Ordinary Council Meeting

28 November 2023

Attachments - Under Separate Cover

These attachments to be retained for Council Meeting

Endorsed Report

Country Mayors Association of NSW

Crime, Law & Order

ENDORSED OCTOBER 2023

THE **COUNTRY MAYORS ASSOCIATION** OF NSW INC

"What we want is nothing more than equity"

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

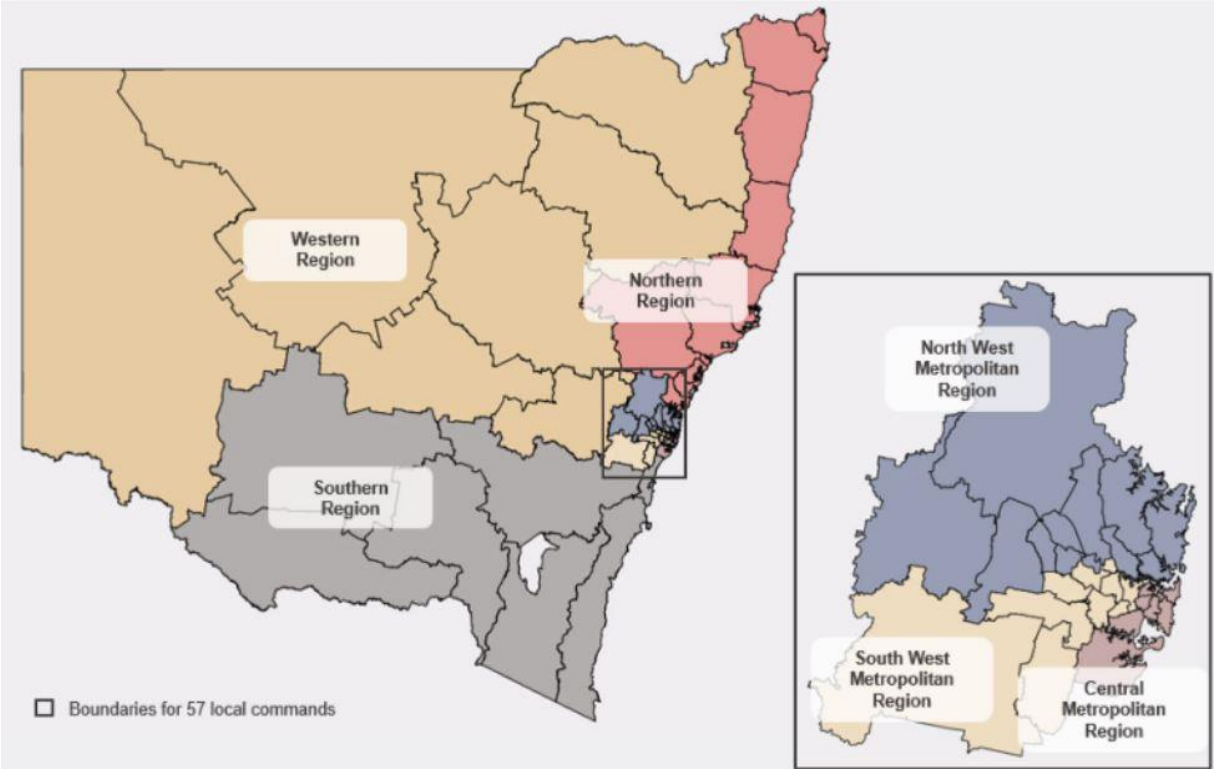
"What we want is nothing more than equity"

Policing Regions

There are 17,659 sworn police officers operating across 57 police area commands and police districts (local commands) and six police regions in New South Wales.

As the image below shows there are three Metropolitan regions with the rest of NSW broken into three Regional, Rural and Remote regions.

The Metropolitan regions service 10,434 square kilometres or 1% of NSW land mass of NSW and the Regional and Rural regions service 789,940 Square kilometres or 99% of the land mass of NSW.



Source of information

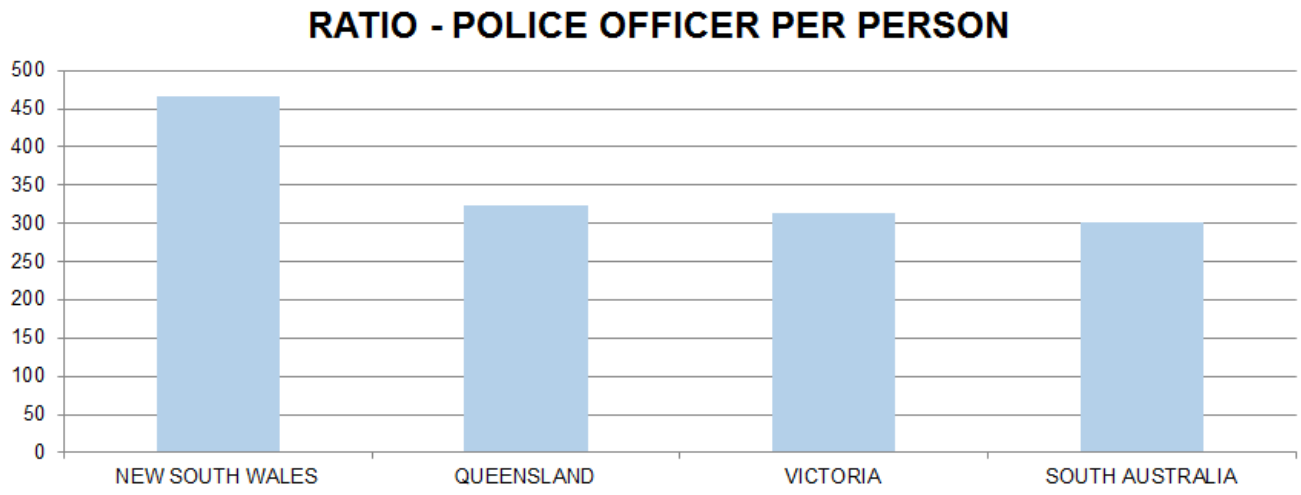
NSW POLICE ANNUAL REPORTS

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

"What we want is nothing more than equity"

COMPARISON
POLICING RESOURCES DISTRIBUTION BETWEEN METROPOLITAN - REGIONAL & RURAL REGIONS 2021-22 YEAR

STATE	POLICE COUNT	POPULATION	RATIO-POLICE OFFICER PER PERSON	OPERATIONAL EXPENSES	$ SPENT PER PERSON
NEW SOUTH WALES	17,659	8,238,800	1- 467	$4,615,000	$560
QUEENSLAND	16,615	5,378,300	1- 324	$2,858,646	$532
VICTORIA	21,398	6,704,300	1- 313	$4,099,679	$611
SOUTH AUSTRALIA	6103	1,834,300	1- 301	$1,036,241	$565



New South Wales Police Officer Counts

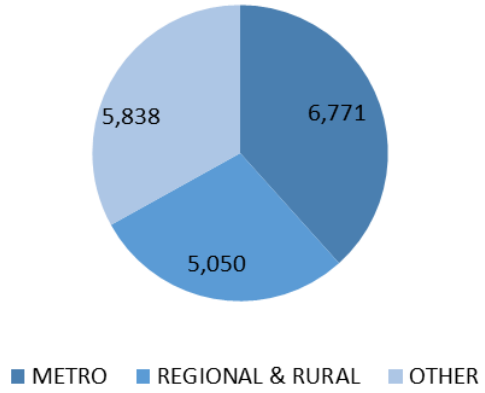
YEAR	POLICE COUNT	POPULATION	RATIO-POLICE OFFICER PER PERSON
2015	16693	7.62	1-456
2016	16627	7.7	1-463
2017	16649	7.81	1-469
2018	16788	7.89	1-469
2019	17111	7.992	1-467
2020	17348	8.072	1-465
2021	17727	8.163	1-460
2022	17659	8.24	1-466
2023	TBA	TBA	TBA

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

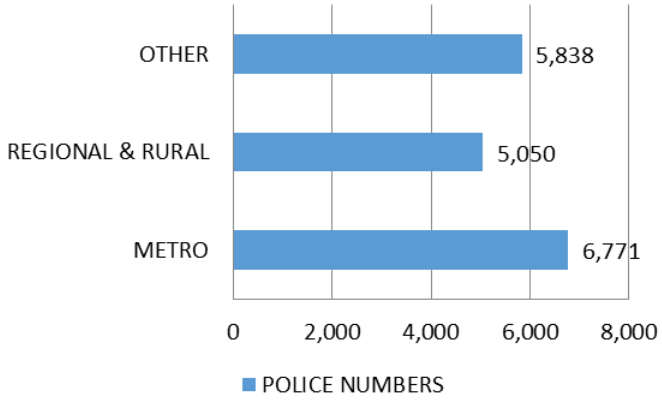
"What we want is nothing more than equity"

COMPARISON
POLICING RESOURCES DISTRIBUTION BETWEEN METROPOLITAN - REGIONAL & RURAL REGIONS 2021-22 YEAR

POLICE NUMBERS



POLICE NUMBERS



	DISTRIBUTION%
NEW SOUTH WALES	100%
METRO	38%
REGIONAL & RURAL	29%
OTHER	33%

xplanation of Other (Taken from NSW Police Annual Report)

' Region population estimates have been derived by taking each region's share of the NSW population. The figures above do not nclude staff (police and administrative) who are centrally managed but deployed throughout the regions in specialist and :orporate roles to provide investigative support, radio communications, call centres, forensic services, complaints and employee nanagement, air and sea policing, specialist surveillance, canine and mounted support, media and public relations, counter errorism and major crime investigation, police prosecutions, technology support, occupational health and safety, injury nanagement, education and training, human resource support and asset management. The figures above represent actual police strength as at 30 June 2022. These figures will vary from month to month and year to year. Actual strength across the NSW Police Force has decreased from 17,727 in 2020-21 to 17,659 in 2021-22.

