba, **inundation can occur from 2.4 m on the Yamba gauge dependant on the tides**.

[3] Clarence Valley Flood Emergency Sub Plan pg72

- uncertainty exists about the effects of a combination of a severe flood and storm surge conditions in this area, West Yamba - Crystal Waters
- At 2.4 m on the Maclean gauge, Yamba is completely isolated.

Evacuation from Yamba

Image 16. Harwood Bridge easterly view, road access to and from Yamba is cut at 2.1 m on the Maclean gauge

Image 17. Yamba road westerly view, the evacuation route from Yamba

Evacuation to the North

The existing highway through Harwood and Chatsworth Islands has a flood immunity of less than a 5 year ARI event around Serpentine Creek.

For large flood events that exceed a 20 year ARI, flow breaks out of the main channel of the Clarence River with the dominant flow direction from west to east across the floodplain of Harwood and Chatsworth Islands.

The highway at Serpentine Creek is the lowest section of the highway and usually the first section to be overtopped in significant flood events. This has typically resulted in road closures of this section lasting several days

Evacuation to the South

The evacuation route south from Yamba

Image 18. Pacific Mwy, Gulmarrad south westerly view

Image 19. Pacific Mwy, Gulmarrad southerly view

(9) Uncertainty in Predicting Evacuation Route Closures

Accurately predicting the timing of evacuation route closures is not feasible.

“Partly because of variations in flood levels on different tributary streams within the catchment, travel times of flood peaks can vary significantly from flood to flood.”[4]

The document "Clarence Valley Local Flood Emergency Sub Plan" provides insight into the complexities of flood behaviour in the Yamba area, which make it challenging to accurately forecast the timeframes before evacuation routes are cut. Several factors contribute to this difficulty:

Variable Flow Times: The flow times from Grafton to Maclean, and consequently to Yamba, can be highly variable. This variability is largely dependent on ocean conditions and tidal influences. The document notes that recorded times for floodwaters to travel from Grafton to Maclean have ranged from as little as 6 hours to as much as 24 hours. This wide range indicates that the speed at which floodwaters move can be influenced by a number of unpredictable factors related to weather and tidal conditions.

High Tides and Storm Surges: Near coastal areas like Yamba, unusually high tides can cause inundation of land that is typically dry. When thunderstorm activity coincides with high tides, it can lead to significant local ponding in Yamba. This means that the presence of high tides and storm surges can exacerbate flooding, making the timing of road closures and the need for evacuation more unpredictable.

[4] Clarence Valley Local Flood Plan (47) pg 47

Ocean Storm Tide Conditions: The document states that peak flood levels at Yamba are almost entirely dictated by ocean storm tides. This suggests that the riverine flooding experienced in Yamba is heavily influenced by the sea, rather than just the volume of rainfall or river flow. As ocean storm tides are influenced by wider meteorological conditions, they can be difficult to predict with precision.

Variations in Flood Levels: The flood levels can vary significantly due to different tributary streams within the catchment area. This variation can affect the travel times of flood peaks, making it challenging to forecast when specific areas will be impacted. In periods of very severe flooding, these flow times may be shorter than expected, further complicating the prediction of evacuation timeframes.

Influence of Tides on Inundation: In Yamba, the document indicates that inundation can occur from 2.4 meters on the Yamba gauge (204410-558022), depending on the tides. This means that the timing of road closures and the extent of inundation are not solely dependent on the river's water level but are also influenced by tidal conditions, which are subject to change.

In summary, the inability to accurately forecast timeframes before evacuation routes are cut in Yamba is due to the complex interplay of variable river flow times, the influence of high tides and storm surges, the impact of ocean storm tide conditions, variations in flood levels from different tributaries, and the dependency of inundation levels on tidal conditions. These factors are inherently unpredictable and can change rapidly, making it difficult to provide precise forecasts for evacuation planning.

Evacuation Information for Yamba

I am requesting access to the following information related to flood evacuation planning and procedures for Yamba:

34) Any analysis, modelling, or reports that detail the expected timeframes before evacuation routes leading to Yamba Bowling Club on Wooli Street are cut off due to flooding, under various flood scenarios, including estimated cut-off times.

35) Any analysis, modelling, or reports that detail the expected timeframes before evacuation routes leading out of Yamba are cut off due to flooding, under various flood scenarios, including estimated cut-off times, for example time from evacuation warning until the roads close as shown in images 18 and 19.

36) Evacuation Impact Studies: The average vehicles per occupied dwelling is 1.4[5], with 2800 dwelling affected this equates to 3,920 vehicles.
Any studies, reports, or analyses that explore the logistical and infrastructural impacts of evacuating 5,000 people from Yamba within a short timeframe, including traffic flow, road capacities, and bottleneck points.

[5] Clarence Valley Local Flood Plan (26) pg 59

37) Evacuation Plans: Specific details of the current evacuation plans tailored for Yamba, focusing on scenarios where a mass evacuation is required within hours.

38) Resource Allocation: Information on the resources designated for facilitating a rapid mass evacuation, including personnel, transportation means, and emergency services involvement.

39) Historical Precedents and Simulations: Records of any previous evacuation drills or simulations that involve rapid mass evacuations, and any lessons learned or improvements made following these exercises.

40) Community Preparedness Programs: Details of any community preparedness programs that train residents on rapid evacuation procedures, particularly focusing on the logistics of evacuating 5,000 individuals in a short period.

41) Records of stakeholder consultation or community engagement related to evacuation planning for Yamba, including any feedback received.

42) Public Communication Strategies: Documentation outlining the strategies for communicating with the public during a rapid mass evacuation, including how information is disseminated and how residents are instructed to proceed.

43) Impact Assessments: Any impact assessments that have been conducted to evaluate the social, economic, and environmental consequences of a rapid mass evacuation from Yamba.

44) Details of the criteria and decision-making processes used to determine when evacuation warnings and orders should be issued for Yamba and Lake Wooloweyah based on forecast flood levels or other triggers.

45) Any other information relevant to the evacuation procedures, routes, timing, and planning considerations specific to Yamba in the context of flood emergencies.

(10) The plan lacks specific details regarding evacuation for Yamba residents

Based on my review of the pages provided for the Yamba sector in the Clarence Valley Local Flood Emergency Sub Plan, there are several gaps and lack of detailed information that would make the current evacuation strategy inadequate or not fit for purpose:

Evacuation of At-Risk Population:

The plan does not provide specific details on the number of residents potentially requiring evacuation from Yamba during flood events. Without this critical information, it is difficult to plan and allocate appropriate resources for a safe and orderly evacuation.

There are no clear triggers or decision criteria outlined for when evacuation warnings or orders should be issued for Yamba based on forecast flood levels or other factors.

The plan lacks information on identified evacuation routes, potential traffic management points, and estimated timeframes before routes are cut off due to flooding.

Self-Evacuation:

The plan does not provide any guidance or options for Yamba residents who may not have friends or family outside the impact area to self-evacuate to.

There is no mention of any arrangements or facilities to accommodate those who cannot make their own evacuation arrangements.

Evacuation Centres:

The plan identifies the Yamba Bowling Club on Wooli Street as a potential evacuation centre, but on the 21/4/2024, the SES Community Capability Officer advised that this is not a recognised evacuation centre.

The plan does not list any alternative recognised evacuation centres to be established for Yamba evacuees.

There is no information provided about the trigger points, logistics, or management procedures for activating and operating an evacuation centre for Yamba.

Road Access:

The plan notes the road to the Yamba Bowling Club gets cut off early when the lowest point of 1.4m AHD is reached, potentially isolating approximately 5,000 people on the other side, as shown in image 20.

However, the plan does not provide further details on this critical access issue or contingencies for evacuating those isolated residents.

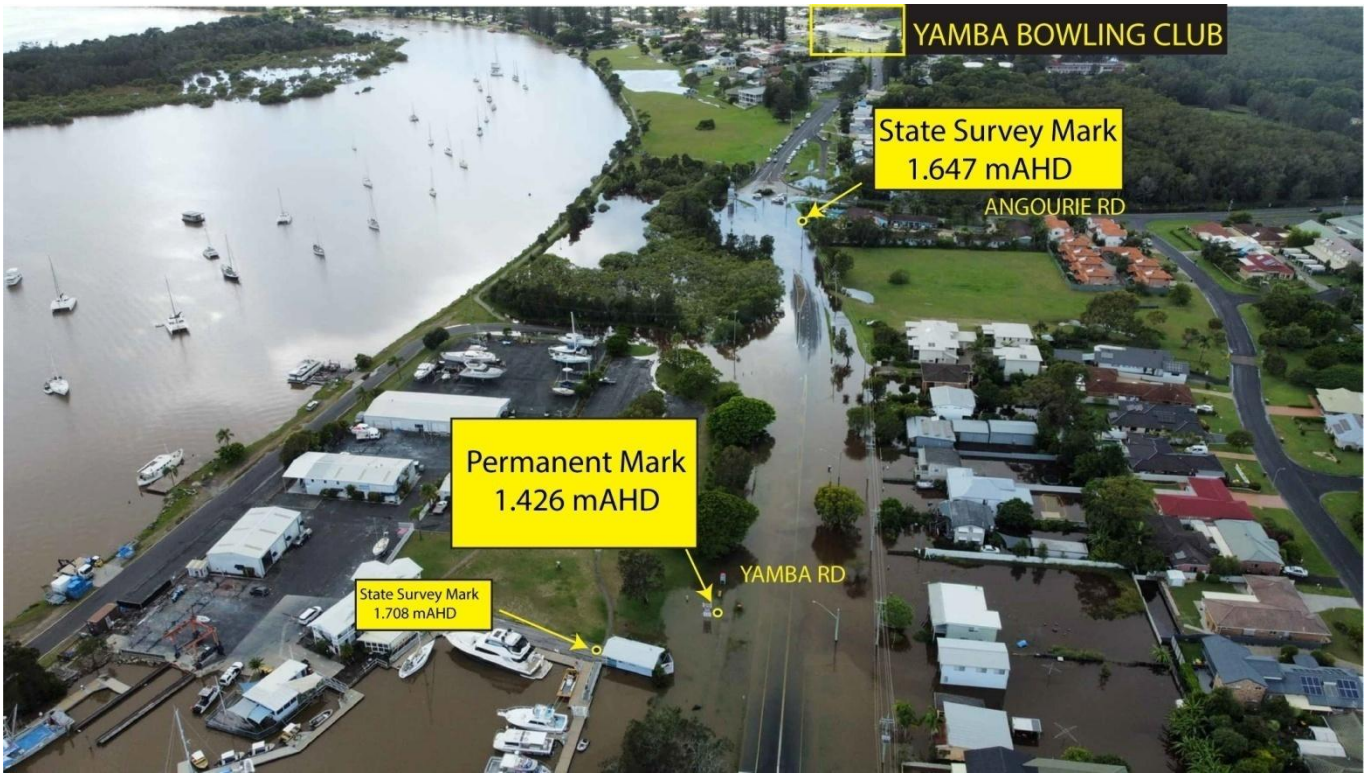


Image 20. Yamba road, easterly view. The evacuation route to Yamba Bowling Club

Overall, while the plan acknowledges the need for evacuation in Yamba during floods, it lacks the critical operational details, population numbers, evacuation routes/triggers, centre locations, and contingencies that would be required for a comprehensive and effective evacuation strategy specifically for the Yamba area. The lack of such key information makes the current strategy inadequate to guide a safe and well-coordinated evacuation for the at-risk population in Yamba.

Information on At-Risk Residents and Evacuation Procedures
I am requesting access to the following information held by the NSW State Emergency Service related to flood evacuation planning and procedures for at-risk residents in the Clarence Valley region:

46) Definition and Identification: How "vulnerable communities" are defined and identified within the context of your emergency planning.

47) Tailored Measures: Detailed descriptions of the specific measures that have been put in place to ensure the safety and evacuation of vulnerable community members during emergencies.

48) Engagement and Communication Strategies: Information on the engagement processes and communication strategies used to inform and prepare vulnerable communities for potential emergency situations.

49) Resource Allocation: Insights into the resources that have been specifically allocated for the support of vulnerable communities during emergencies, including personnel, equipment, and financial resources.

50) Training and Preparedness Programs: Details of any special training programs or preparedness initiatives that have been developed for vulnerable community members or for those assisting these communities during emergencies.

51) Any data, lists or details identifying at-risk residents or facilities housing vulnerable populations (e.g. aged care, disability, etc.) that may require additional assistance during flood evacuation in Yamba

52) Documentation outlining the procedures, criteria and decision-making processes used by NSW SES to determine which areas and residents will be door knocked to provide evacuation warnings.

53) Information on the estimated number of residents in Yamba that do not have access to private transport and may require transportation assistance for evacuation.

54) Contingency plans for evacuating residents or providing transportation assistance to those who do not have private vehicles or ability to self-evacuate from Yamba.

55) Records related to community engagement or communication strategies to ensure at-risk residents are aware of evacuation procedures and available support services.

56) Any other relevant information pertaining to the identification, notification and evacuation of vulnerable or at-risk residents during flood events in the Yamba area.

57) Any data, analysis or estimates of the number of residents and/or visitors that may require evacuation from Yamba under different flood scenarios, ie: school holidays.

58) Documentation outlining the criteria triggers and decision-making processes used to determine when evacuation warnings and orders should be issued for Yamba based on forecast flood levels or other risk factors.

59) Details on the designated evacuation centre and/or assembly areas to be used for Yamba residents requiring evacuation, since the Yamba Bowling Club on Wooli Street is not a recognised evacuation centre according to the NSW SES Community Capability Officer.

60) Details on the designated evacuation centre and/or assembly areas to be used for Yamba residents requiring evacuation in a probable maximum flood, since the Yamba Bowling Club on Wooli Street will be inundated, as depicted in image 20.

61) Documentation outlining the evacuation routes, transportation arrangements, and logistics for evacuating Yamba residents to the designated evacuation centre(s)/assembly area(s), particularly the

plan for evacuating those without private transportation.

62) Specifics on the flood boat and helicopter capabilities, arrangements, and operational plans to evacuate potentially thousands of trapped Yamba residents, as referenced in the statement "If roads are inundated flood boats and helicopters will be utilised."

63) Risk assessments, population estimates, and other data used to plan for the number of Yamba residents potentially requiring evacuation and transportation assistance during flood events.

(11) No accurate timing for evacuation route closures

Planning for a more resilient NSW - Department of Planning and Environment
Yamba is a 'vulnerable community'
key points related to "vulnerable communities" as outlined in the document:

Definition and Characteristics of Vulnerable Communities:
Vulnerable communities are described as those that are more susceptible to the impacts of natural hazards due to a combination of physical, social, economic, and environmental factors.

Characteristics that may define a vulnerable community include significant numbers of older or young persons, lower socio-economic groups, regional or remote locations from emergency services, people with mobility issues, language barriers, and isolation during and after a hazard event.

Infrastructure located in high-risk areas or that must cease operating when an event occurs is also considered when assessing community vulnerability.

Planning Considerations:
The document emphasises the importance of strategic land-use planning in identifying and delivering physical infrastructure and socio-economic support systems that help reduce the community's vulnerability to current and future hazards.

It discusses the need for detailed analysis and planning to identify ways to increase resilience to hazard events for these vulnerable communities.