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

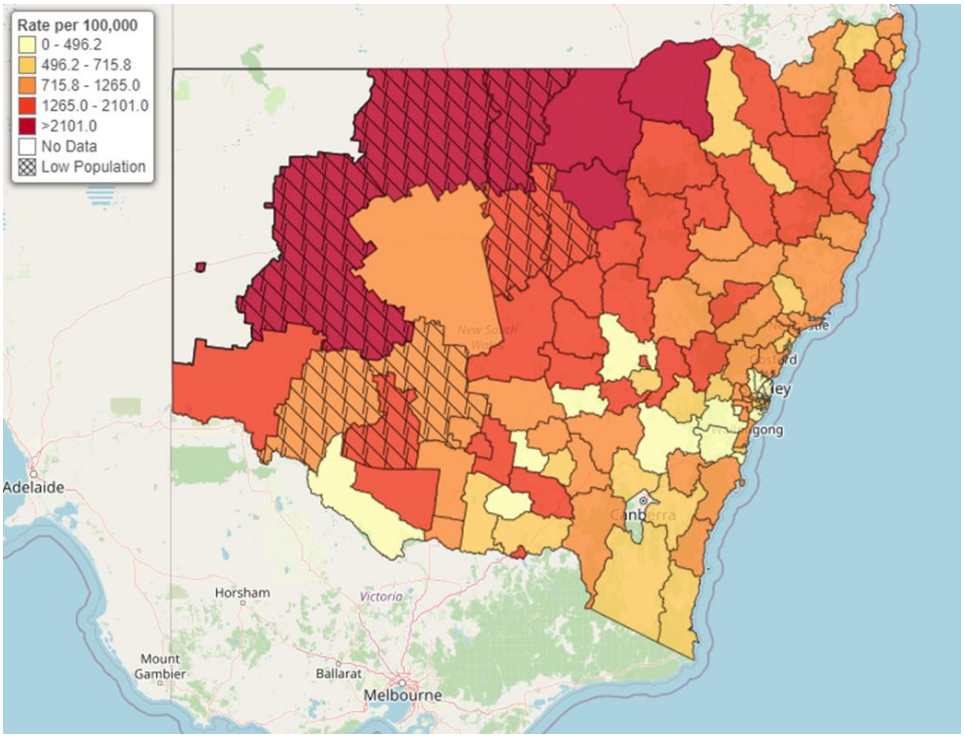
"What we want is nothing more than equity"

WHERE ARE THE CRIME RATES AND CRIME COUNTS THE HIGHEST

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

"What we want is nothing more than equity"

NSW Bureau of Crime Statistics and Research



About:

The Bureau is a statistical and research agency within the Department of Communities and Justice. It was established in 1969.

Their aims are to:

- identify factors that affect the distribution and frequency of crime;
- identify factors that affect the effectiveness, efficiency or equity of the NSW criminal justice system;
- Ensure that information on these factors and on crime and justice trends is available and accessible to our clients.

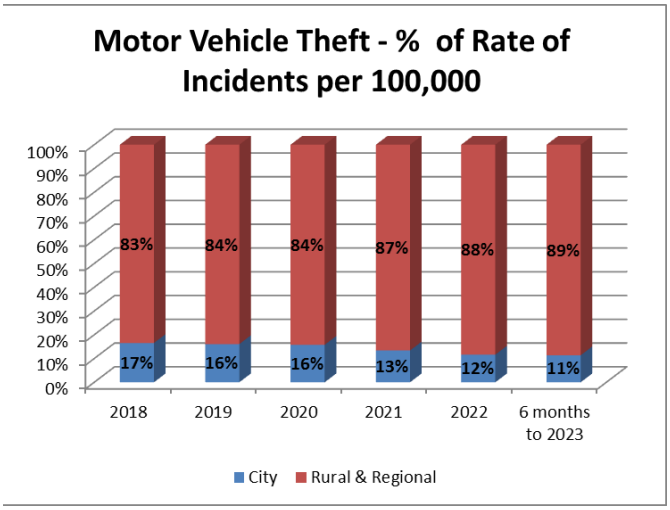
Their four main areas of activity are:

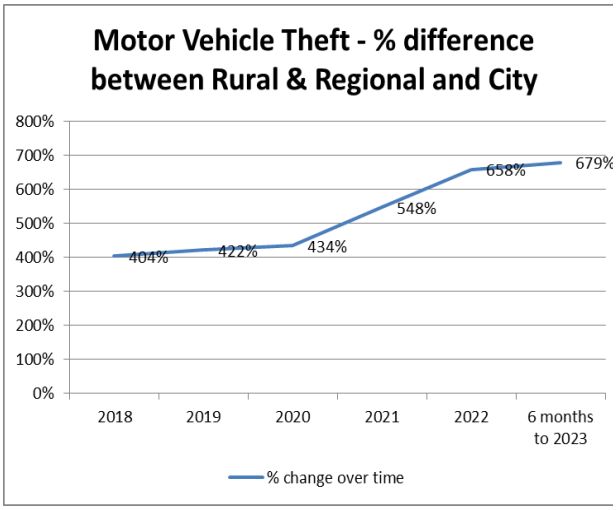
- developing and maintaining statistical databases on crime and criminal justice in NSW;
- conducting research on crime and criminal justice issues and problems;
- monitoring trends in crime and criminal justice;
- providing information and advice on crime and criminal justice in NSW.

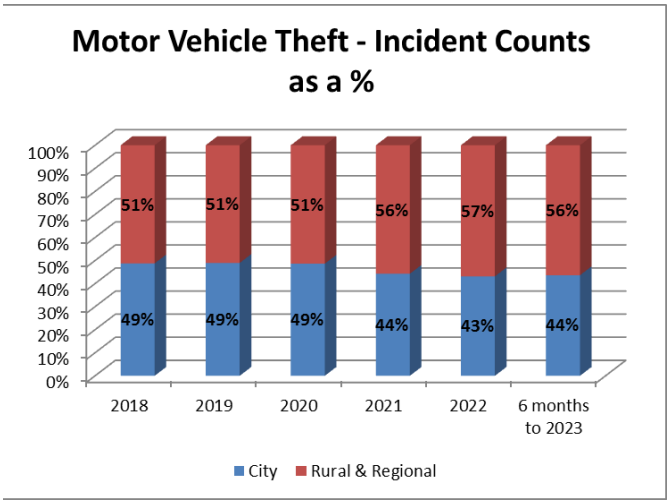
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

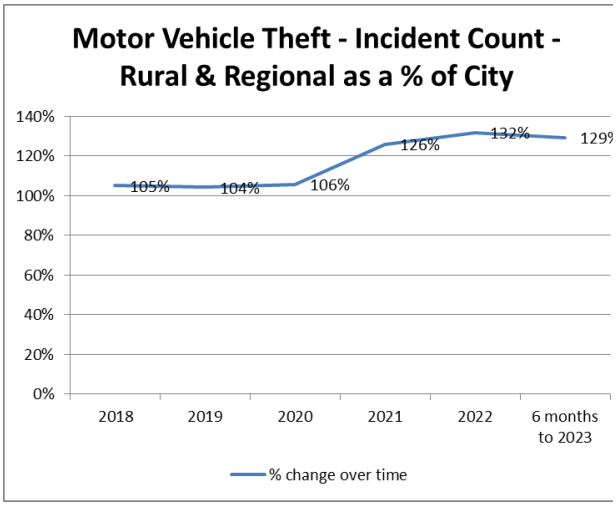
"What we want is nothing more than equity"

MOTOR VEHICLE THEFT







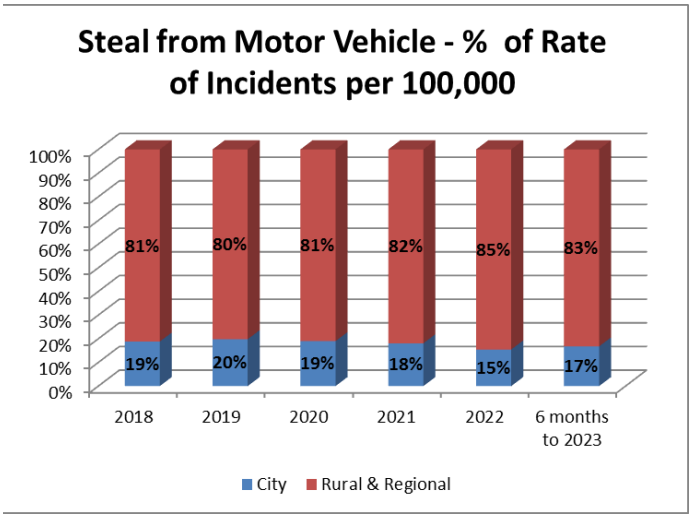


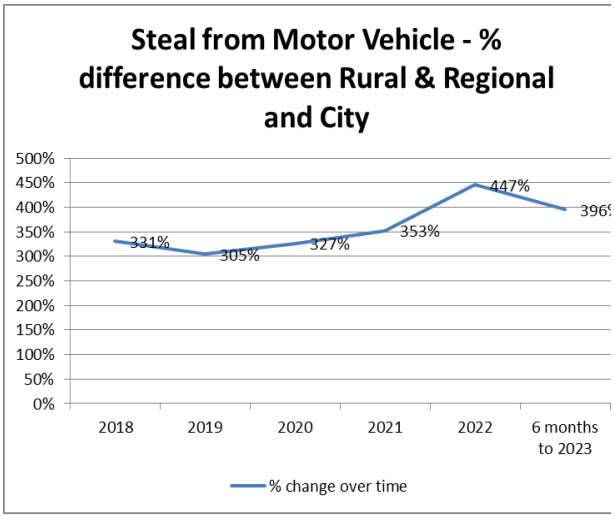
Motor Vehicle Theft - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	6383	6575	5703	4640	5302	3022
Rural and Regional	6707	6853	6026	5845	6990	3905
Total	13090	13428	11729	10485	12292	6927

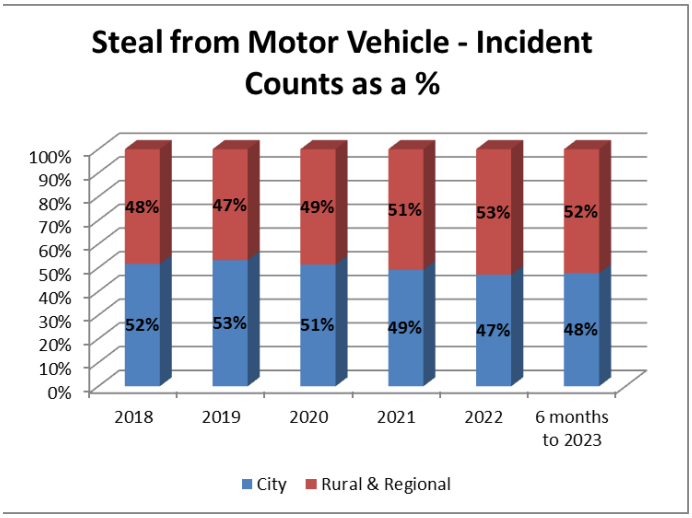
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

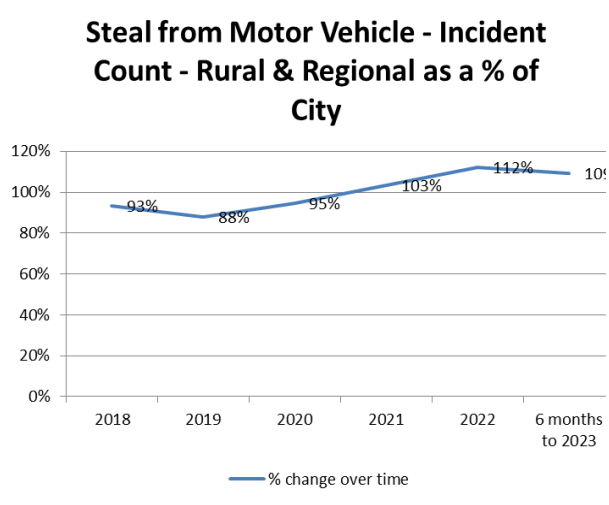
"What we want is nothing more than equity"

STEAL FROM MOTOR VEHICLE







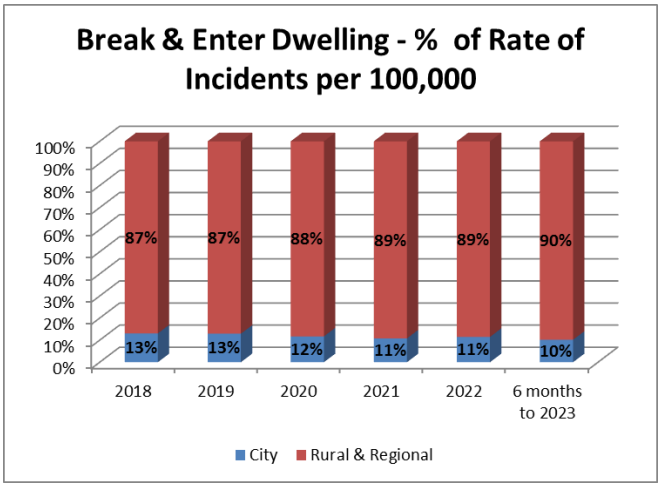


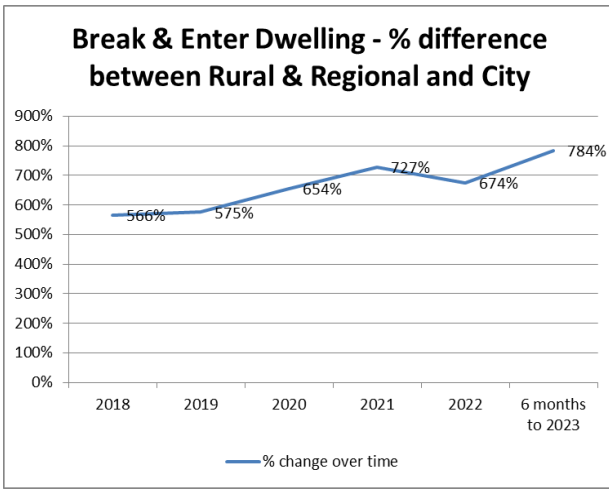
Steal from Motor Vehicle - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	19702	20330	14553	13634	12790	7040
Rural and Regional	18407	17856	13781	14090	14370	7699
Total	38109	38186	28334	27724	27160	14739

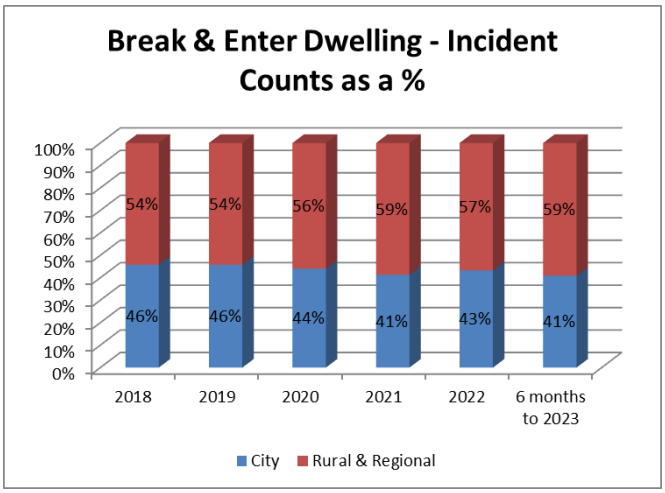
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

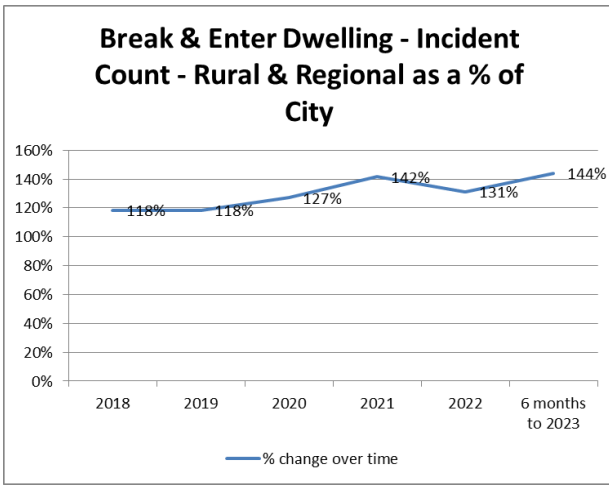
"What we want is nothing more than equity"