Engagement and Education:
The guide stresses the importance of involving vulnerable communities in the planning process to ensure that their specific needs and circumstances are considered.

It advocates for educating these communities about natural hazards and resilience strategies to enhance their preparedness and response capabilities.

Case Study on Vulnerable Communities:
A case study mentioned in the document highlights the challenges faced by vulnerable communities and assets during the 2019–20 'black summer' bushfires in NSW. It discusses how areas became isolated, impacting evacuation and resupply, and emphasises the importance of strategic planning in mitigating such impacts.

This document underscores the critical role of strategic planning in not only identifying vulnerable communities but also in implementing measures to enhance their resilience against natural hazards. It highlights the necessity of integrating considerations of vulnerability into all stages of planning and response to ensure that these communities receive the support and protection needed during natural hazard events.

(12) Plan Errors Pose Potential Flood Risk to Lives

The plan offers a false sense of security that in reality is fraught with problems.

In Yamba, a 1% AEP CC1 flood event will inundate most dwellings, rendering them potentially uninhabitable for months. The affected homes may require extensive drying of timber frames before building repairs can be undertaken. Additionally, builders may not be able to meet the high demand for repairs.
The CVC-FES plan gives the impression that Yamba is prepared.

In Yamba, a 1% AEP CC1 flood event will inundate most dwellings, rendering them potentially uninhabitable for months. The affected homes may require extensive drying of timber frames before building repairs can be undertaken. Additionally, builders may not be able to meet the high demand for repairs.

a) Residents wishing to leave Yamba need to do so before a height of 2.1 m is reached on the Maclean gauge
The phrase "Residents wishing to leave Yamba need to do so before a height of 2.1 m is reached on the Maclean gauge" implies that evacuation is optional, depending on personal preference rather than a necessary safety measure. This wording may downplay the urgency and necessity of evacuating under dangerous conditions. When flood heights exceed 2.5 mAHD, evacuation becomes crucial for safety, not just a matter of choice. Moreover, as flood waters rise, the availability of accessible high ground diminishes, potentially trapping residents who delay evacuation based on the optional tone of the statement. Using language that suggests evacuation is optional can lead to delayed responses, inadequate preparedness, and increased risk during flood events, leaving residents under-informed about the severity of the threat and the critical need to evacuate promptly.

b) Local roads around Yamba will open and close, depending on local rainfall and tidal conditions.
The statement "Local roads around Yamba will open and close, depending on local rainfall and tidal conditions" fails to capture the critical impact of riverine flooding, which can close evacuation routes for extended periods, potentially trapping residents. This omission does not fully inform the community about the significant risk of prolonged road closures and the urgency of timely evacuation

c) Evacuation Centre/Assembly Point Yamba Bowling Club, Wooli Street, Yamba
The designation of Yamba Bowling Club on Wooli Street as an "Evacuation Centre/Assembly Point" creates a false sense of security because it is not a recognised evacuation centre according to the SES Community Capability Officer. Moreover, the current strategy emphasises evacuating the at-risk population rather than sheltering them locally, potentially misleading residents about available emergency resources and safe locations during a crisis

d) In the event that large scale evacuations are required residents will be transported to where an Assembly Area/evacuation centre will be established.
Given that thousands of residents may require evacuation in the event of a large-scale emergency, the statement "In the event that large scale evacuations are required residents will be transported to where an Assembly Area/evacuation centre will be established" lacks specificity and clarity. It does not provide information on predetermined locations or logistics for evacuation centres, which is crucial for effective emergency preparedness and ensuring resident safety during critical times. This uncertainty could hinder timely and organised evacuations, potentially placing many residents at risk.

e) If roads are inundated flood boats and helicopters will be utilised.
Given the potential need to evacuate thousands of residents during a large-scale emergency and the issues identified with the local evacuation strategy, the statement "If roads are inundated, flood boats and helicopters will be utilised" raises significant concerns about practicality and resource availability. Relying heavily on boats and helicopters may not be feasible due to the extensive scale of operations required and the limited availability of such resources, especially considering that other areas may also be affected and competing for the same resources. This approach could result in substantial delays and complications in evacuating all affected residents swiftly and safely, highlighting a need for a more robust and well-resourced evacuation plan.

Given the uncertainty in predicting evacuation route closures, should a 1% AEP CC1 event occur, people will be unable to accurately plan their evacuation, many people will be unable to leave Yamba.
The only other potential place of refuge is the Yamba Bowling Club. The road to the Bowling Club gets cut off early when the lowest point of 1.4m AHD is reached, isolating people between there and the Oyster Channel bridge. As flood water rises, potentially thousands of people will be trapped with rising flood waters.

Craigh McNeill

Yamba CAN Inc.
Community Action Network

Yamba CAN Inc
[redacted]

14 April 2024

Ms Laura Black
General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2464

Dear Ms Black

Re: Submission to DA2023/0241 - 120 Carrs Drive Yamba

Yamba CAN Inc. advocates maintaining a vibrant, safe township and local area with a progressive culture that respects and protects our unique and fragile environment, particularly on the Yamba floodplain. Therefore, Yamba CAN Inc. strongly objects to the proposed DA2023/0241 as follows:

In summary:

1. The State Disaster Mitigation Plan (SDMP) released in February 2024 was authorised by the Hon. Paul Scully, Minister for Planning and Public Spaces and the Hon. Jihad Dib, Minister for Emergency Services.

   The SDMP requires serious consideration in relation to the flood risk hazard of any proposed development on the Yamba floodplain, particularly as Clarence Valley is the highest flood risk in the social, economic and natural environment above any other Local Government Area in NSW. Surely residents' lives matter.

2. It is paramount that the Clarence Valley LEP 2011 clause 5.21 (2), which sets out flood planning provisions needs to be provided thorough and full consideration when assessing whether to approve or refuse this proposed development. Under this clause, consent for developments on land within the flood planning area must not be granted, unless the development:

   (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**—
   a) is compatible with the flood function and behaviour on the land, and
   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
   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
   d) incorporates appropriate measures to manage risk to life in the event of a flood, and
   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.

3. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.

4. Ongoing filling of the west Yamba floodplain will cause Yamba Road, Carrs Drive and other roads in west Yamba to become water courses, trapping residents in their homes and hindering safe evacuation. Many of these roads already experience flooding in heavy rainfall events and often close.

5. Difficulties will inevitably continue to increase in relation to servicing residents, burdening the availability of goods and services, access to shops and availability of parking spaces, traffic congestion and bottlenecks, access to support care and medical and health treatment, access to schools and recreation and leisure facilities, risks to water supply, power outages causing health stress and food wastage, internet outages, sewer pumps failing, transport services paused and safe evacuation and potential risk to life. In the 2022 February/March flood Yamba was cut off for 7 days. Ensuring availability of food and other essential supplies to the increasing population, for up to 7 days is cause for concern.

6. Residents will be isolated on mounds during stormwater flooding as the one road in and out, Carrs Drive, is flooded and closes without adequate warning for evacuation. Yamba also has one road in and out.

7. It appears there would be an extra burden on SES volunteers during flooding.

8. It appears CVC and State Planning Departments have failed in their duty of care to Yamba residents.

Impacts on existing residents must be considered, along with ensuring safe and efficient evacuation of all persons can be guaranteed.

Yamba CAN Inc is aware that Council has stipulated that residents in new developments in West Yamba are not to be an added burden on SES during a natural disaster event.

Yamba CAN Inc is concerned whether the Clarence Valley Local Environmental Plan, 5.21 Flood Planning, point (2) will continue to be contravened.

Overall, in view of the above, Yamba CAN Inc. asserts that this proposed development is not appropriate, particularly in relation to protecting the safety of the lives and livelihoods of existing residents and the fragile, and natural environment, hence our strong objection to it being approved.

Yours sincerely

[redacted]

Chair
Yamba Community Action Network (Yamba CAN) Inc.

[redacted]

Lynne Cairns
Secretary
Yamba Community Action Network (Yamba CAN) Inc.

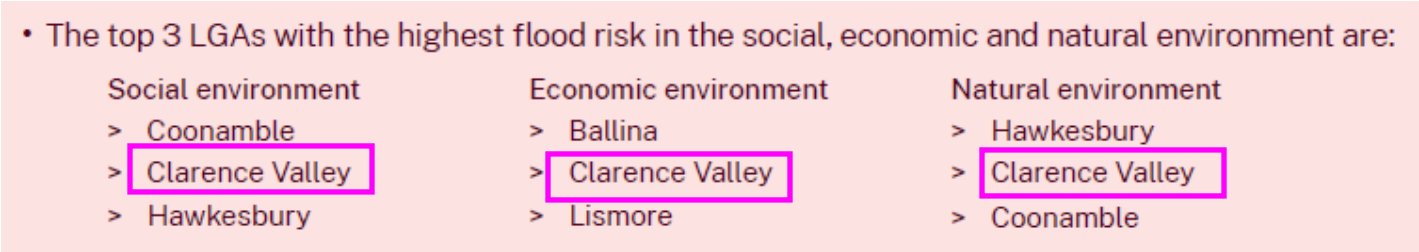
We acknowledge the Yaegl people as the custodians of the land on which we live.

The State Disaster Mitigation Plan 2024 - 2026

The State Disaster Mitigation Plan (SDMP) released in February 2024 was authorised by the Hon. Paul Scully, Minister for Planning and Public Spaces and the Hon. Jihad Dib, Minister for Emergency Services.

The Plan outlines the natural hazard risks in NSW and on page 34 Floods are mentioned. Types of flooding are detailed, in particular "*Flash flooding - the result of intense local rain and is characterised by rapid rises in water levels when natural or artificial drainage systems are overwhelmed. The Bureau of Meteorology defines flash flooding as occurring within about 6 hours of rain although flash floods can occur far more rapidly depending on the intensity of the rainfall and the nature of the catchment*."

The Plan states on page 37 that in 2023:
- *The LGAs with the highest flood hazard are the Hawkesbury, equal for Clarence Valley, Ballina and Coonamble.*
- *The LGAs with the highest flood risk to the built environment are the Clarence Valley, Tweed and Ballina."*
- *The top 3 LGAs with the highest flood risk in the social, economic and natural environment are:*



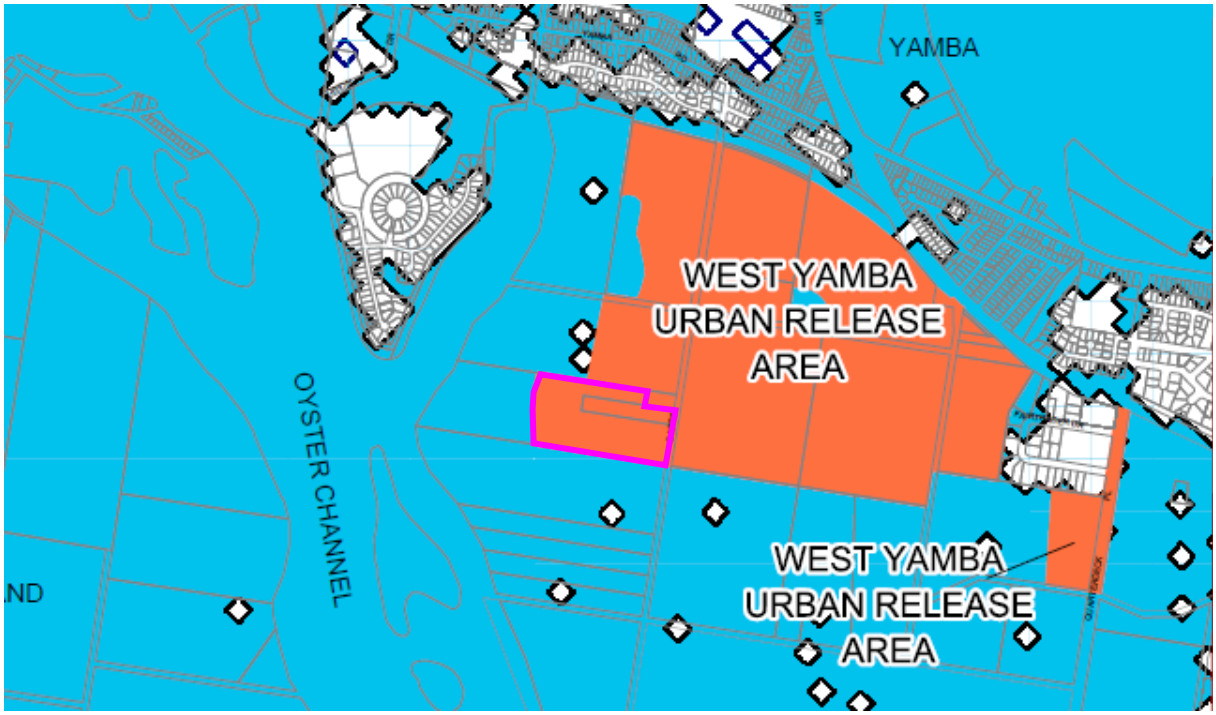
Clarence Valley is the only Council that featured in all three of the potential flood impacts.

The SDMP requires serious consideration in relation to the flood risk hazard of any proposed development on the Yamba floodplain, particularly as Clarence Valley is the highest flood risk in the social, economic and natural environment above any other Local Government Area in NSW. Surely residents' lives matter.

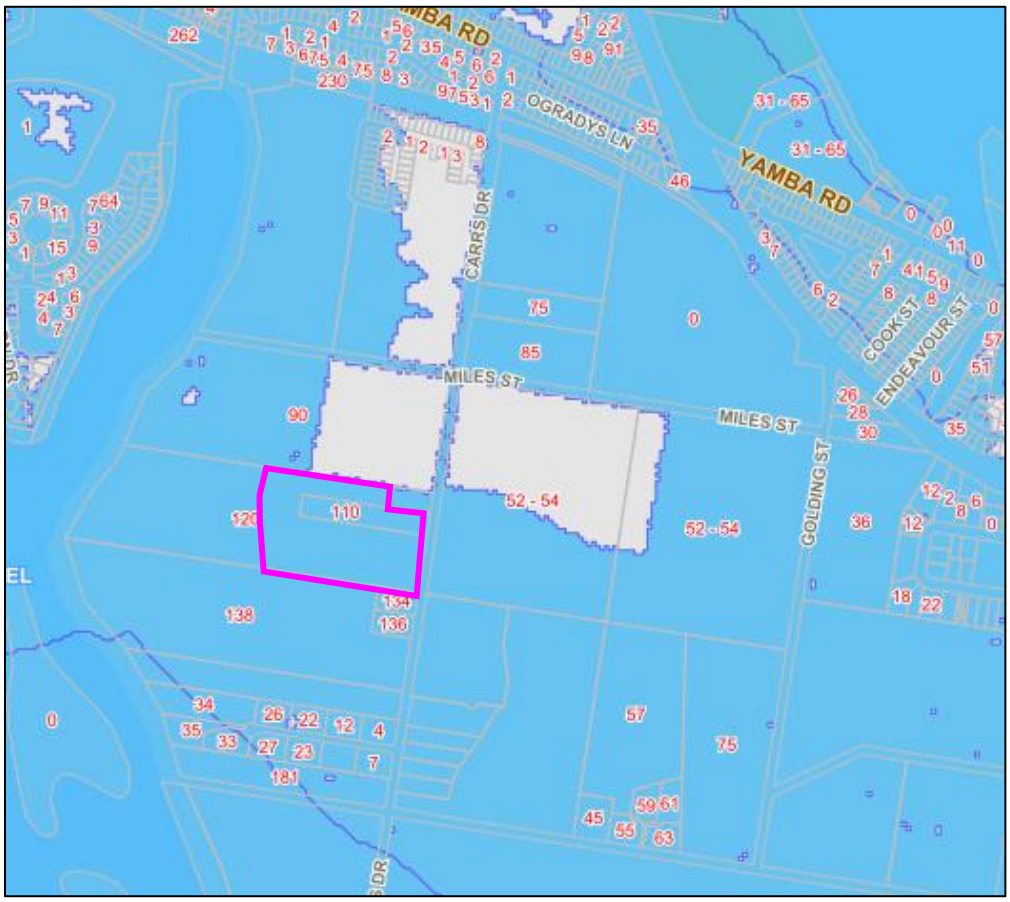
Social environment includes deaths and injuries, mental distress, loss of personal memorabilia, increased crimes such as theft or looting of impacted homes and domestic and family violence due to psychological stress.
Economic environment includes damage to homes and property; transport infrastructure, roads and bridges; loss of business and commercial assets; outages and damage to telecommunications, electricity and gas, damage to sewer and water services, damage to public assets and facilities, and damage to motor vehicles.
Natural environment includes soil erosion, estuarine inundation and damage to unique ecosystems including seagrass, soft sediments, mangroves and saltmarsh, impacts on breeding habitats for marine and land species, changes to river flow, and water pollution impacting drinking water.

The Council's Flood Planning Map on the next page shows the area for the proposed development would be completely submerged in the probable maximum flood. Council's Map is deceptive as it appears at first glance to indicate 120 Carrs Drive has already been filled (see pink boundary), however this is not the case. The WYURA would have been best shown with a boundary line around the area.

Proposed development – pink boundary



Council's Intra Maps – Flood and Top – Pink boundary of Proposed Development at 120 Carrs Drive Yamba.



BMT's 120 Carrs Drive Yamba Flood Impact and Risk Assessment dated 20 February 2024 page 3 states, "*To the south of the Site, the predicted increase in flood depth occurs in locations already inundated, indicating that the extent of inundation does not increase. While the depth of inundation increases between 10 and 20mm it does not further impact on existing residential buildings on this adjoining lot and therefore has limited significance*." There appears to be no consideration of all residents on the Yamba floodplain and the detrimental impacts caused by filling the site of the proposed development.

Support for Emergency Management Planning (2022) the following information is provided from the Independent Peer Review – Flood Emergency Management Plan, formulated by Ms Louise Collier B.B. MEngSc FIEAust CPEng, for the Parkside development located at 8 Park Avenue, Yamba.

The document entitled *Support for Emergency Management Planning* (DPE, 2022) provides advice on how flood emergency management can be considered as part of the flood risk emergency management framework as described in the Draft *NSW Flood Risk Management Manual* (DPE EES, 2022).

The support document defines flood emergency response community classifications. Under section 2.9.4 of the Clarence Valley Local Flood Plan (NSWSES, 2017), Yamba is broadly classified as a 'high flood island.' Despite this, flood mapping within the Local Flood Plan also shows that areas of Yamba are inundated in flood events as frequently as the 5% AEP. Given the definitions provided in the Support for Emergency Management Planning 2022 document, much of Yamba would rather be considered a 'low flood island,' including where the existing site is situated. The proposed development's flood refuge would act as a 'high flood island' which is defined as an area of higher ground within a floodplain which is isolated in an extreme flood event, providing an opportunity for people to retreat to thus reducing the direct risk to life. A high flood island may require resupply via boat or air and may need to be provided with adequate support such as medical facilities during the period of isolation. Without this support people are more likely to interact with floodwaters increasing the likelihood of injuries and fatalities (DPE, 2022). A high flood island is conceptualised in **Figure 1**.

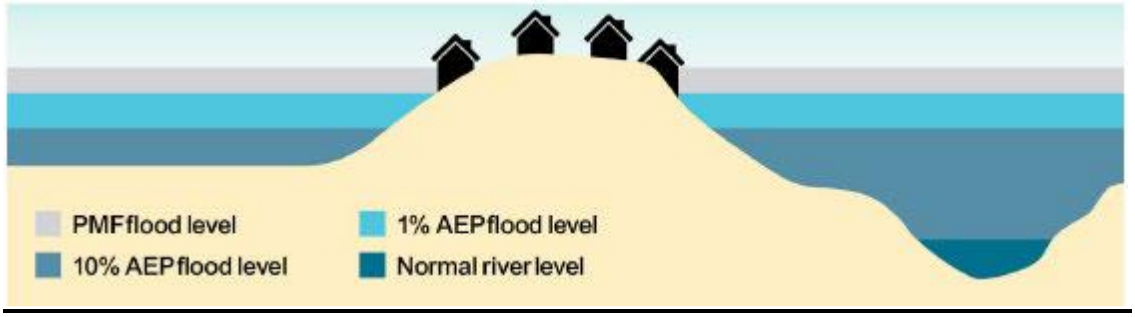


Figure 1 High flood island (DPE, 2022)

A low flood island initially becomes isolated, with access to and from the island being cut by floodwaters. If floodwaters continue to rise, the island becomes inundated (**Figure 2**). On a low flood island, evacuation of the community is required before evacuation routes are inaccessible.

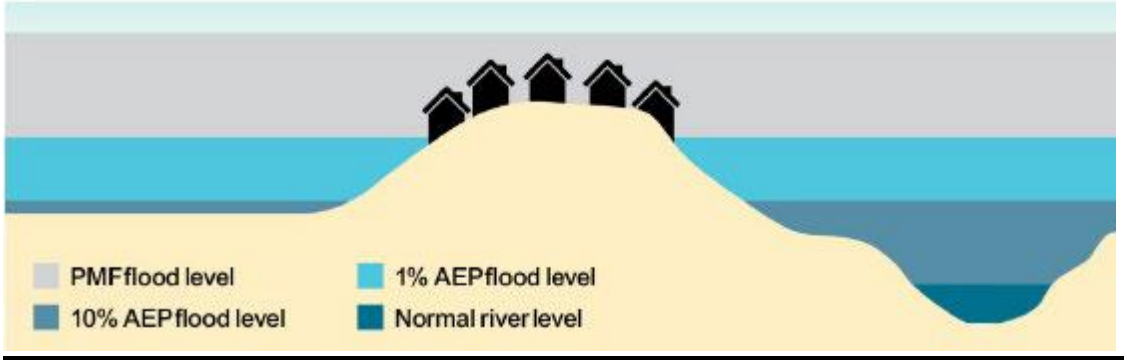


Figure 2 Low flood island (DPE, 2022)

Table 12 of the document recommends emergency management issues for councils to consider in strategic decision making. In relation to proposed future communities such as what the proposed development would result in, for an emergency management response strategy of evacuation it is recommended to consider the feasibility of evacuation on a community scale without detriment to the existing community's ability to evacuate and should have supporting evidence of an evacuation capability assessment considering the vulnerability of the proposed development type and land uses. A shelter in place strategy is generally not supported by the NSW SES (DPE, 2022, pp.65). Please see the following link:
https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Floodplains/flood-risk-management-emergency-management-planning-support-220055.pdf

The Flood Risk Assessment and Flood Emergency Response Plan (FRA&FERP) for this proposed development, on page 3 states:

2. "*The site may become isolated for up to approximately 8 days in very rare extreme flood events. However, there will be sufficient warning time for all flood events, ensuring complete evacuation of the site either towards Maclean/M1 or to the Yamba Bowling Club, considering the minimum warning times of approximately 6 hours and 22 hours*."

Point 2 is completely incorrect. On the 28 February 2022 residents woke to stormwater inundation with many roads closed, including Yamba Road (see page 20). There was no warning. West Yamba residents were unable to reach the Yamba Bowling Club nor could any resident in Yamba evacuate to Maclean. Yamba was cut off for 7 days.

*"3. A community refuge building, situated above the Probable Maximum Flood (**PMF**) level documented in 2013, will be equipped with adequate resources to facilitate 'shelter in place' for any occupants who were unable to leave the site before or during a flood event."*

As outlined above "*A shelter in place strategy is generally not support by the NSW SES (DPE, 2022, pp 65)."* Furthermore, the PMF level is documented in 2013, not Council's latest Flood Model.

"5. Flood wardens will be appointed by the owner/operator and will be trained to monitor floods, manage responses, and ensure maximum evacuation opportunities for site occupants during extreme flooding, in addition to SES services."

Appointing wardens for managing an emergency, including stormwater or riverine flood events, may not be the most appropriate approach. MHEs are for people over 55, as the current Clifton Village being constructed in Carrs Drive advertises it is for 55+. Concerns include the fact that wardens are generally older folk, who may be ill or are unavailable as they may be travelling outside the area. Also, residents may not want to take on this responsibility.

FRA&FERP directs most residents to shelter in place in a location that can be isolated for a number of days – this is divergent from state guidance and practice. The proposed evacuation of residents with medical issues is also complex, has too short a time to be able to allow for suitable preparation, relies on information that may not be available during the course of a flood event and does not account for potential temporary accommodation requirements in Maclean for up to 60 persons. It also does not account for the degradation of evacuation route access over time with climate change.

Residents sheltering in place are unlikely to have sufficient space or amenities and therefore likely to impose an additional pressure on the NSW SES with respect to the need for resupply and also with respect to potential medical evacuation requirements.

Additionally, the proposed floor level of the shelter area is 4.1mAHD and would need to be elevated to 4.5mAHD to allow for projected climate change, otherwise there is potential for the refuge itself to be inundated. Based on these findings, the current proposal is unsatisfactory from a flooding and emergency management perspective.

Yamba CAN Inc. asserts the proposed development's Flood Risk Assessment and Flood Emergency Response Plan is inadequate and flawed with incorrect information.

28 February 2022 Rainfall

On 28 February 2022 Yamba received 274mm of heavy rain in 24 hours. This rainfall was not unprecedented. Stormwater inundated homes and many roads were closed. After the stormwater dissipated the Clarence River flood crest reached Yamba two days later and homes were again inundated, and roads remained closed. Yamba has one road in and out and the town was cut off for seven days. Residents in the whole of the west Yamba area were unable to reach the SES designated evacuation centre, the Yamba Bowling and Sporting Club. Yamba Fair closed due to stormwater inundation in the carpark and Treelands Drive and Coles closed after running out of food. Quite a number of homes were flooded with stormwater followed by riverine water. Pilot Hill is also not a suitable location to evacuate, if people could reach it, as food supplies would diminish after a few days, there would be inadequate ablution/sanitary facilities for a lot of people, and inadequate and insufficient accommodation. Also walking through floodwater can cause infection from sewage pollution.

In 2022 residents were not provided with information that they could register their home as flooded; nor were many aware of State Government assistance such as the NSW Government Back Home Grant of $20,000.

Yamba was very fortunate that the February/March floods in 2022 did not coincide with a king tide. If that had occurred many more homes would have been inundated with water and sewage.

Statement of Environment Effects (SEE)

Page 13 of the SEE states, “Local elevation at the site is approximately 1.3m (RL) and the MHE development proposes up to 3.1m of fill will be imported to ensure filling that provides the finished surface level of dwelling sites to a minimum level of RL3.5m AHD.”

Is it acceptable to continue to fill the Yamba floodplain, which will continue to detrimentally affect residents on the floodplain?

Page 39 states, Part D - Floodplain Management Controls
Part D5 requires that development which involves filling of flood liable land must comply with the following criteria:
(a) The filling of flood liable land must not increase the flood risk on other land within the floodplain.
(b) Filling and associated works must not have any unacceptable associated environmental impacts such as detrimental affects on the ecology of riparian corridors.

Any filling on a floodplain will impact other land within the floodplain as water (whether stormwater or riverine water) has to flow elsewhere. This has already been occurring on the Yamba floodplain for years.

Yamba CAN believes photos in this submission confirm the contravention of the Clarence Valley LEP 2011 clause 5.21 Flood Planning, which sets out flood planning provisions.

(**1) The objectives of this clause are as follows**—
a) to minimise the flood risk to life and property associated with the use of land,
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,
c) to avoid adverse or cumulative impacts on flood behaviour and the environment,
d) to enable the safe occupation and efficient evacuation of people in the event of a flood.

Under this clause, consent for developments on land within the flood planning area must not be granted, unless the development:

(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**—
a) is compatible with the flood function and behaviour on the land, and
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
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
d) incorporates appropriate measures to manage risk to life in the event of a flood, and
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 Vegetation Management Plan
The Plan states on page 16:
"*Filling the site will involve:*
- ***introduction of fill from an approved source*** *or quarry*
- *trucking of fill material on to site via Carrs Drive*
- *batters to be located 10 to 15 m from the edge of retained vegetation along Oyster Channel (Appendix 5)."*

The Plan states on page 17, *"Overland flows from the development site will be directed to bioretention basins or detention basins and subsequently to the channel at the southern boundary of the site, where flows will be conveyed towards the Oyster Channel (Appendix 8). This will apply to all proposed stormwater outlets except for two scour valves directing stormwater flows to the west."*

The Statement of Environmental Effects (SEE) states on page 62 states:
"The extent of the Threatened Ecological Community to be impacted includes the riparian corridor of the 2nd order stream that runs inside the site's southern boundary between Carrs Drive on the eastern boundary and Oyster Channel on the western boundary."

Page 60 of the SEE states at Engineering - Geotechnical Assessment, "*There is no compression to ground conditions and no dredge material proposed.*
These issues are addressed within the new report entitled Earthworks Management Plan dated January 2024 and Preliminary Geotechnical Investigation dated 20 May 2022."

The Earthworks Management Plan states, *"There are currently no plans to undertake filling operations with dredge material."*

The Preliminary Geotechnical Investigation dated 20 May 2022 has not been provided with the documents exhibited on Council's website.

Concern is that fill will be required from another approved source, which could be from the Oyster Channel.

Pollutants could enter Oyster Channel from east to west. The drone photos on the following pages show that pollutants from all the developments in Carrs Drive would drain into Oyster Channel.

Pollutants entering a river system can have a wide range of negative environmental and human health consequences. The specific effects depend on the type and quantity of pollutants involved, as well as the characteristics of the river and its ecosystem. The following are some common consequences of pollutants entering a river:

1. **Water Contamination:** Pollutants can contaminate the water in the river, making it unsafe for swimming, or supporting aquatic life. Chemical pollutants such as heavy metals, pesticides, and industrial chemicals can be harmful to both humans and aquatic organisms.
2. **Harm to Aquatic Life:** Pollutants can disrupt the balance of the river's ecosystem by harming or killing fish, insects, and other aquatic organisms that survive in the river system. This can lead to a decline in biodiversity and negatively impact the food chain.
3. **Algal Blooms:** Excess nutrients, such as nitrogen and phosphorus from agricultural runoff or wastewater discharge, can cause harmful algal blooms. These blooms can deplete oxygen levels in the water, leading to "dead zones" where aquatic life cannot survive.
4. **Disruption of Sediment Balance:** Sediment pollution, often from construction sites or erosion, can cloud the water and smother aquatic habitats. It can also lead to changes in the river's flow patterns and channel morphology.
5. **Spread of Disease:** Polluted water can carry pathogens and contaminants that can lead to the spread of diseases to humans and wildlife that use the river.
6. **Negative Impact on Recreational Activities:** Contaminated water can make recreational activities like swimming, fishing, and boating unsafe and unpleasant.