BREAK & ENTER DWELLING







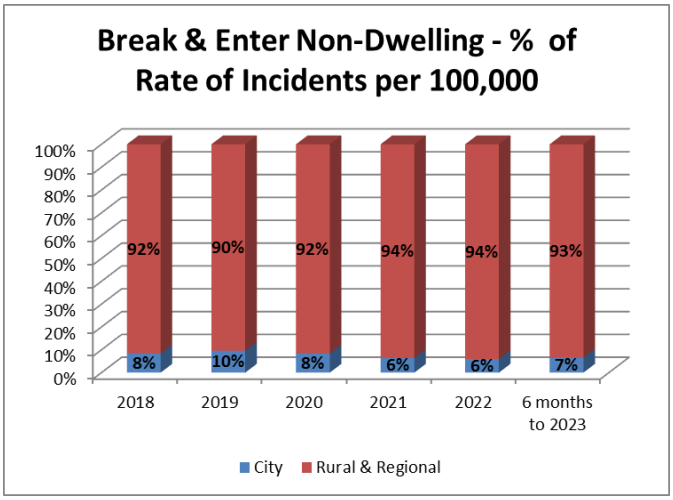


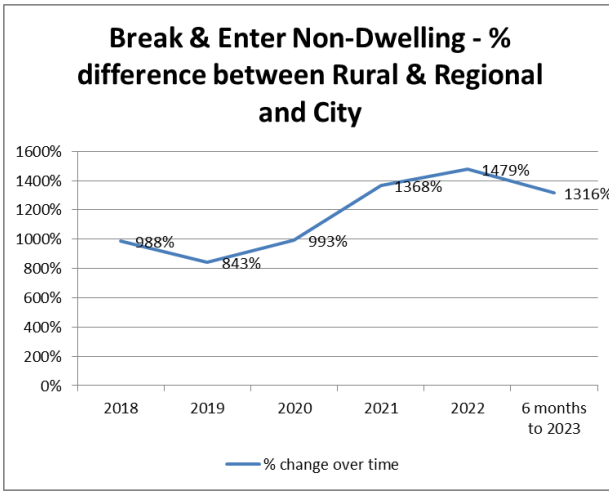
Break & Enter Dwelling - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	12151	11676	8669	7394	8112	3948
Rural and Regional	14398	13834	11027	10480	10645	5693
Total	26549	25510	19696	17874	18757	9641

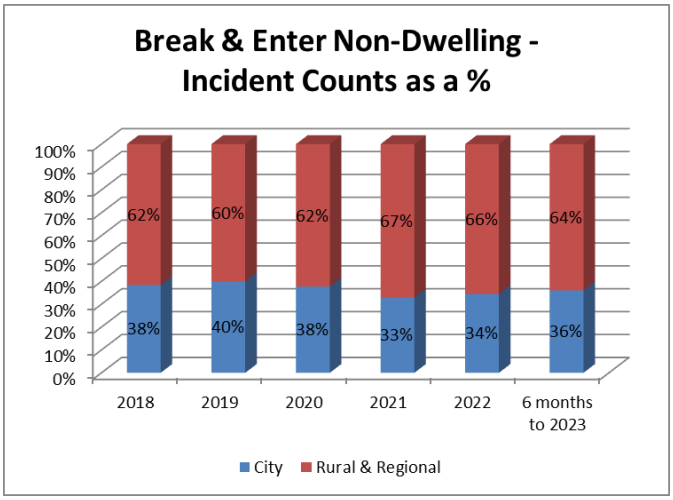
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

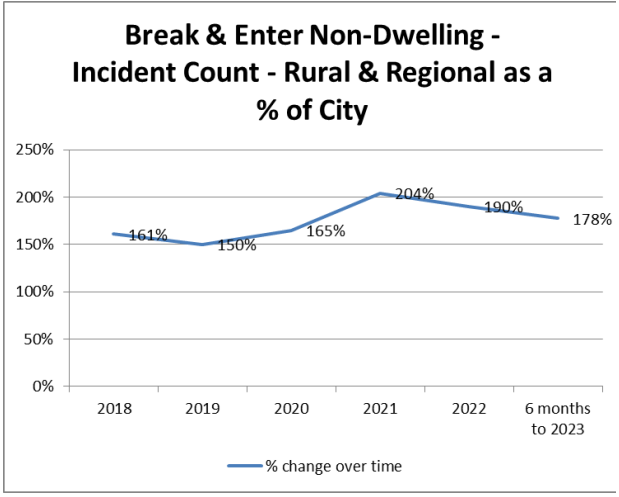
"What we want is nothing more than equity"

BREAK & ENTER NON-DWELLING







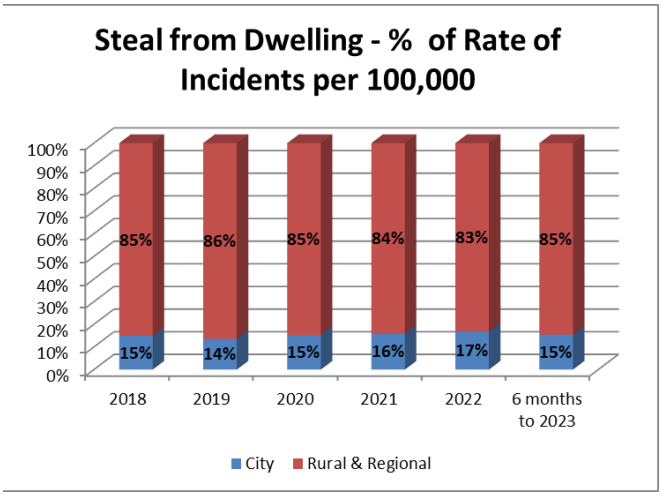


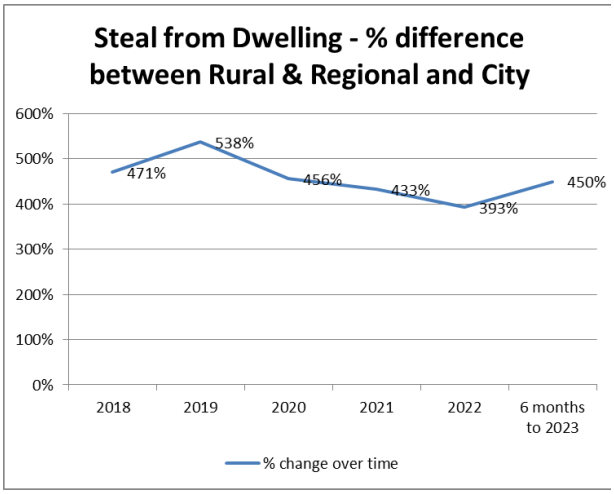
Break & Enter Non-Dwelling - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	3919	3966	2783	2353	2553	1522
Rural and Regional	6303	5950	4593	4801	4857	2702
Total	10222	9916	7376	7154	7410	4224

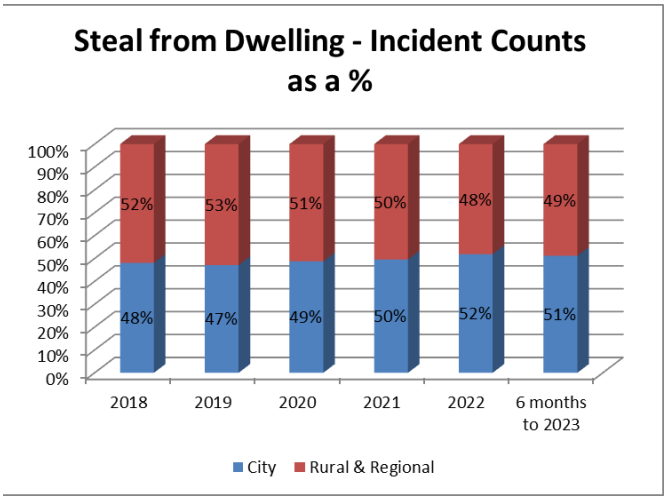
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

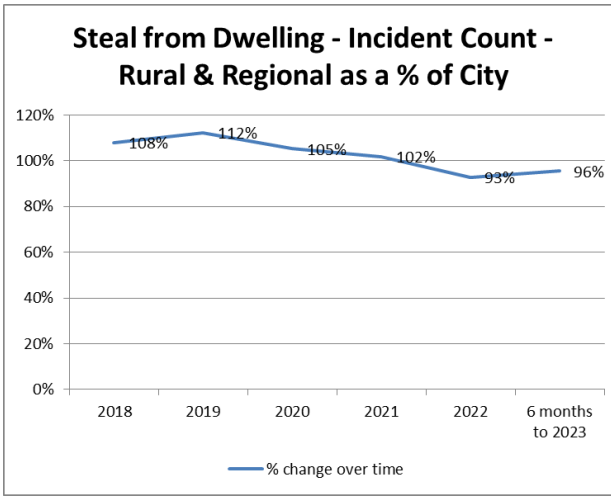
"What we want is nothing more than equity"

STEAL FROM DWELLING







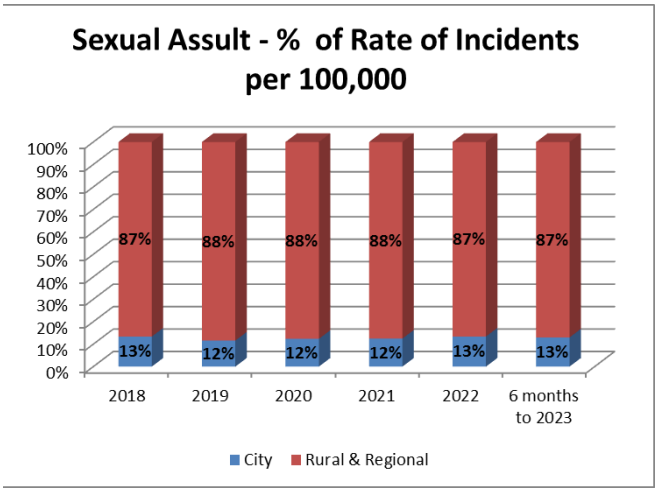


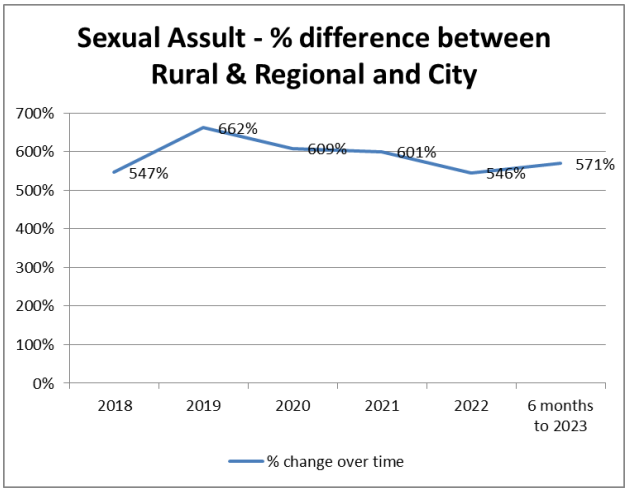
Steal from Dwelling - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	9249	8848	8184	8143	7869	3924
Rural and Regional	9984	9939	8612	8290	7294	3749
Total	19233	18787	16796	16433	15163	7673

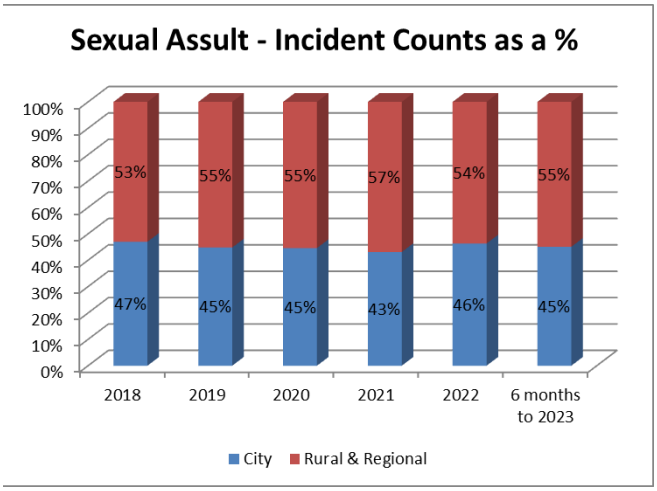
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

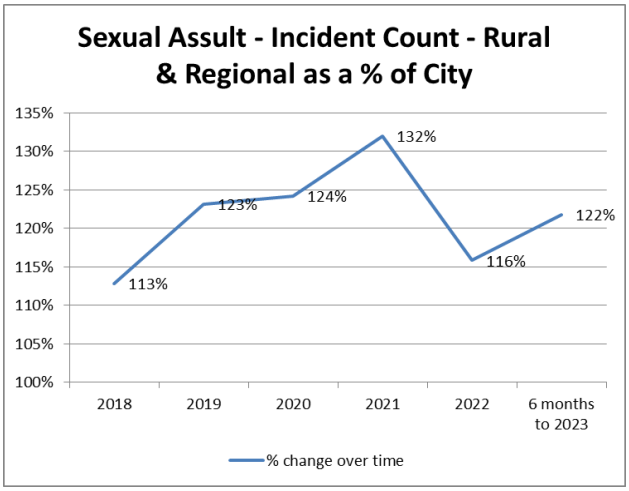
"What we want is nothing more than equity"

SEXUAL ASSAULT







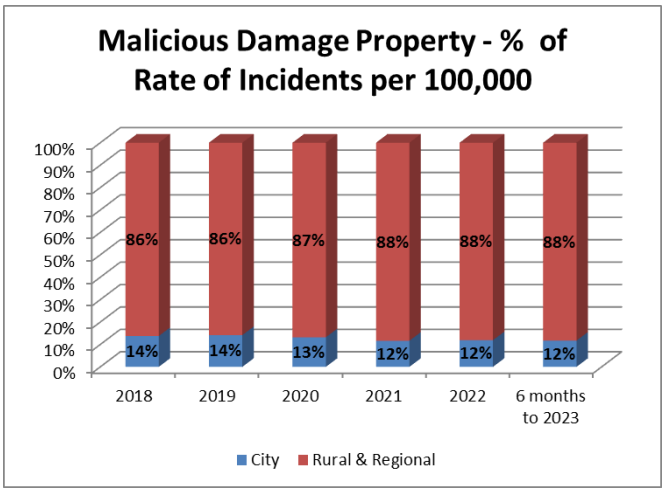


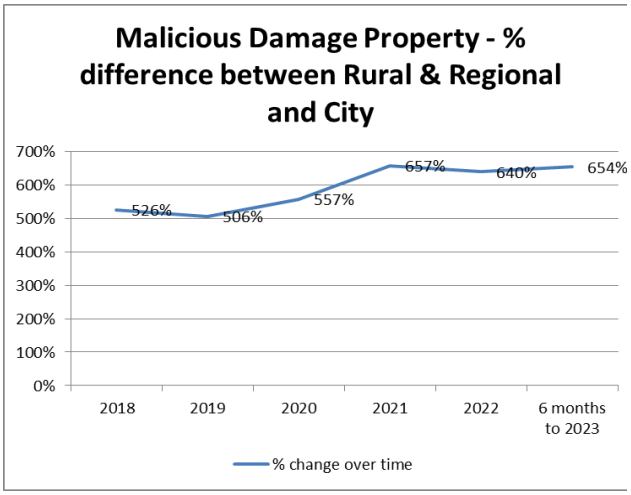
Sexual Assault - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	2754	2843	3127	3149	3396	1564
Rural and Regional	3108	3501	3884	4157	3935	1905
Total	5862	6344	7011	7306	7331	3469

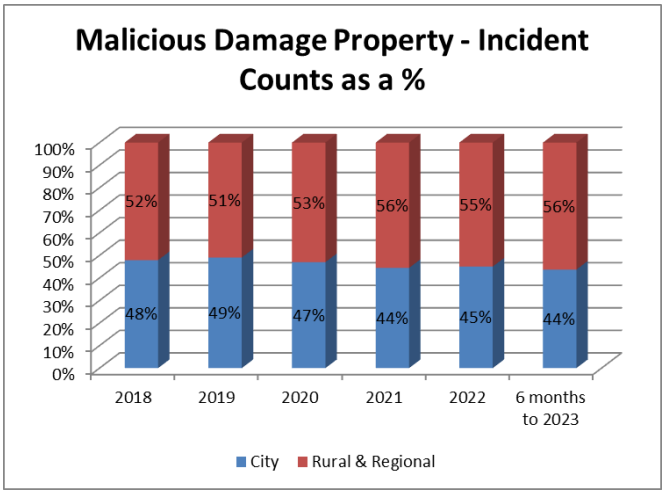
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