7. **Economic Impact:** Polluted rivers can harm local economies by affecting tourism, property values, and industries that rely on clean river water.
8. **Long-term Environmental Damage:** Some pollutants, such as persistent organic pollutants (POPs), can have long-lasting effects on the environment, accumulating in the ecosystem and causing harm over many years.
9. **Human Health Risks:** Polluted water can pose serious health risks to people who use the river for swimming or other purposes. Exposure to contaminated water can lead to various diseases and health issues.

There is significant concern about the negative, harmful, detrimental impact to aquatic life and the potential buildup of the extra sediment over the years, all detrimentally impacting on the aquatic life and the breeding cycle of aquatic life in the Oyster Channel vicinity.

In summary, filling floodplains can have a range of negative impacts on the environment, public safety, and the economy. Careful consideration of the potential consequences, as well as the implementation of effective floodplain management strategies, is essential to minimise these impacts and promote sustainable development in flood-prone areas.

Page 14 of this submission provides an aerial photo dated 13 July 1958 of the flood storage and flow path areas, most of it a wetland area where residents were trying to cultivate and grow crops. There are a number of flow paths visible across the West Yamba area. These areas were ponding basins for stormwater.

Civil Plans of the proposed development

Earthworks Plan D14 shows some of the roads within the proposed development have a fill depth of 0.0 – 0.5m. Concern is that these roads will cause ponding of water in a heavy rainfall event. Residents adjacent to these roads could become trapped. The entrance appears to show a fill depth of 2.0 – 2.5m which could cause the site to be cut off during a flood event. The Plans mention a number of detention basins. While vital for managing stormwater runoff and potentially preventing flooding, these basins can encounter several problems, such as:

1. **Sediment Accumulation**: Over time, sediment can build up in detention basins, reducing their capacity to hold stormwater. This accumulation can decrease the basin's effectiveness and may require costly operations to restore capacity.
2. **Vegetation Overgrowth**: If not properly maintained, vegetation can overgrow in detention basins, hindering water flow and reducing storage capacity. Additionally, invasive species may establish themselves, further exacerbating the problem.
3. **Trash and Debris**: Detention basins can become litter traps, collecting trash and debris carried by stormwater runoff. This not only reduces the basin's capacity but also poses environmental hazards and can degrade water quality.
4. **Poor Design or Maintenance**: Inadequate design or lack of maintenance can lead to structural issues such as erosion, embankment failures, or outlet blockages. These problems can compromise the functionality of the detention basin and increase the risk of flooding downstream.
5. **Water Quality Concerns**: Detention basins can accumulate pollutants washed off from roads, parking lots, and other surfaces. Without proper management practices, these pollutants can degrade water quality and harm aquatic ecosystems.
6. **Limited Effectiveness in Extreme Events**: In severe storms or prolonged periods of heavy rainfall, detention basins may reach their capacity quickly, leading to overflow and potential flooding downstream. This limitation underscores the need for comprehensive stormwater management strategies that incorporate multiple techniques.

Addressing these issues requires proactive maintenance, regular inspections, and adherence to best management practices in stormwater management. Additionally, ongoing monitoring and adaptation to changing environmental conditions can help ensure the effectiveness of detention basin systems.

The cumulative impacts of development:

- Approvals of development applications for residential use should never be given on a recognised flood plain.

- CVC Development Control Plan Part X WYURA under Objectives states:

  "*02. Minimise flood and drainage impacts of the development in the WYURA on adjoining residential neighbourhoods and property including ensuring that there is no net increase in the number of existing dwellings whose habitable floor levels become inundated by the ultimate filling and development of the entire WYURA.*

  04. Ensure that any stage of the overall WYURA development is successfully integrated and does not prejudice or detrimentally impact overland flow path/s, existing watercourses and stormwater management network."

  Neither Object 02 nor 04 have been met as photos on the following pages demonstrate.

- CVC is a statutory body and has a statutory duty of care to its residents.

  In 2009 a Floodplain Risk Management Plan (FRMP) was adopted by CVC after a study was done. The Plan concerns environmental issues relating to flooding, in particular new residential development on flood-liable land and the impacts of increased human activity. The FRMP states "*a Master Plan be prepared to achieve a holistic strategy to ensure development is integrated and does not create problems when addressing cumulative issues in West Yamba. This would include the potential impacts of increased human activity - nutrients, sedimentation, runoff - on the nearby exclusion zones during a flood or ocean event when WSUD capacities are exceeded."* The Master Plan to be prepared prior to developments being approved. The (2009 FRMP) also recommended that Stormwater study be completed and that this was outside the scope of the 2009 FRMP.

  A Master Plan was never prepared although development has been allowed to go ahead on the floodplain.

  The new development areas on the floodplain resulted in water diversion into existing residents' properties and homes in west Yamba. Yamba's stormwater drainage system was unable to cope, causing flooding. Yamba's stormwater drainage system requires thorough investigation for upgrading. A comprehensive drainage and flood study is required.

  As a Master Plan that takes into consideration Stormwater in accordance with FRMP was not prepared, and developments have been allowed to proceed on the floodplain, it appears CVC and State Planning Departments have failed in their duty of care to residents.

  Furthermore, Council neglected to organise collection of any post flood data in Yamba after the February 2022 flood event. This data would be considered as paramount to updating Council's Flood Management Plans and also assist with updating the SES Clarence Valley Emergency Sub Plan.

- The Lower Clarence Flood Model (LCFM) 2022 does not address stormwater inundation and flooding in Yamba.

- The West Yamba Urban Release Area acts as a storage for flood waters and the Yamba Bypass drains flood waters into Oyster Channel, neither of which have been addressed in the LCFM 2022. The ongoing fill required for the approved developments in the WYURA and elsewhere in Yamba is negatively impacting, causing stormwater inundation and flooding into existing residents' properties and homes and potentially adversely affecting the safe occupation and efficient evacuation of residents or exceeds the capacity of existing evacuation routes for the surrounding area in the event of stormwater and/or riverine flooding.

- Council's draft Local Housing Strategy is currently on exhibition and states on page 51 under Mitigation Measures:
  "Proper land use planning to avoid building in high-risk areas, along with resilient infrastructure, ensures homes can function during and after disaster events. Critically, the recommendations from the flood and bushfire inquiries highlight the need for a risk-based approach to planning for natural hazards and include prioritising and encouraging new development in safe areas and ensuring evacuation routes are available and of sufficient capacity where new development is permitted in disaster-likely areas."

  Unfortunately, this appears not to have occurred in the Clarence Valley Council LGA for decades.

  Pink = developments in the WYURA

Over the past few years, the number of homes, units, townhouses and developments in Yamba have increased, negatively impacting on the lifestyle and amenity of residents.		
Kahuna, Carrs Drive	284 small lots	Partially filled – lots not approved
Clifton, Carrs Drive - existing	193 MHE	Approved – filled and being constructed
Clifton – new DA, 120 Carrs Drive	216 MHE	Not approved
Senior living	52 senior living units	Approved – not filled/constructed
Parklands – 3 stages	161 lot subdivision	Approved – being filled/constructed
Golding Street	16 high rise units	Not approved
Grevillea Waters	156 MHE	Existing/approved
IN THE WYURA	1,078	
Park Avenue	136 MHE	Partially filled – more fill & MHE's approved (see page 19 below)
Orion Drive	78 MHE – 71 two storey and 7 single storey	Approved – filled and being constructed (see page 19 below)
Palm Lakes Resort	Approx. 184	Existing/approved
The Dunes estate	24 lots	Approved – filled and being constructed
The Links estate	68 lots	Approved -
Total number of homes	1545 homes	493 not approved 1028 being constructed or existing
Other developments approved: 72 lot subdivision Quays estate; 6 lot subdivision Sullivans Road; Caroona aged care facility 84 units; 17 apartments 6 Yamba Road; 14 townhouses Mulgi Street. 193 extra homes, units and townhouses.		

- The existing residents of the whole of West Yamba were unable to reach the designated SES Clarence Valley designated Flood Evacuation Centre on 28 February 2022 as the roads were closed. The SES Clarence Valley Plan actually states not to drive or wade through any water at all.

- **Other impacts include:**
  - Unable to access required goods, services, support and medical and health treatment due to storm and riverine water inundation and flooding, causing road closures.
  - Homes flood damaged.
  - Water supply risks.
  - Power outages causing food wastage.
  - Sewer pumps failing.
  - Public transport paused.
  - Increased house insurance premiums.
  - Devaluation of properties.
  - Infrastructure damage.
  - Water quality issues in creeks and rivers, harm to aquatic life by pollutants and increased sediment.
  - Habitat destruction.

Climate change and natural disasters

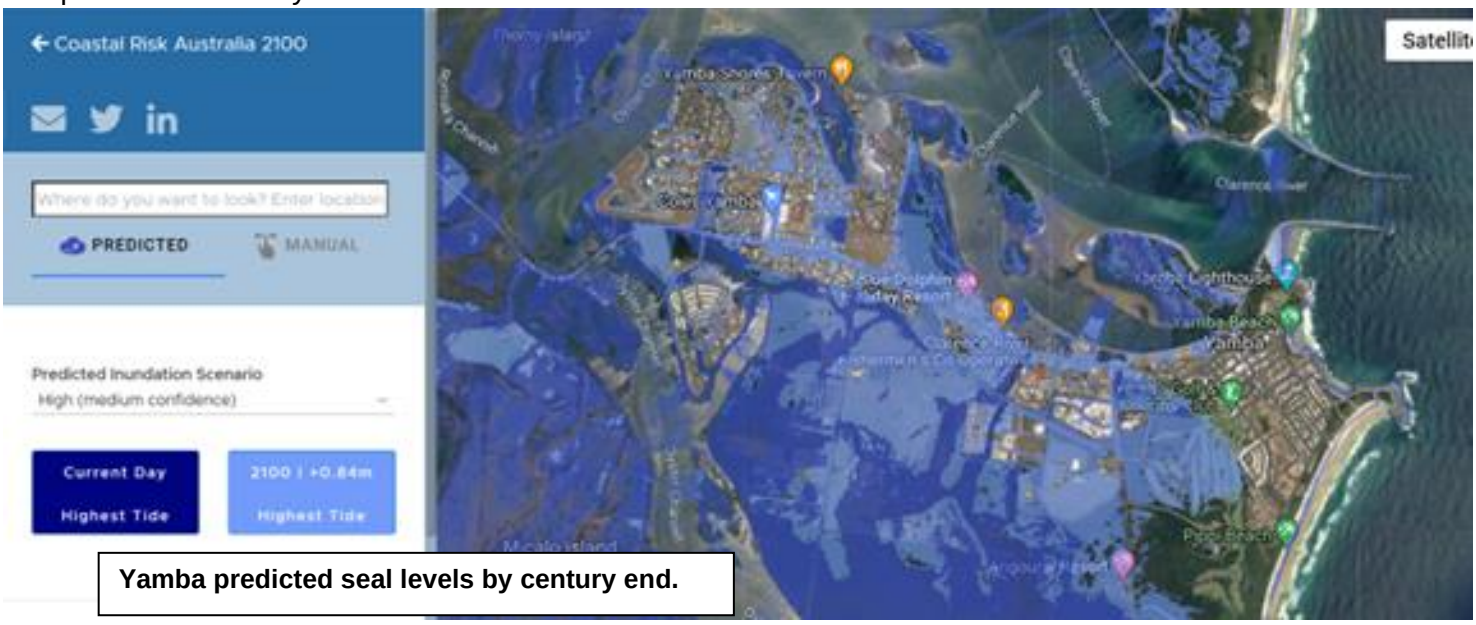
The February/March 2022 floods in the Northern Rivers have highlighted the need for better planning strategies to fully consider climate change and natural disasters.

It appears that thorough consideration of climate change and natural disasters concerns is often in the too hard basket for Council and the Regional Planning Panel. Residents are becoming more concerned and are losing confidence in Planning authorities.

Weather events are becoming more extreme, triggering more catastrophic natural disasters.

Areas that are vulnerable to rising sea levels, coastal erosion or drought conditions as a result of climate change.

Sea level rises predicted by the end of this century show that much of coastal New South Wales (NSW) will be inundated. Using Yamba as an example the image below shows how under current conditions areas planned for subdivision are negatively impacted by sea levels and along with significant areas of the town will be further impacted this century.

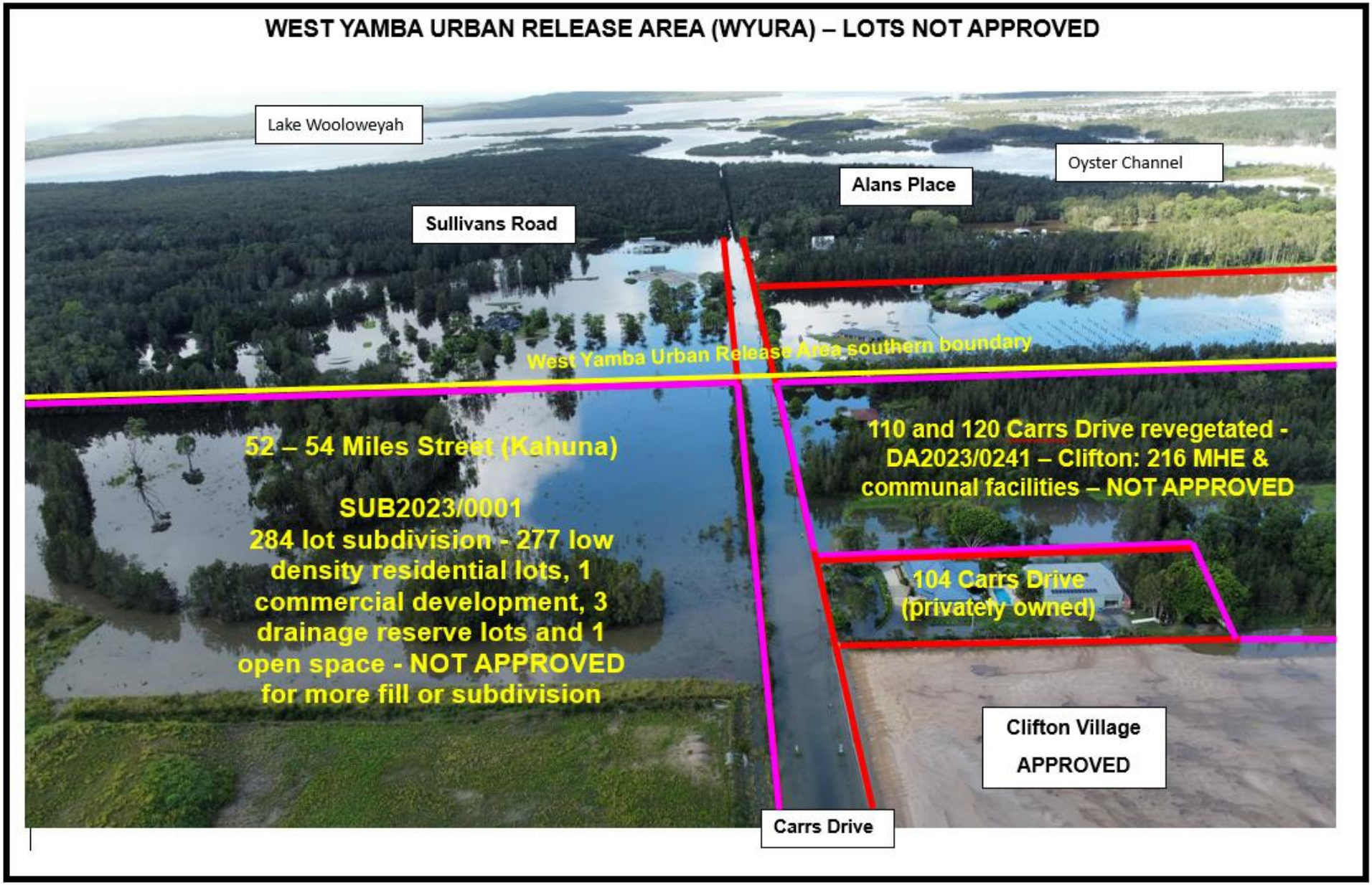


Yamba predicted seal levels by century end.