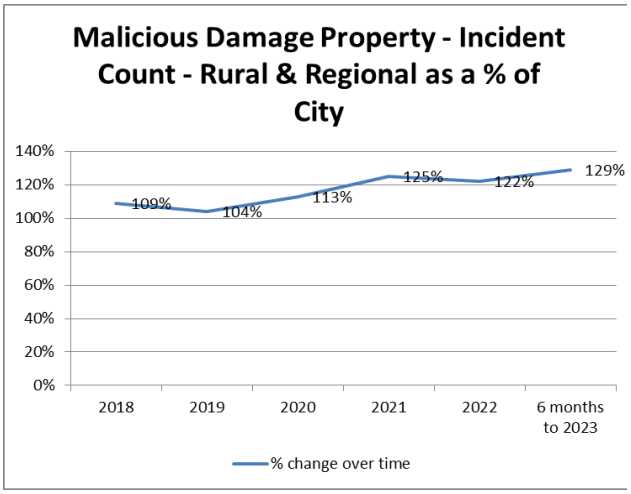
"What we want is nothing more than equity"

MALICIOUS DAMAGE PROPERTY







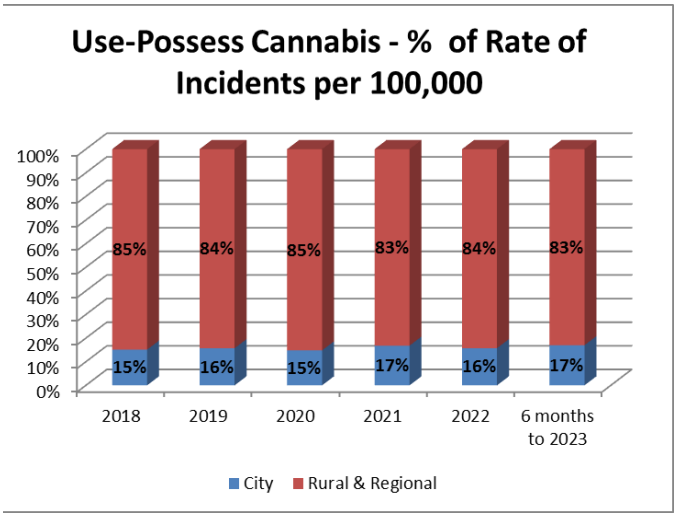


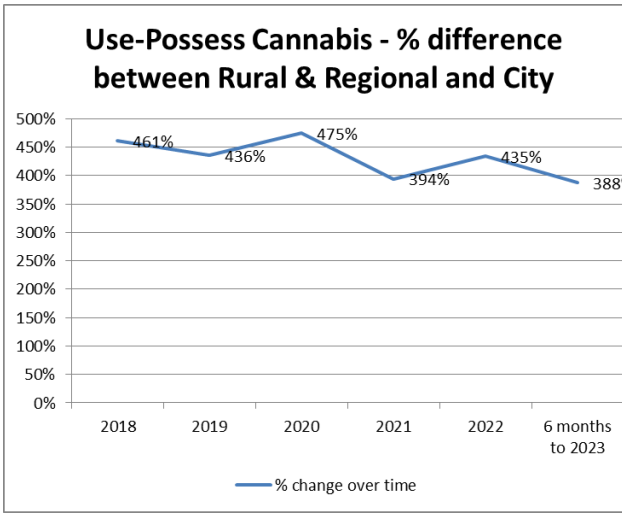
Malicious Damage Property - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	28004	28000	25028	21870	21809	10532
Rural and Regional	30487	29077	28235	27342	26610	13570
Total	58491	57077	53263	49212	48419	24102

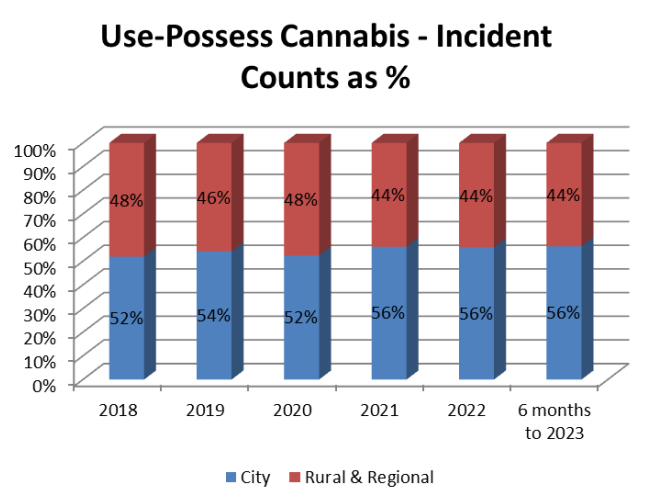
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

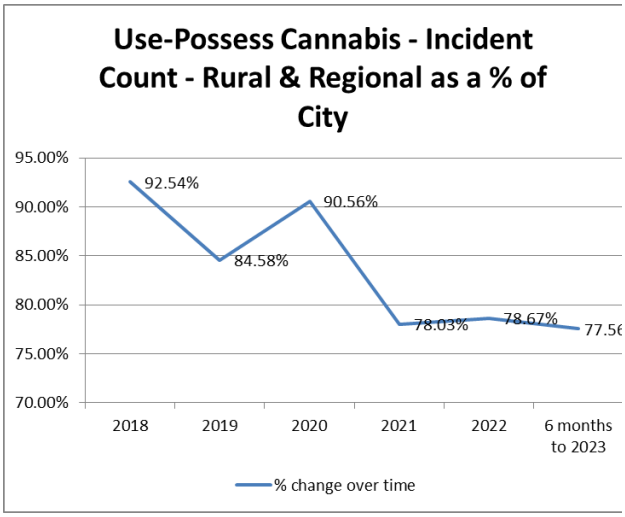
"What we want is nothing more than equity"

USE-POSSESS CANNABIS







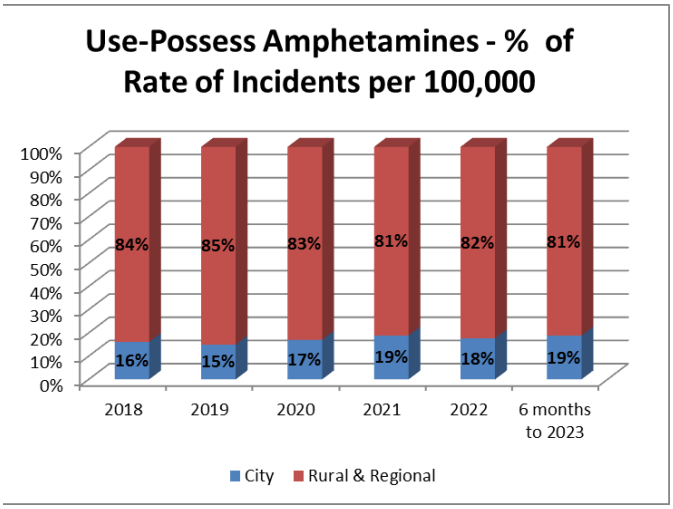


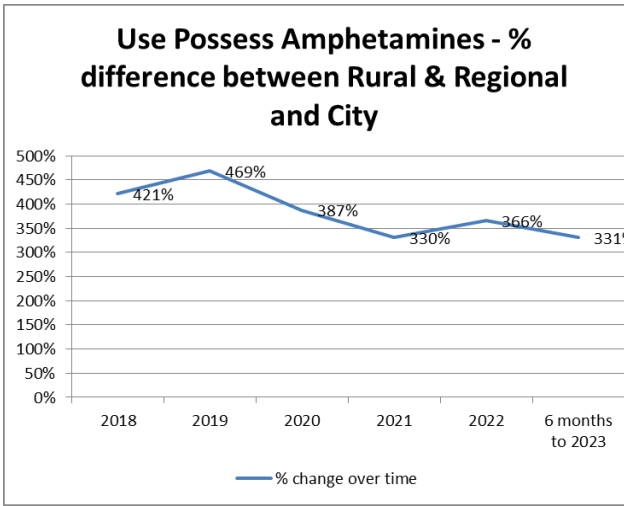
Use-Possess Cannabis - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	8901	9536	9509	9065	8717	4144
Rural and Regional	8237	8066	8611	7073	6858	3214
Total	17138	17602	18120	16138	15575	7358