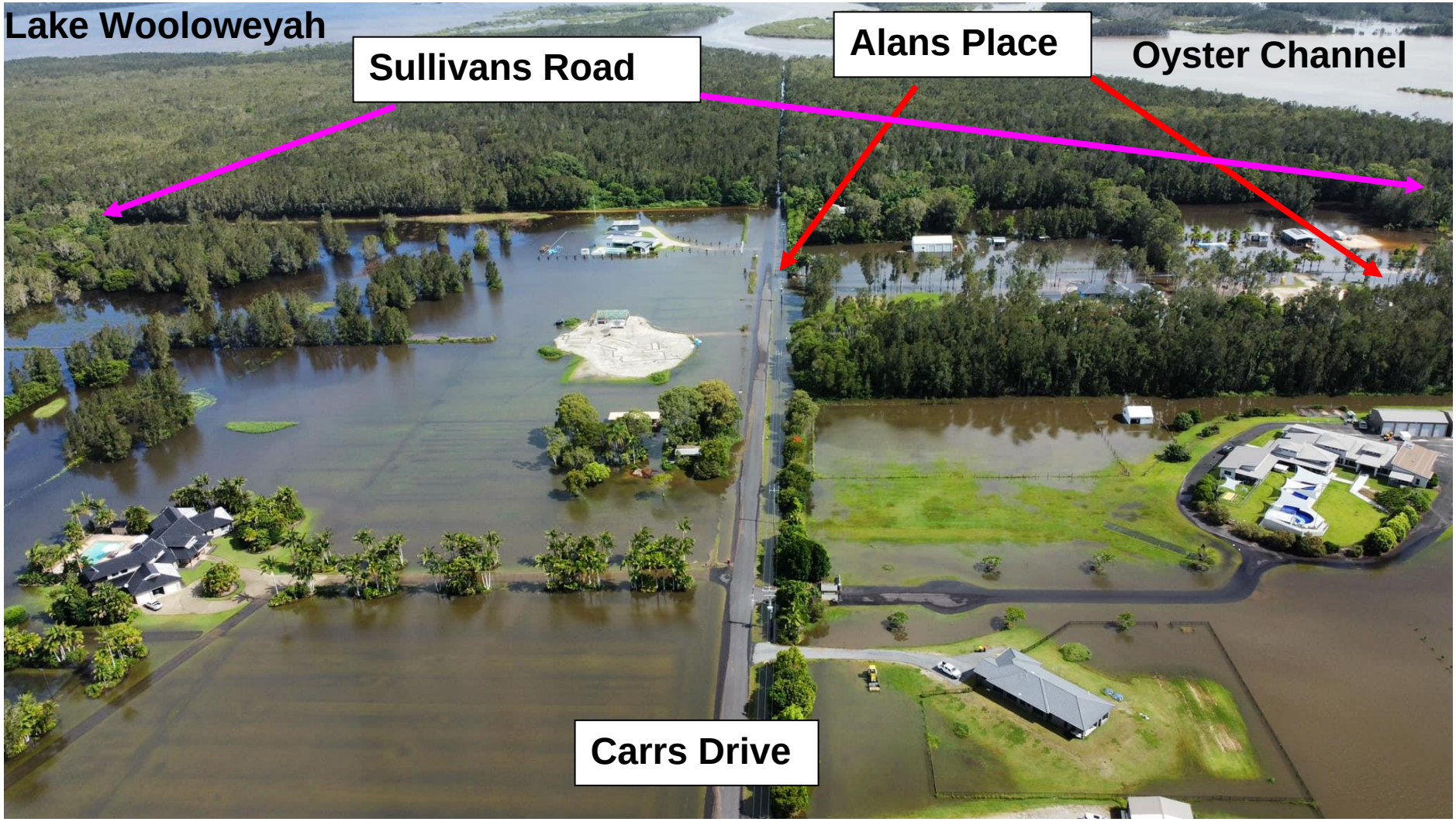
Existing planning addressing flooding and sea level impacts commonly fails to achieve sustainable outcomes which do not prevent negative impacts on the existing residents, and commercial and industrial areas. There is no real assessment of the predicted impacts caused by climate change and the predicted extremes in weather that are already being experienced. West Yamba is one example of poor planning, where filled areas already impact on existing residents, and commercial and industrial areas. Difficulties will inevitably arise in relation to servicing the residents in developments on mounds of fill, such as goods, services, support, medical treatment and evacuation. Planning for the future impacts of climate change must prevent development in areas where there is a real and known negative impact due to the increased probability of flooding due to natural disasters caused by climate change.

Digital photo provided by the Port of Yamba Historical Society dated 11 July 1958 – the Proposed Development is in a flow path and floodway.

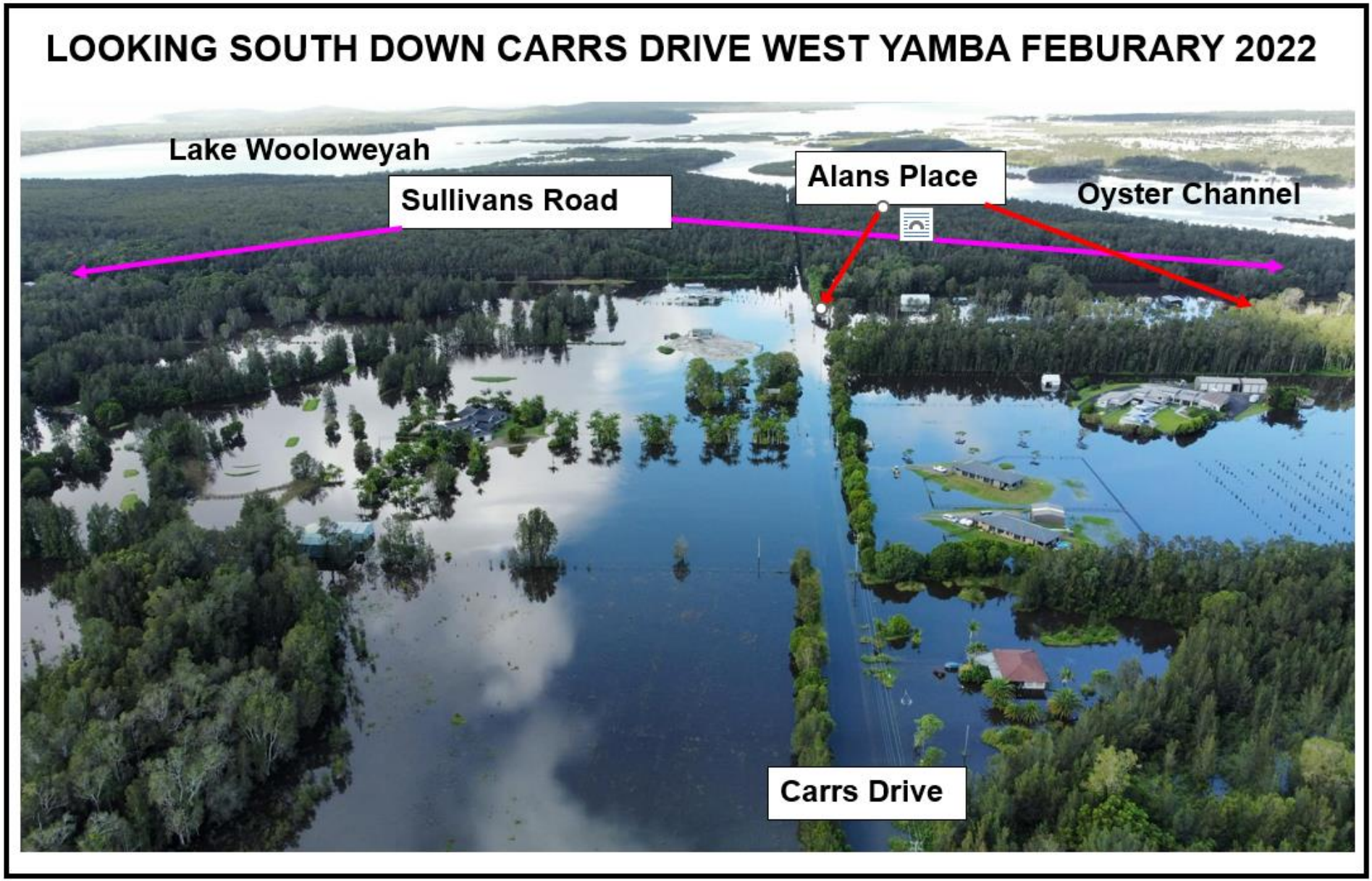
Google earth imagery 2024



LOOKING SOUTH DOWN CARRS DRIVE WEST YAMBA FEBURARY 2022



The



17 April 2023, photo of the height of fill from the existing ground level at Parklands subdivision in Carrs Drive Yamba

The stick is 3.0m in length

28 February 2022, just prior to Yamba Road being closed due to stormwater flooding. West of Carrs Drive intersection.

28 February 2022, residents woke to Yamba Road cut by Kolora Lake overtopping from the north to the south.

28 February 2022, Looking across Yamba Road closed. West of Carrs Drive intersection.

28 February 2022, Yamba closed when Kolora Lake overtopped in February 2022 – SES manning the closure.

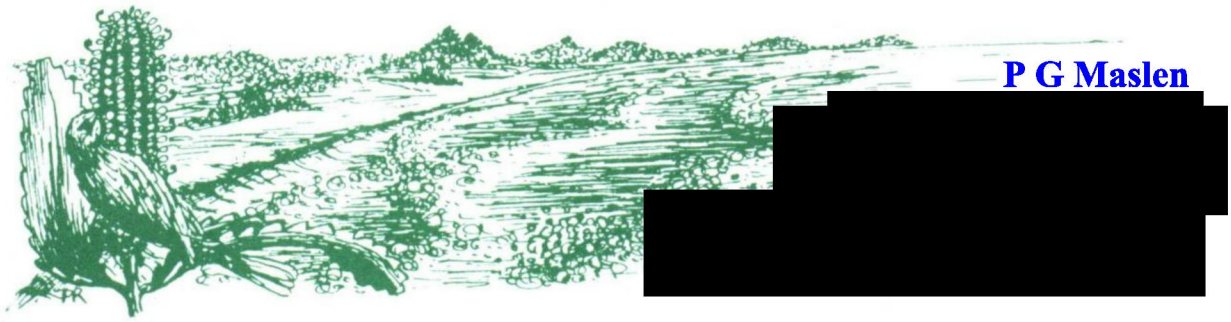
28 February 2022, driveway beside Yamba Fair on Treelands Drive Yamba.

Shores Drive after the flood crest reached Yamba two days after the stormwater flooding dissipated.

Flooding of Yamba Road and Golding, Susan, Cook and Endeavour Streets – just northeast of the WYURA.

February 2022. These natural disaster events will potentially become more catastrophic.

Yamba Road and properties flooded towards Angourie roundabout. West Yamba residents unable to reach the Yama Bowling Club – the designated SES evacuation.



P G Maslen
[redacted]

15th April 2024

Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Attention: Environment, Development & Strategic Planning Director

SUBJECT: DA2024_0241 110-120 CARRS DRIVE YAMBA 216 DWELLING MANUFACTURED HOME ESTATE AND COMMUNAL FACILITIES

Dear Sir,

This is a submission on application DA2024_0241 for 216 dwelling manufactured homes estate and community facilities.

The council is to be complimented on ensuring the community can make submissions on the application. The confusion regarding the most current flood reports available to council are still real concerns. The community should be given the opportunity to have input to all information available to council complying with council's Community Engagement Policy and Community Participation Plan, and any information resulting from a council request for additional information or clarification of an application.

With the lack of a master plan for the West Yamba Urban Release Area (WYURA), there are numerous unanswered issues of the overall impact of this application and others in this area. This application cannot be considered in isolation to other past, current and future proposals. There is no council approved master plan that details the preferred traffic movement, stormwater flows and treatment, emergency response plan or appropriate open space for recreation and environment protection and enhancement. This is a serious flaw in council's planning process and will ultimately lead to a hotchpotch of outcomes that has and will continue to create problems for both the council and the community. Inappropriate rezoning is a feature of the Clarence Valley Council or its predecessors planning scheme in the lower Clarence, with irresponsible planning rezoning in this area allowing high density housing in a flood plain and inappropriate R1 zoning enclaves in R5 zoned areas of James Creek and Gulmarrad. The lack of any guidance by a master plan is likely to result in a local community that is fragmented, lacking interconnection with the immediate community and the rest of Yamba, open space and natural areas either existing or created. The general health and wellbeing of an area and its residents is determined by the layout and amenities and the immediate availability of open space. The proposal and west Yamba in general, as it is heading does not give any confidence that the well being of future residents is being considered. The apparent high density of the existing proposals with a concept of squeezing in as many lots as possible and hence, people into the area without suitable amenities, is a recipe for a less than optimum environment, resulting in a living standard less than could be achieve especially in an area such as Yamba which has the opportunity to provide a high standard of living for a future community.

The referenced Yamba Coastline Management Plan is outdated and does not reflect future potential impacts at the appropriate levels. The Clarence Valley Open Coast Coastal Management Program out for public comment, while does not directly address the proposal area, indicates that future river levels and flood levels are higher than currently documented. The proposed estuary management plan for the Clarence River will be developed over the next couple of years and hence a more conservative approach must be taken when assessing and implementing applications such as this.

While the inclusion of street trees is commended, some species proposed for street trees while all are wonderful species in the appropriate place, have potential issues for long term maintenance due to their impacts on water reticulation system, communication infrastructure and possibly electricity services, and road and path pavements. Many of the proposed species grow into large trees with the corresponding extensive large root systems. Given the high density of this proposal the proximity of large trees may present an issue for residents. Allowing the larger species in this proposal, appears to be in contradiction to the council's policy to permit removal of trees without council approval, within the proximity of dwellings. *Livistona australis* is not considered suitable as a street tree, as are palm species in general. Palms give virtually no shade defeating one of the purposes of street trees in reducing heating of the community and providing shade for residents. *Livistona australis* while being a local native, have nasty thorns on the stems of their leaves and like most palms drop large leaves resulting in a general maintenance issue for council and residents. I have several of the recommended species including *Livistona australis*, on my acreage property and have been involved with the selection of street trees and the impacts of inappropriate species selection as a council officer approving subdivision landscape plans.

The greatest concern in this proposal is the filling and impacts on surrounding lands, stormwater flows and the flood plain. There is serious concern regarding the the submitted flood study as it does not address the impacts of the filling of this site and the impacts of stormwater flooding in the western half of Yamba beyond the WYURA. A study the potential impacts on the existing homes and the area in general should be the content of any flood study addressing both storm and riverine flooding, related to applications in WYURA. Any approval must ensure there is no worsening of flooding in the wider west Yamba area and any potential for flooding is overcome for existing landowners compensated for any impacts by the applicant. The flooding of the nearby school is not addressed and there is no solution to the apparent negative impacts on this existing site. The changes in the hydrology of the area while causing the stated increase in flooding of existing properties, is highly probable to cause ecological changes to the adjacent wetland areas.

The levels of Carrs Drive are unchanged resulting in future residents becoming isolated during flood events If Carrs Drive were to be raised to ensure access during flood events, then the flows that are normally permitted along road reserves in greater than ARI2 events would be prevented. It would cause increased flood of the existing west Yamba and still isolate residents to the WYURA as Yamba Road floods.

The stormwater quality improvement devices (SQIDs) proposed appear to be appropriate with contemporary designs and infrastructure included. In any approval a condition must be included to submit a maintenance plan for the stormwater treatment system with annual reports to council to ensure the plan is carried out.

The known and probable negative impacts such as flooding, possible damage, decreased property values and increased insurance policies on existing properties must be addressed by council and compensation given by the applicant.

The management of the natural vegetation must be undertaken as implied in the vegetation management plan. This must include protection and enhancement of the retained natural area and the plantings described in the landscape plan. The use of native plants is complemented with some variation as detailed above.

If council requests additional information, I ask that I be given the opportunity to comment on that information prior to a council decision on the application.

Yours faithfully,

Peter G Maslen BE BSc FIE (retired)

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Mon, 15 Apr 2024 13:57:14 +1000
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - McCartin
Categories: Logan

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - McCartin

Contact details	
First name	Monika
Last name	McCartin
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464
Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	As a twelve year Yamba local, I feel like I know the area well, have gone thru drought and a few floods, am connected with the community and have a grasp on what most people who live here value, I am appalled at the short sightedness of this project. After what we've experienced with past floods, it seems obvious that we absolutely need the precious floodplains and filtration areas to mitigate the overflow of flood and storm waters that are already at capacity when tested. We are a small town, one road in and out, (with parts of the road over water channels!) and already pushed to our limits with population numbers during holiday times (ask anyone who shops at Coles or needs a car park in town!) how do the council and these developers think we can handle THAT many more people (across several new developments) moving to town? Most of these may be elderly, who may not mind not having no garden, privacy, or any access to nature, do they even know there isn't a hospital here? We don't even have doctors to take new patients. It just doesn't make sense to me. My family and I, and all my friends and colleagues are adamantly opposed to this and other shortsighted plans that really only benefit the land developers and the people they've got on their side. Please do right by your community, stop future land fills, which only divert the storm water to existing homes, and be responsible enough to think about the future of Yamba and the Clarence...
Supporting documents	

	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.

Privacy advice

Disclaimer

	I agree

From: [redacted]
Sent: Sun, 14 Apr 2024 16:54:50 +1000
To: "CVC Council Email" <council@clarence.nsw.gov.au>
Subject: DA2023/0241 - 120 CARRS DRIVE YAMBA
Categories: Bec

Dear Manager

My objections to the proposed DA2023/0241 are as follows:

The extensive amount of filling required for development of 120 Carrs Creek, will increase the flooding already occurring from ongoing filling on earlier developments, ie Clifton and Parkland. This causes Carrs Drive to be flooded, which is turn affects the Carrs Drive Roundabout and residents living on Yamba Road who were affected in 2022.

The possible flooding of St James School, Carrs Drive, Yamba is a huge and unfair risk.

Increased traffic on Carrs Drive, possibly over 200 car movements per day, each way, is a huge problem. When traffic turns off Yamba Road from the "Yamba Town" end, there is no visibility for residents trying to enter Carrs Drive from O'Grady's Lane. Similarly there is no visibility for residents on Yamba Road, in close proximity to the roundabout. Drivers are able to see vehicles approaching the roundabout from Town, but we have no visibility of who has entered the roundabout from Carrs Drive, ie could be a double bogey truck!

The existing Clifton Village has mainly Senior Residents. Another 200 plus Seniors, marooned for days, unable to keep medical appointments, go to the shops, do basic things, will cause a lot of problems from our Volunteer SES personnel. People buying into a Village such as Clifton, may be totally unaware what they might encounter with heavy rain.

The increasing traffic on Carrs Drive in recent years has been difficult for other residents due to Parkland and Clifton, add another 230 traffic movements and it is just not feasible with the state of that road, ie narrow and rough. How many more

years will there be double bogey trucks travelling Carrs Drive? I feel sorry for students, staff and parents at the Primary School. I feel it is dangerous.

The issues of clean water, sewerage, medical facilities, shopping facilities are at a premium now, without adding 120 Carrs Drive residents to the scene.

How can this development and others in the area even be considered when there is a potential for other properties in the area to be impacted quite severely?

Where are existing residents from Susan, Cook, Golding, Cox, Coonawarra Court and Yamba Road going to evacuate to in time of flood? Won't be able to get to the evacuation centre at Yamba Bowling Club if Yamba Road was under water as in 2022.

I feel there are multiple reasons why this development should not be approved, hence my objection.

Thank you for reading my objection.

Pat Craigie

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Sat, 13 Apr 2024 12:05:44 +1000
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Adams
Categories: Logan

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Adams

Contact details	
First name	William
Last name	Adams
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464
Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	My objections to the proposed DA2023/0241 are as follows: 1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents. 2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study. Refer to the recently released NSW State Disaster Mitigation Plan. 3. The ongoing fill required for approved developments in the WYURA and elsewhere on the Yamba floodplain is negatively impacting, causing stormwater inundation and flooding into existing residents' properties and homes, and commercial and industrial areas. 4. Ongoing filling of the west Yamba floodplain will cause Yamba Road, Carrs Drive and other roads in

	west Yamba to become water courses, trapping residents in their homes and hindering safe evacuation. Many of these roads already experience flooding in heavy rainfall events and often close. 5. Difficulties will inevitably continue to increase in relation to servicing residents, burdening the availability of goods and services, access to shops and availability of parking spaces, traffic congestion and bottlenecks, access to support care and medical and health treatment, access to schools and recreation and leisure facilities, risks to water supply, power outages causing health stress and food wastage, internet outages, sewer pumps failing, transport services paused and safe evacuation and potential risk to life. In the 2022 February/March flood Yamba was cut off for 7 days. To ensure availability of food to the increasing population, for up to 7 days is of serious concern. 6. Negative impacts of trucking in and compacting fill on site. Lower-lying properties already experience increased inundation of stormwater, as occurred in the February/March 2022 flood event. 7. Yamba Road and Carrs Drive have already greatly deteriorated from the truck and dogs bringing in fill for the current Carrs Drive development, costing more ratepayers funds to repair. 8. Dredging from Oyster Channel to fill the subdivision land is of great concern, potentially adversely impacting aquatic species and aquatic vegetation and disrupting riverbed habitats, food and shelter

	for marine life. The removal of native vegetation is also of concern. 9. Residents will be isolated on mounds during stormwater flooding as the one road in and out, Carrs Drive, is flooded and closes without adequate warning for evacuation. Yamba also has one road in and out. 10. It appears there would be an extra burden on SES volunteers during flooding. 11. It appears CVC and State Planning Departments have failed in their duty of care to Yamba residents.
Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

RE: DA2023/0241 120 Carrs Drive Yamba – 216 manufactured dwellings

The 120 Carrs Drive Yamba development is an inappropriate development which will contribute to flooding of established properties in the areas that surround the West Yamba Urban Release Area and therefore it must be denied.

My objections to the proposed DA2023/0241 are as follows:

1. The 120 Carrs Drive subdivision is in direct breach of the ***Local Environment Plan legislation clause 5.21.2 (b)***. The Clause states:

   '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 . . . . (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.'

   - 120 Carrs Drive is flood plain. It has a critical purpose to hold water during rain events. The developers proposed fill height is staggering. Stormwater will run off 120 Carrs Drive, back up and inundate existing properties.
   - Please note in the ***attached photo*** the amount of water sitting over the 120 Carrs Drive site in the 2022 Yamba Rain event. It clearly demonstrates this is flood plain and is not suitable for development.
   - This development is in breach of the above clause and therefore the development application must be denied.

2. ***Stormwater Inundation of surrounding homes:***
   - In February 2022 my home of 15 years, along with neighbours in Endeavour Street, was inundated by stormwater from the West Yamba flood plain. It was stormwater as the water was clear. It was not from the river. We watched the movement of sticks, leaves, logs and other debris float from West Yamba towards the river. We were prepared, we sandbagged but nothing can stem the flow of stormwater.
   - The 120 Carrs Drive development will fill this land similar to other inappropriate WYURA developments. The dispersed water will inundate the St James Primary School and Carrs Drive. The stormwater will impact Harold Tory Drive and O'Grady's Lane, making its way to Golding, Cox, Cook, Endeavour and Susan Streets inundating properties.

3. ***The 120 Carrs Drive subdivision is in direct breach of the Local Environment Plan legislation clause 5.21.2 (c). The Clause states:***

   '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 . . .(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'.

- Carrs Road floods. As the attached photo documents access is completely cut off. The residents of this development will not have access to food supplies, pharmacies or be able to seek medical attention as they will be marooned for days.
- Emergency services will be put under further pressure for their evacuation or delivering basic supplies such as food and medical supplies.
- This development is in breach of the above clause and therefore the development application must be denied.

4. The 120 Carrs Drive subdivision is in direct breach of the ***Local Environment Plan legislation clause 5.21.2 (e)***. The Clause states:

   '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 . .(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.

   - As documented in the 120 Carrs Drive Statement of Environmental Effects, the development will remove 8.3 ha of native vegetation on the eastern side of the site.
   - It will therefore adversely affect the environment and is therefore in breach of this clause. It must be denied.

5. Impact of Filling

- The proposed fill levels of this site highlight how inappropriate the site is for this development.
- The constant reference in the 120 Carrs Drive Flood report + other WYRA developers flood reports to the "Flood Way". Their "flood way" seems to miraculously go around existing homes – incredible really!! Do they think the locals are fools? All locals know the stormwater dispersed from this development will bank up, be unable to get to the river and inundate surrounding properties.
- The amount of fill required for this height is staggering. It will require thousand of tonnes of fill to raise it to the required height. This demonstrates it is completely inappropriate for development.
- The continuing bombardment of Truck and Dog movements for the 120 Carrs Drive filling the site will impact the integrity of Yamba road, cause traffic congestion and continue to affect the residents of Yamba Road.

The 120 Carrs Drive development and WYURA Yamba Urban Release Area is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. It will adversely affect impact existing residents and the fragile natural environment.

I feel CVC and State Planning Departments have failed in their duty of care to Yamba residents. I strongly object to this development and the disastrous impact it will have on my neighbourhood.

Yours faithfully
Liza Townend
[redacted]
14/04/24

Carrs Drive and West Yamba inundation – 2022 rain event

Submission for DA 2023/0241 120 Carrs Drive Yamba, Clifton part 2

Over 55's lifestyle development

I object to this proposed DA for the reasons outlined below.

I believe creation of the proposed Clifton 2 development, while very well planned and highly desirable, will generate serious issues for other Yamba residents that should be considered by Clarence Valley Council.

Over-representation of over 50's age group.

On 30th June 2023 Yamba's population was estimated at 6,467 people, and potentially double in summer, many over 50's already live here, or visit.

Over 50's housing currently exists at Palm Lake – 180 houses and Grevillea Waters – 140 houses (37 being new), also under construction are Palm Lake Resort - 78 houses, Parkside -134 houses, and Clifton, part 1, at 90 Carrs Drive - 197 houses.

All will be completed soon and occupied but without time to assess their impact on the town.

This DA, Clifton 2, with 216 homes, would bring the total to over 660 new homes catering for a single demographic, and in town of Yamba's size that is unbalanced.

The expected population increase would be over 1000 new residents, all over 50 y/o.

Yamba currently does NOT provide enough services to meet residents' needs.

Medical Services

We do not have enough doctors now; another has just left. I had a cancer diagnosis last year and found all the established providers will not accept new patients.

Supermarket

One supermarket! Cleaned out in 2022 floods!

Traffic increase

The DA traffic report identifies the bus stop nearest to Clifton 2 as 2km away, and estimates another 454 expected vehicle movements per day, add Clifton part 1 and that's around 900 trips in and out of Carrs Drive daily, again add in the other developments and that's a lot of extra vehicles at the roundabout and trying to find parking.

Water and sewage

Does Yamba have the capacity to cope with the increased demand?

Electricity

Yamba already has too many blackouts, if this DA passes another 216 houses will connect into the grid. Clifton presents a particularly superior design model including using higher levels of insulation and allowing for solar panel installation, but housing density means no provision for parkland in and around the lots, so no tree canopy, no shade, instead creating another hot urban space of metal roofs and roads. Heat index maps would mark it as a hot spot. The result for residents is a forced reliance on electricity to power AC units and a greater demand on the grid.

Land Fill

The DA relies on land fill, 3.5 to 4.1 metres of fill, to raise the site above the floodplain, tons of fill, thousands of truckloads, indicative of the wrong site choice for this proposal. The residents have had enough of these monster trucks and trailers travelling in and out of town. The Parkside development just made it on to the nations' TV screens on ACA for its relentless disregard for its neighbours and Yamba residents' wellbeing.

Lack of Parkland

Lack of parkland also contributes to increased water runoff. New roads, roofs and hard surfaces all contribute to runoff and when it rains hard in Yamba (530mls in 36hrs in 2022) no system can cope, contain, or store that amount of water so it becomes flood or stormwater, passed onto the neighbours.

Vegetation removal and replacement

The development will remove up to 10 hectares of vegetation from the site. It is a revegetated site but still contains trees such as Swamp Oak and paperbarks that live in floodwaters and help disperse water back into the atmosphere, more loss of floodplain. Plantings in the new development cannot and will not help with flooding.

Floods and Flooding

All the aerial imagery of Carrs drive in the 2022 flood shows flood water everywhere except filled areas. The land is designated floodplain and floodway, it is a catchment area. Filling it comes with significant risk to other areas of Yamba.

BMT flood modeling consistently shows land fill will have no impact on surrounding areas, but the water will go somewhere else and that is most likely to already established parts as happened in 2022. There is great community concern that BMT reports do not reflect residents' experiences.