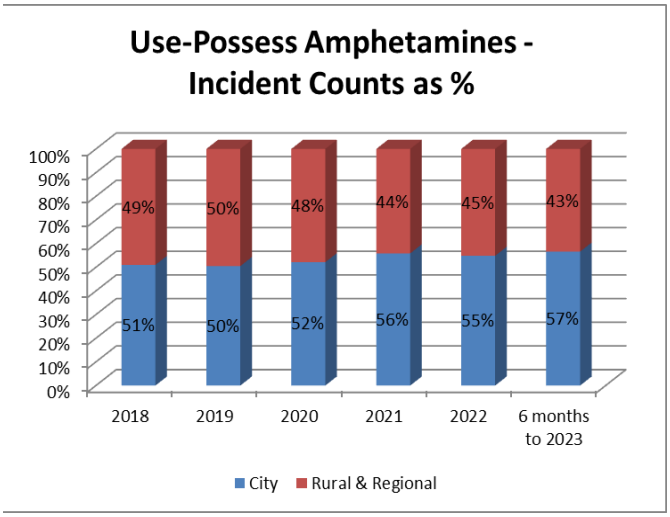
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

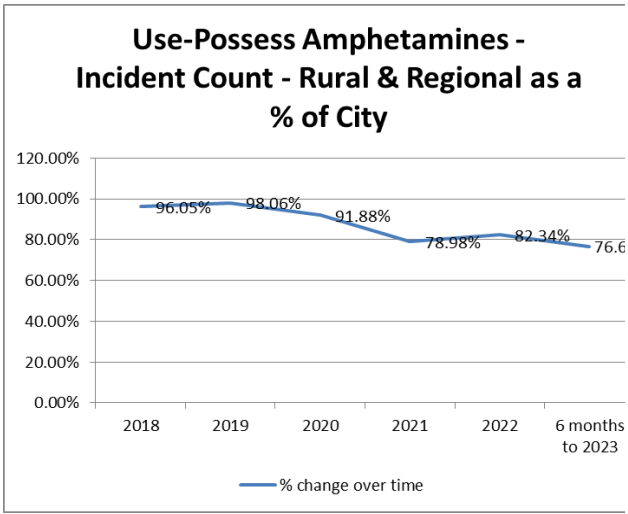
"What we want is nothing more than equity"

USE-POSSESS AMPHETAMINES







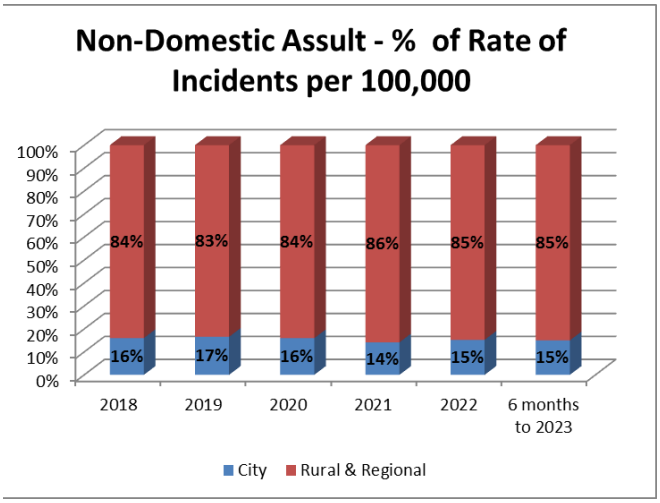


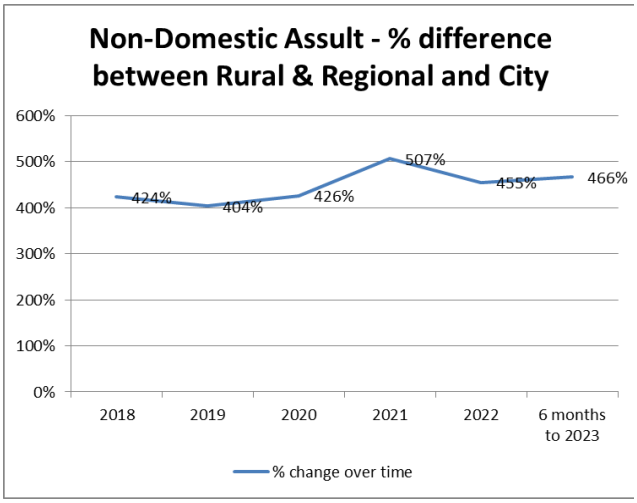
Use-Possess Amphetamines - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	3597	4015	4160	4100	3432	1774
Rural and Regional	3455	3937	3822	3238	2826	1360
Total	7052	7952	7982	7338	6258	3134

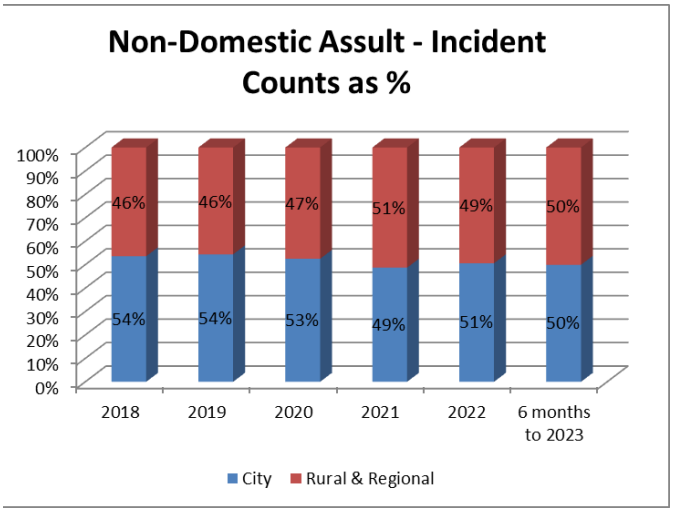
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

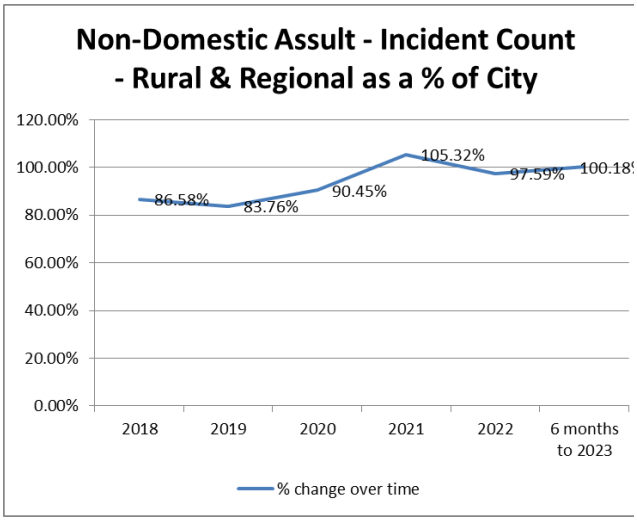
"What we want is nothing more than equity"

NON-DOMESTIC ASSAULT







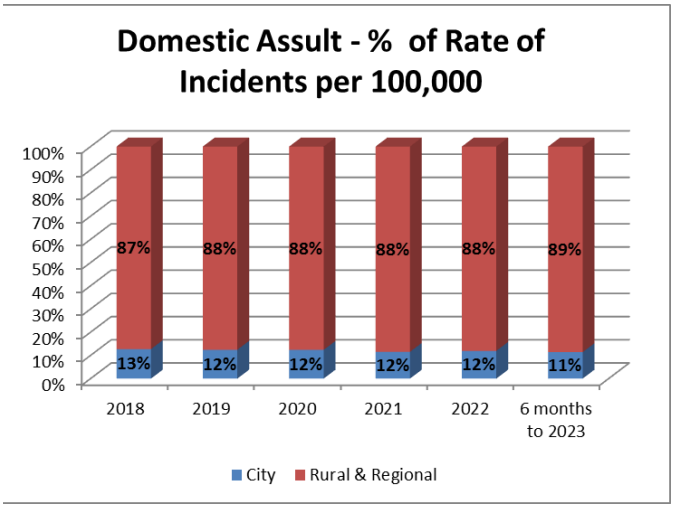


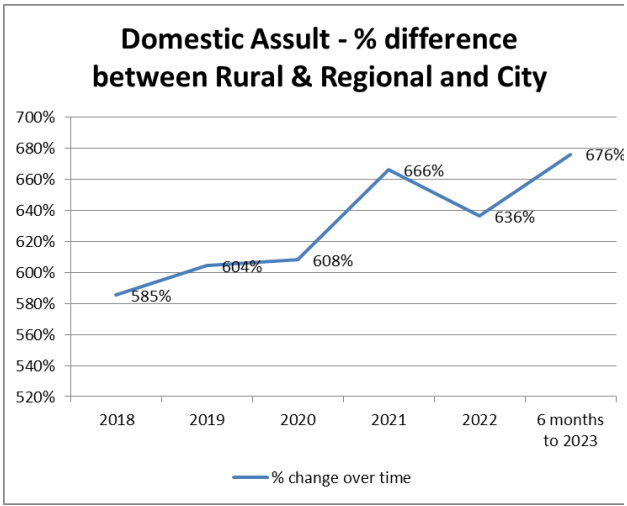
Non-Domestic Assault - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	16345	16879	14944	13389	15122	7868
Rural and Regional	14152	14138	13517	14101	14757	7882
Total	30497	31017	28461	27490	29879	15750