But BMT's modeling did help me understand that Grevillea Waters, in Golding Street, where I live sits surrounded by a council flood pathway (pages 16 and 17 of BMT's report). In 2022 my house had water around on three sides. Reducing water storage capacity of the floodplain for this development will impact on my property and community because floodwater crossed WYURA west to east and south to north, to the floodway.

The recent State Disaster Mitigation Plan listed the Clarence Valley as one of the top areas of concern for flooding and the only LGA to cause concern in all three areas associated with flooding (page 37). IAG insurers, who include NRMA, list Clarence Valley as third in Australia, and second in NSW in their category of highest flood risk assessment. Yamba holds position number 8 on the Groundsure ClimateIndex top 20 towns impacted by flooding. Master Builders, planners, and politicians have all called for floodplain development to cease following the disasters of 2022 and this development is on a floodplain.

Flood Evacuation Plans

Obviously, a DA requirement but misleading as Martens have used BMT measurements but no local knowledge.

Plan 1 - evacuate to Maclean, only 18mins drive! Not safe in torrential rain, not possible because the road will be closed at Micalo Channel. Not desirable as Maclean has its own issues in a flood.

Plan 2 - evacuate to The Bowling Club, only 7 mins drive, but flooded in 2022! Carrs Drive, Yamba Road, the roundabouts at Carrs Drive, Shores Drive, Golding Street and Angourie Road were all closed! Plus 400 houses of the two Cliftons all evacuating together. How long would that take?

Previous lack of planning means all six of the over 50's developments - Grevillea Waters, Parkside, Palm Lake, Palm Lake Resort and both Clifton 1 and 2 have, or will have, flood evacuation route plans that involve travelling through flood waters and **that is strictly against all emergency services advice.** The Martens' report on page 6, states 30cm of water over a road and small vehicles start to float so the road must be closed. Staying in place is also an issue as the report indicates isolation may last for up to 8 days, again the people with some of the highest needs for services would be cut off from them.

Housing Crisis

Yamba is not responsible for fixing the current housing crisis.

Those are my concerns and thank you for taking the time to read them.

Yours sincerely

Lynda Darya

From: [redacted]
Sent: Tue, 9 Apr 2024 10:53:41 +1000
To: "CVC Council Email" <council@clarence.nsw.gov.au>
Subject: 120 Carrs Drive Submissions
Categories: Kym

You don't often get email from [redacted]. Learn why this is important

Thanks for the opportunity

I am concerned with the on going level fill being used in these developments .

The effect on water levels during heavy rain is a concern to all residence.

We have 2 children attending st James school .

We remain concerned about the amount of days the school has to close during flood.

Regards Col

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Sun, 7 Apr 2024 12:00:51 +1000
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Kelly
Categories: Kym

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Kelly

Contact details	
First name	Karen
Last name	Kelly
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2460

Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	As an investment property owner in Yamba, I object to this development being approved as I feel the infrastructure in Yamba is not up to the standard to cope with this increased capacity of high traffic and flooding risks. There is only one road in and one road out in Yamba and we have observed the difficulty in navigating the main road during peak time. The construction of a second road should be a priority now for the council, if they are going to approve new developments as the population growth for Yamba is going to continue to rise. We are also concerned about future flooding of the existing Yamba housing estates due to the raining of the ground levels and the continued building on flood plains. This flooding has and will have an impact on existing infrastructure, such as drainage and roads, and also impact the housing that has seen flood only since the commencement of the development of the existing flood plains.
Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Tue, 2 Apr 2024 13:17:54 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Imeson
Categories: Narisa

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Imeson

Contact details	
First name	Susan
Last name	Imeson
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464

Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	I wish to lodge my strong objection to this DA (and any others that will adversley impact the Yamba Flood Plain) I totally support the Petition that was left in our Mailbox today detailing all objections and impacts this DA will create. I have lived at my current address for over 10 years and can vouch for the ongoing issues with heavy vehicles using Carrs Drive - very concerning that Council are not being transparent or caring enough to show their Duty of Care to ensure residents are safe. They appear to not waste their time to routinely check the road condition or the safety concerns with regard to truck and dogs using the road at the same time Parents/children are accessing St James School. These truck and dogs at the very least should be on a curfew around these times (I have a recollection they are not supposed to enter Carrs Drive until 7.30am but I have witnessed them being driven on the road - and at times others parked up near Lake Kolora waiting in line). During the 2022 flood event we witnessed the reality of impacts already to the residents around the new subdivision just past Harold Tory Drive - apart from the major impact along Yamba Road it certainly trapped those of us in the area around Carrs Drive. In all the years we have lived at our current address I have not seen any Council workers even come and clear debris/rubbish out of the small drain in front of the Reserve that backs O'Gradys Lane - some concerned residents take it upon themselves to keep their areas cleaned out but as it is Council land it appears they have no care and are extremely negligent with this detail.

Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Mon, 1 Apr 2024 10:24:46 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Edwards
Categories: Narisa

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Edwards

Contact details	
First name	Geoff
Last name	Edwards
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464

Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	Developments along Carrs Drive have been ongoing without adequate stormwater management. Developments along Carrs Drive have been ongoing without adequate consideration of infrastructure to cater for population increases in Yamba. Before any further development applications are considered, CVC should immediately and deliberately consider the following necessary issues : 1. Yamba Bypass Road should be completed to cater for increased traffic flows at Carrs Drive/Yamba Road and future developments in WYUNA. 2. Carrs Drive needs to be raised and properly sealed. The road is full of pot-holes and repaired pot-holes. Part of previous DAs required Carrs Drive to be appropriately rectified. This has not occurred. 3. Stormwater flow studies undertaken by BMT and reports issued to CVC by Craig MacNeill (Submission for SUB2023/0001-52-54 Miles Street) indicate that flows will impact properties along Sullivans Road, with water flowing back towards Golding Street. Sullivans Road needs to be raised with adequate culverts to allow flow of water. Sullivans Road needs to be developed as an appropriate public road with storm-water considerations and appropriate development to cater for changes made to the flood-plain North of Sullivans Road. 4. Land South of Sullivans Road has accumulated debris stopping historical flows into Lake Wooloweyah. Historically, this land was cleared and farmed, with flow channels allowing water flows. This land is now locked with debris. Without raising

	Sullivans Road and ensuring cleared stormwater flows into Lake Wooloweyah, Sullivans Road is impacted by the total lack of stormwater management. 5. The flood modelling by BMT (WYURA Flood Impact Assessment Flood Study 2001) show new flow paths for storm-water caused by raising the floodplain in West Yamba. Our property, at Lot 521 Sullivans Road, is zoned Environmental management 3 . The buildings on our property were established using existing flood levels, before the flood plain was allowed to be modified by CVC and developers, and no-where in the BMT reports does it show or consider the changed risks to our property or any other property south of WYURA (since our properties are not included in WYURA). The flood studies actually show water being deliberately re-directed into properties along Sullivans Road as a consequence of changes made to the flood plain. To manage these risks, we require CVC to change the zoning of properties that are subject to Environmental Management back to "RURAL", so that we are legally allowed to manage the properties given the changes to the natural flood plain caused by the developments along Carrs Drive, and the potential developments along Carrs Drive/Miles Street. CVC initiated the zoning changes in 2003/4, and should revert the zoning so that adequate management of property, debris and water flows can be undertaken on these properties. Records are being kept towards litigation against CVC, Members of CVC and BMT relating to deliberate changes to the flood plain without adequate consideration of the impacts to neighboring properties.

Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Fri, 29 Mar 2024 06:55:57 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Peters
Categories: Narisa

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Peters

Contact details	
First name	Dion
Last name	Peters
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2463

Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	Subject: Disapproval of Development Proposal for 120 Carrs Drive, Yamba Dear CVC I am writing to express my strong disapproval of the proposed development at 120 Carrs Drive in Yamba. As a concerned resident and member of the Yamba community, I believe that this development will have significant negative impacts on our town and its resources. Yamba and Maclean are cherished small towns that pride themselves on their close-knit community, natural beauty, and unique identity. The construction of such a large-scale development in our already limited space would place an undue burden on our current resources and infrastructure. One major concern is the strain it would put on our roadworks. The council is already struggling to maintain and improve our road network, and the additional traffic generated by the development would only exacerbate the issue. Moreover, the recent surge in break-ins in Maclean and Yamba, coupled with the presence of only one police officer, raises serious concerns about our community's safety and security. Another pressing issue is the lack of adequate parking facilities. With the growing influx of tourists, finding parking spaces has

	become increasingly challenging. This development would only worsen the situation, further inconveniencing residents and visitors alike. Furthermore, Yamba's appeal as a small town lies in its tranquil atmosphere, unique charm, and sense of community. The introduction of such a large-scale development threatens to erode our identity and disrupt the very essence that attracts tourists to our town. We must preserve the character and spirit of Yamba for future generations to enjoy. Lastly, the impact of additional fill from the development on our drainage system during flooding cannot be ignored. Yamba is prone to flooding, and any disruption to our drainage infrastructure could have severe consequences for our community's safety and wellbeing. In light of these concerns, I urge the council to reconsider the approval of the development at 120 Carrs Drive. It is essential that we prioritize the interests and needs of our small town, its residents, and the preservation of its unique character. Thank you for your attention to this matter. I trust that you will carefully consider the implications of this proposal and act in the best interest of the Yamba community. Yours sincerely, Dion Peters

Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

From: [redacted]
Sent: Thu, 28 Mar 2024 10:53:45 +1100
To: "CVC Council Email" <council@clarence.nsw.gov.au>
Cc: [redacted]
Subject: DA. 2023/0241
Categories: Kym

You don't often get email from [redacted] Learn why this is important

Re Notice of Development Application.
Application Number DA2023/0241.
120 Carrs Drive Yamba NSW 2464.
Lot 2 DP 733507.

I am submitting this email to notify you of our objection to this development.
This development will if approved be on our western and southern boundaries, being another stage of the existing development on our northern boundary.
Having experienced the current development and this being an indication of what is to come we don't want to have to tolerate these conditions and the lack of action again.
The total disregard for neighboring properties and people has been extremely stressful and disappointing , not to mention the possible future health implications.
For almost three years now we have been submitted to sometimes intolerable conditions.
Despite many phone calls ,text messages and emails this current development has failed to be pro-active in addressing the problems .
The following are some of the reasons for our objection.

Dust—severe – silicosis health risk.
Hours of work.
Water runoff.
Road and traffic conditions and congestion.(St James school area is dangerous).
Earth works vibration to the extent of feeling nausea.
Construction entry point on our boundary???
Have the conditions of consent been complied with????
Have the conditions of consent been monitored ?????
Will this development be held accountable for future problems such as water inundation or health ????

The proposed development is also a concern considering there will be an increase in storm water to the existing stream shown on the plan, and with the proposed development on the opposite side of Carrs Drive , application no.SUB2023/0001, flow from the detention basin would increase the volume to this stream and possibly threaten inundation to our property.
This existing stream and surrounds are also the entry point for flood water in this area, which with an increase in storm water and a decrease in surface area will again threaten inundation to our property.
I have lived at this property for 25 years with no previous adverse effects from flood or storm water.
I have been a resident of Yamba for approximately 60 years.
I am happy to have further discussions about this email and provide photos, videos, and correspondence regarding this objection.

Clifton Yamba Land Pty Ltd

DA2023/0241 -120 Carrs Drive Yamba

I have the following comments

1. There should be no fill on flood plains of east coast waterways. There is a proven increase in flooding levels due to current fill deposited on flood plains resulting in flood water entering existing residences that were previously not impacted by flood water. The original development design for West Yamba was based on flawed data, the area should be re-zoned back to rural and environment.
2. General fill above 2.0m high will compress the existing sub-surface soil structure, compressing existing aquifers and blocking ground water flow across the area. There is a risk of ground water levels rising to impact existing low lying property and existing road pavements.
3. The proposed stormwater infiltration into subterranean sand layers appears to be based on pre-loaded sand permeability. The proposed fill is likely to compress the sand layers significantly reducing the capacity for transporting water. The sand layers may become impermeable causing the proposed stormwater system to fail.
4. The existing levels on Carrs Drive appear to be raised by about 470mm, based on the Road 1 longitudinal section. The DA does not refer to Carrs Drive construction, who is responsible for the road construction and what is the flooding impact on adjacent property?
5. There is no road widening shown on Carrs Drive at the Road 1 intersection to allow through vehicles to pass turning vehicles.
6. There does no appear to be an allowance at the letter box location to allow a vehicle to stop and deliver mail or pick up personal mail. There is a risk that congestion will spill onto Carrs Drive.
7. There does not appear to be an allowance for pedestrian/bicycle connectivity between Road 1/Carrs Drive and Yamba Road.
8. The stormwater design shows entry pits in the middle of intersections. There is a risk to bicyclists and motorcyclists of destabilisation and falls as the grates get slippery in wet conditions.
9. Shelter in place residents will continue to use the sewage system during flood events. There is a risk of sewage overflow when the treatment plant is flooded.

Trevor Ferris

[redacted]

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Sun, 24 Mar 2024 15:16:01 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Muldoon
Categories: Nicole

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Muldoon

Contact details	
First name	Chris
Last name	Muldoon
Email	[redacted]
Phone number	
Address	
Suburb	
State	Nsw
Postcode	2463

Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	1.There insufficient drainage to service this development 2. Councils website did not permit submissions on line within a reasonable time. 3. The existing and intended infrastructure will not support and sustain the development 4. The intended housing is too concentrated and put of character with the town.
Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.

Privacy advice

Disclaimer

	I agree

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Thu, 21 Mar 2024 17:25:27 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Rollins
Categories: Miah

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Rollins

Contact details	
First name	Bryan
Last name	Rollins
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464
Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	There are a number of reasons why the Clarence Valley Council should not approve of this application: 1. Flooding. Given the very recent history of flooding in Yamba, a DA like this that will decrease our flood resilience is not a good idea. There isn't a well made third party, peer reviewed flood plain study that has been updated with the new understanding of floods in recent years, and the removal of the flood plain drainage from the already completed high density project on Carrs Drive. The current flood models are based on readings which have been shown to be unreliable - so the existing model is unreliable. This is not an acceptable level of risk - and the council needs to be minimising the risk to Yamba. We ignore it at the peril of our neighbors. 2. Strategy. The strategy for a healthy, thriving Yamba is so poorly served by creating a high density area along one road. Just one example - With another several hundred residences, that brings another several hundred cars, and there is no room for widening of Yamba Road without a severe impact to the entire town. Yamba is a unique place, and when we don't consider things broadly. we can easily destroy what has made this place great, and you'll see property values decrease, tourism decline (places which have suffered devastating natural disasters don't attract tourists...) and Yamba suffer. 3. Existing residents. Currently the council does not provide water, decent road maintenance or postal services to Sullivans

	Road. So approving new residences which will receive postal services to 100s of new homes is an insult to those of us who have been waiting for decent road maintenance or postal delivery. Why are new homes are being prioritised over existing residents? We are paying council fees and receiving very little for it. Their have been great amounts of repairs done - only in front of the new residences, while poor patchwork and infrequent grading of a dirt road is all that we receive. I'm not anti-development. But I do expect council to be smart. And thoughtful. And to have a clear, articulated strategy for how we address the current challenges in Yamba. This DA only makes the challenges of flood risk, road quality, family services, school quality and proximity worse. Let's take a breath, deny this application, and come together to build a better future for Yamba, not a worse one. Thanks for reading this. I hope my comments will be taken seriously and in the spirit of my willingness to help solve this problem and help our community.
Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.
Privacy advice	
Disclaimer	
	I agree

From: "noreply@clarence.nsw.gov.au" <noreply@clarence.nsw.gov.au>
Sent: Thu, 21 Mar 2024 16:24:06 +1100
To: "Forms" <forms@clarence.nsw.gov.au>
Subject: Submission - DA2023/0241 - 120 Carrs Drive Yamba - Tennant
Categories: Miah

OpenForms

Submission - DA2023/0241 - 120 Carrs Drive Yamba - Tennant

Contact details	
First name	Lesley
Last name	Tennant
Email	[redacted]
Phone number	
Address	
Suburb	
State	NSW
Postcode	2464
Submission details	
Development Application	DA2023/0241 - 120 Carrs Drive Yamba

on exhibition	
Comments	This DA is not necessary. The amount of fill being trucked into Yamba is crazy this development will add further stress to peoples lives whom live on Yamba rd as will the amount of fill on the floodplain the water will lie somewhere else how many more over 55’s can they cram into Yamba. The local hospital not equipped for more aging population. Most specialists are 80ks more from Yamba theres one nursing home no forward planning or infrastructure considered just greed. Well the time has come for the community to protest The premier said no more building on floodplains but still these developers are aggresively pushing through !!!
Supporting documents	
	I have not made a political donation or gift to any Clarence Valley Council employee or councillor in the last 2 years.

Privacy advice

Disclaimer

	I agree

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.
2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.
3. The ongoing fill required for approved developments in the WYURA and elsewhere on the Yamba floodplain is negatively impacting, causing stormwater inundation and flooding into existing residents' properties and homes, and commercial and industrial areas.
4. Ongoing filling of the west Yamba floodplain will cause Yamba Road, Carrs Drive and other roads in west Yamba to become water courses, trapping residents in their homes and hindering safe evacuation. Many of these roads already experience flooding in heavy rainfall events and often close.
5. Difficulties will inevitably continue to increase in relation to servicing residents, burdening the availability of goods and services, access to shops and availability of parking spaces, traffic congestion and bottlenecks, access to support care and medical and health treatment, access to schools and recreation and leisure facilities, risks to water supply, power outages causing health stress and food wastage, internet outages, sewer pumps failing, transport services paused and safe evacuation and potential risk to life. In the 2022 February/March flood Yamba was cut off for 7 days. To ensure availability of food to the increasing population, for up to 7 days is of serious concern.
6. Negative impacts of trucking in and compacting fill on site. Lower-lying properties already experience increased inundation of stormwater, as occurred in the February/March 2022 flood event.
7. Yamba Road and Carrs Drive have already greatly deteriorated from the truck and dogs bringing in fill for the current Carrs Drive development, costing more ratepayers funds to repair.
8. Dredging from Oyster Channel to fill the subdivision land is of great concern, potentially adversely impacting aquatic species and aquatic vegetation and disrupting riverbed habitats, food and shelter for marine life. The removal of native vegetation is also of concern.
9. Residents will be isolated on mounds during stormwater flooding as the one road in and out, Carrs Drive, is flooded and closes without adequate warning for evacuation. Yamba also has one road in and out.
10. It appears there would be an extra burden on SES volunteers during flooding.
11. It appears CVC and State Planning Departments have failed in their duty of care to Yamba residents.

Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours s[redacted]

Sign: [redacted] Date: 15 April 2024

Print name: LEIGH CHIPLIN

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.
2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.
3. The ongoing fill required for approved developments in the WYURA and elsewhere on the Yamba floodplain is negatively impacting, causing stormwater inundation and flooding into existing residents' properties and homes, and commercial and industrial areas.
4. Ongoing filling of the west Yamba floodplain will cause Yamba Road, Carrs Drive and other roads in west Yamba to become water courses, trapping residents in their homes and hindering safe evacuation. Many of these roads already experience flooding in heavy rainfall events and often close.
5. Difficulties will inevitably continue to increase in relation to servicing residents, burdening the availability of goods and services, access to shops and availability of parking spaces, traffic congestion and bottlenecks, access to support care and medical and health treatment, access to schools and recreation and leisure facilities, risks to water supply, power outages causing health stress and food wastage, internet outages, sewer pumps failing, transport services paused and safe evacuation and potential risk to life. In the 2022 February/March flood Yamba was cut off for 7 days. To ensure availability of food to the increasing population, for up to 7 days is of serious concern.
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Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours sincerely

Sign: [redacted] Date: 15 April 2024

Print name: JOE DIMAURO

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

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Yours sincerely

Sign: [redacted] Date: 13 April 2024.

Print name: P.C. CONNELLY

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Clarence Valley Council
Locked Bag 23
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216 dwelling manufactured home estate and communal facilities
Submissions close Monday 15 April 2024

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Yours sincerely

Sign: [redacted] Date: 15-4-2024

Print name: Jill Shephard

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities
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Yours [redacted]

Sign: [redacted] Date: 15.4.24

Print name: COLIN SHEPHARD

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sinc[redacted]

Sign: [redacted] Date: 9.04.24

Print name: Di Wood.

Email or postal address: [redacted]

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Clarence Valley Council
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GRAFTON NSW 2460

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Sign: [redacted] Date: 11-4-24

Print name: KALINDA MCDONALD

Email or postal address: [redacted]

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Clarence Valley Council
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Sign: [redacted] Date: 9.04.24

Print name: R. WHITTOCK

Email or postal address: [redacted]

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Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 3-4-24

Print name: C. THOMPSON

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 3·4·24

Print name: MARTIN THOMPSON

Email or postal address: [redacted]

General Manager
Clarence Valley Council
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GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 11-4-2024

Print name: JOY REA

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities
Submissions close Monday 15 April 2024

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Yours sincerely

Sign: [redacted] Date: 11/04/2024.

Print name: Lynette Fabian

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 10 APRIL 2024.

Print name: [redacted] JOHN FABIAN

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

[redacted]

12/4/2024

JAN BOOTH

[redacted]

Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 12.4.24

Print name: RUTH FLETCHER

Email or postal address: [redacted]

Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Sign: [redacted] Date: 12.4.24

Print name: DOUGLAS FLETCHER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
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GRAFTON NSW 2460

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Sign: [redacted] Date: 11/04/2024

Print name: Troy Shannon

Email or postal address: [redacted]

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Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign [redacted] Date: 11/4/24

Print name: Brett Russell

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 11.4.24

Print name: Chloe Russell

Email or postal address: [redacted]

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Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours [redacted]

Sign: [redacted] Date: 10·4·24

Print name: LYNETTE RUSSELL

Email or postal address: [redacted] Address

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours si[redacted]

Sign: [redacted] Date: 10.4.24.

Print name: BRYAN RUSSELL

Email or ~~postal~~ address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities
Submissions close Monday 15 April 2024

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Yours sincerely

Sign: [redacted] Date: 10·4·24

Print name: SCOTT RUSSELL

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 24.3.24

Print name: Janeen Scully

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours si[redacted]

Sign: [redacted] Date: 24.3.24

Print name: Paul Scully

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 24-03-24.

Print name: CHERYL COPE

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/2024

Print name: RICKY HOLLIS

Email or postal address: [redacted]

General Manager
Clarence Valley Council
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GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/2024

Print name: Janet Wilson

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Sign: [redacted] Date: 24/3/24

Print name: Steven JENNER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 24/3/24.

Print name: KAY CARR

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign [redacted] Date: 2/4/24

Print name: Tim Ferris

Email or postal address [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.
2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.
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Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours sincerely

Sign: [redacted] Date: 2/4/2024

Print name: MAUREEN FERRIS

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 2-4-24

Print name: JAMES GRAINGER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 6·4·24

Print name: HILDA ANNE JONES

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 6/4/2024

Print name: BRIAN JONES

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 8/4/24

Print name: Robert Cairns

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 8/4/2024

Print name: Lynne Cairns

Email or postal address: [redacted]

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Yours sincerely

Sign: [redacted] Date: 24.03.24

Print name: SUSAN MAHER.

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/2024

Print name: LES PAUL

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/2024

Print name: LESLEY D JOHNSTON

Email or postal address: [redacted]

General Manager
Clarence Valley Council
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GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/24

Print name: MERRAN WARLTERS

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

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2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.
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Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours sincerely

Sign: [redacted] Date: 24/3/24

Print name: JAMES DRIVER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 24/3/2024

Print name: Robert Wilson

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 24-3-24

Print name: HILARY DRIVER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours since[redacted]

Sign: [redacted] Date: 24.3.24

Print name: STUART MAY

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Yours sincerely

Sign: [redacted] Date: 29/3/24

Print name: JENNY MAY

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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Sign: [redacted] Date: 24.3.24

Print name: DIANNE WARD

Email or postal address: [redacted]

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Clarence Valley Council
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Sign: [redacted] Date: 24/3/24

Print name: N. WARREN

Email or postal address: [redacted]

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Sign: [redacted] Date: 24.3.24

Print name: Matt Taylor

Email or postal address: [redacted]

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Clarence Valley Council
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Sign: [redacted]

Date: 24/3/2024

Print name: Beck Madden

Email or postal address: [redacted]

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Sign: [redacted] Date: 24·3·24

Print name: MICHAEL PORUCK

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.
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Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours sincerely

Sign: [redacted] Date: 24-3-24

Print name: PETER A. HANSON

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities
Submissions close Monday 15 April 2024

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Yours sincerely
Sandra Evans Date: 10/04/2024

[redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities
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Yours sincerely

Sign: [redacted] Date: 9/4/24

Print name: PAUL CONLEY

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 4/4/2024

Print name: C. TOPPING

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 4/4/2024

Print name: S. CAMPBELL

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 8/4/2024

Print name: Judith Hicks

Email or postal address: [redacted]

Yours sincerely

Sign: [redacted] Date: 5-4-2024

Print name: DOREEN

Email or postal address: [redacted]

Lodging a submission for: DA2023/0241 – 120 Carrs Drive Yamba (216 dwelling manufactured home estate). Closes 15 April 2024

The submission can be posted to the address at the top of the attached suggested submission, prior to the submission period closing. Please fill in the details at the bottom prior to posting.

Alternatively, you can search lodge a submission on the Clarence Valley Council's website. Just search for "Advertised DAs" and "DA2023/0241 – 120 Carrs Drive Yamba will be provided as seen at this link": https://www.clarence.nsw.gov.au/Building-and-planning/Advertised-DAs/DA20230241-120-Carrs-Drive-Yamba

At the bottom of the screen, you can select "Make a submission", and walk through the next screens filling in the various fields, select continue and in the next screen select the "Development Application on exhibition" field and choose "DA2023/0242 – 120 Carrs Drive Yamba". In the comments field you can add your own text, or you may choose to upload the scanned/saved suggested submission attached.

If you require any assistance, please email yambacan@gmail.com or text 0417 422 397.

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

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216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 02/04/24

Print name: S M IMESON

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 4/4/2024

Print name: Teresa Nupier

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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Yours sincerely

Sign: [redacted] Date: 3-4-2024

Print name: JOAN NUPIER

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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11. It appears CVC and State Planning Departments have failed in their duty of care to Yamba residents.

Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, natural environment, hence my objection.

Yours [redacted]

Sign: [redacted] Date: 3-4-2024

Print name: GARRY GOODHAND

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

My objections to the proposed DA2023/0241 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.
2. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the occupation and efficient evacuation of people. A Master Plan needs to be completed (including an overall stormwater management plan) and approved by Council prior to any further developments being approved in the WYURA as outlined in the 2008/2009 Yamba Flood Risk Management Plan and Study.
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Yours sincerely

Sign: [redacted] Date: 2/4/24

Print name: RHONDA O'LOUGHLIN

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours [redacted]

Sign: [redacted] Date: 2-4-2024

Print name: GEOFFREY O'LOUGHLIN PSM

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

Re: DA2023/0241 – 120 Carrs Drive Yamba
216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 3/4/2024

Print name: Greg Brown

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign [redacted] Date: 3/4/2024

Print name: SHARON BROWN

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 2.4.24

Print name: SANDRA ANGEL

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours sincerely

Sign: [redacted] Date: 2-4-24

Print name: Garrick D.A. Ansell

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

RE: DA2023/0776 – 30 Golding Street Yamba
Two lot subdivision and multi dwelling housing (16 townhouses) on proposed Lot 2

My objections to the proposed DA2023/0776 are as follows:

1. The increasing population in Yamba is negatively impacting on the amenity and lifestyle of residents.

2. Evidenced in the DA documents is the fact that this land is located within a "*Flood Storage Area*", is 93.13% flood prone and is the eastern drainage from the WYURA. Filling any part of this land will inevitably cause water inundation to adjacent properties, including potentially negatively impacting the health, welfare and safety of over 200 residents (whose average is mid 70's) in neighbouring Grevillea Waters Manufactured Housing Estate.

3. West Yamba (the West Yamba Urban Release Area – WYURA) is a classic example of inappropriate development and poor planning under current conditions with little regard for the reduction of flood storage areas and future impacts of sea level rise and extreme weather events due to climate change. There appears to be a lack of vision or robust plan for West Yamba by Council, potentially contravening Council's LEP clause 5.21 Flood Planning 2 b) and c), detrimentally increasing the potential of flooding other properties and impacting the safe occupation and efficient evacuation of people.

4. The ongoing fill required for approved developments in the WYURA and elsewhere on the Yamba floodplain is negatively impacting, causing stormwater inundation and flooding into existing residents' properties and homes, and commercial and industrial areas.

5. Ongoing filling of the west Yamba floodplain will cause Yamba Road, Golding Street and other roads in west Yamba to become water courses, trapping residents in their homes and hindering safe evacuation. Many of these roads already experience flooding in heavy rainfall events and often close.

6. Difficulties will inevitably continue to increase in relation to servicing residents, burdening the availability of goods and services, access to shops and availability of parking spaces, traffic congestion and bottlenecks, access to support care and medical and health treatment, access to schools and recreation and leisure facilities, risks to water supply, power outages causing health stress and food wastage, internet outages, sewer pumps failing, transport services paused and safe evacuation and potential risk to life.

7. Negative impacts of trucking in and compacting fill on site. Lower-lying properties already experience increased inundation of stormwater, as occurred in the February/March 2022 flood event.

8. Yamba Road has already greatly deteriorated from the truck and dogs bringing in fill, thus costing more ratepayers funds to repair. Similar deterioration of Golding Street could be anticipated.

9. Residents will be isolated during stormwater flooding as the one road in and out, Golding Street, is flooded and closes without adequate warning for evacuation. Yamba also has one road in and out.

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11. It appears CVC and State Planning Departments have failed in their duty of care to Yamba residents.

Overall, in view of the above, this filled development will further adversely impact existing residents on the Yamba floodplain and the fragile, and natural environment, hence my objection.

Yours sincerely

Sign: [redacted] Date: 24.3.24

Print name: Therese Mylchreest

Email or postal address: [redacted]

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Dear General Manager

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216 dwelling manufactured home estate and communal facilities

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Yours [redacted]

Sign: [redacted] Date: 24-3-24

Print name: Robert Mylchreest

Email or postal address: [redacted]