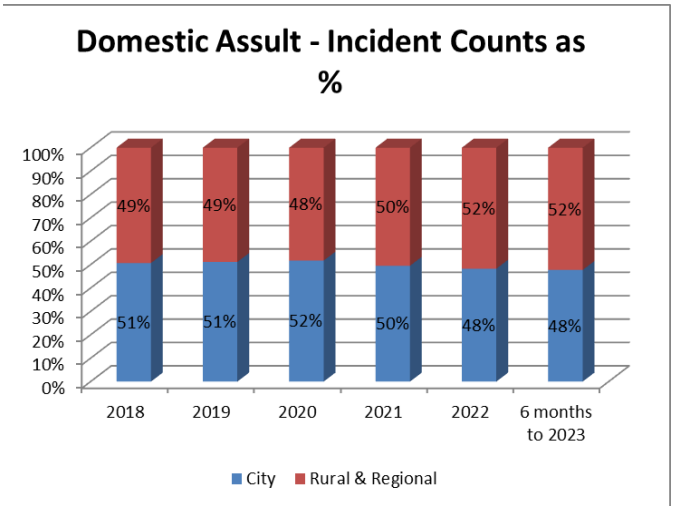
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

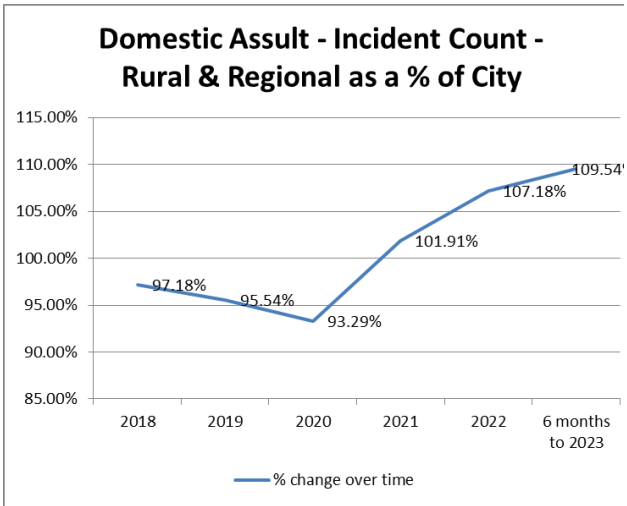
"What we want is nothing more than equity"

DOMESTIC ASSAULT







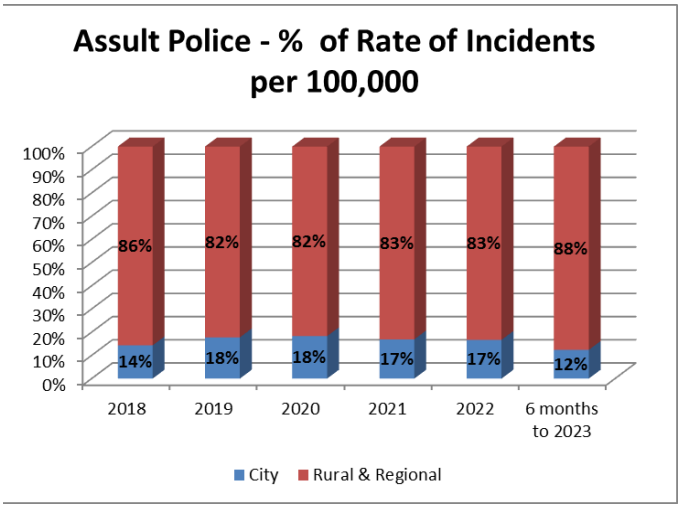


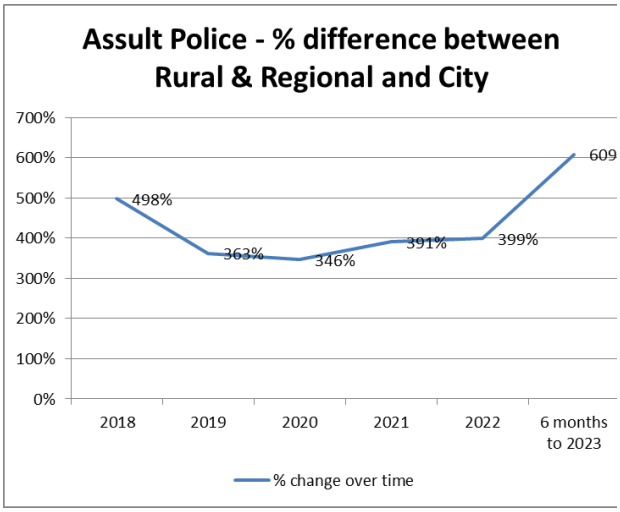
Domestic Assault - Incident Count						
Location	**2018**	**2019**	**2020**	**2021**	**2022**	**6 months to 2023**
City	15069	16026	16689	15899	16265	8279
Rural and Regional	14644	15312	15570	16203	17433	9069
Total	29713	31338	32259	32102	33698	17348

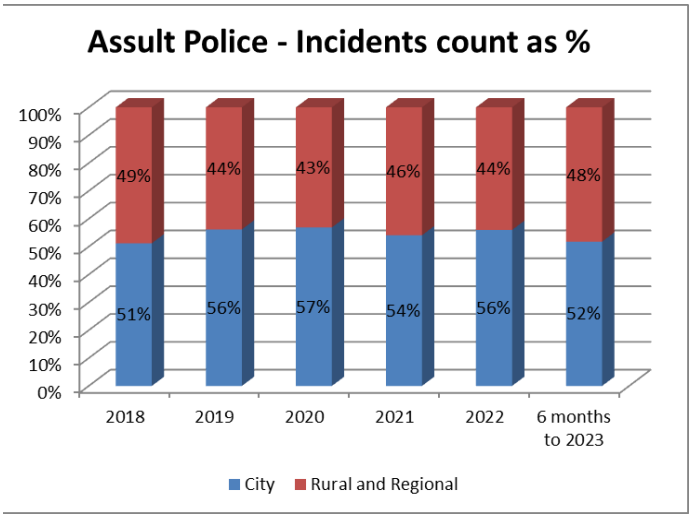
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

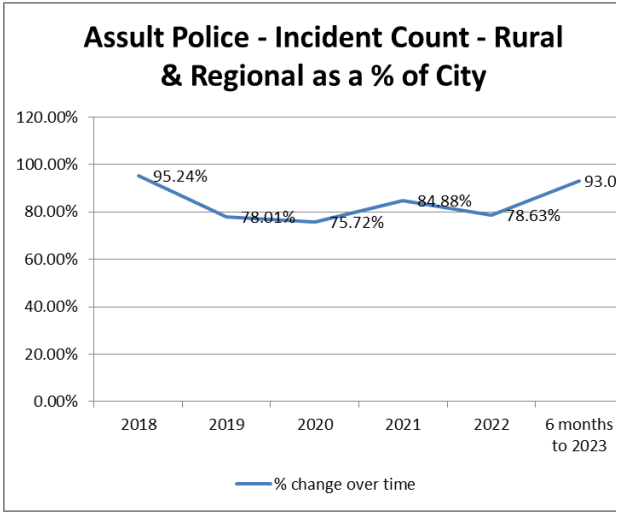
"What we want is nothing more than equity"

ASSAULT POLICE







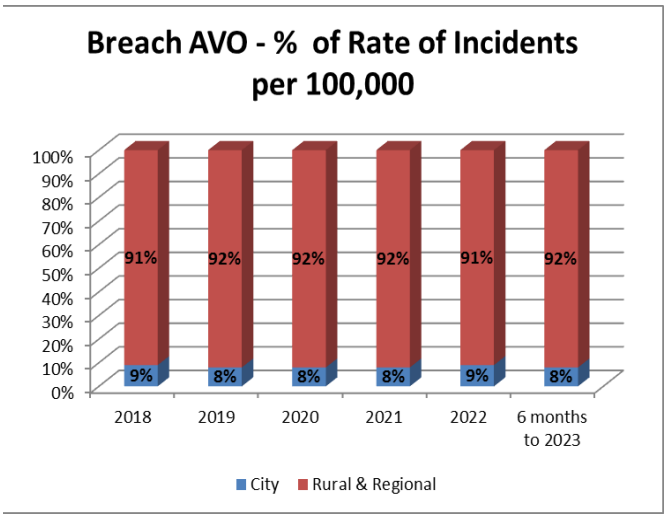


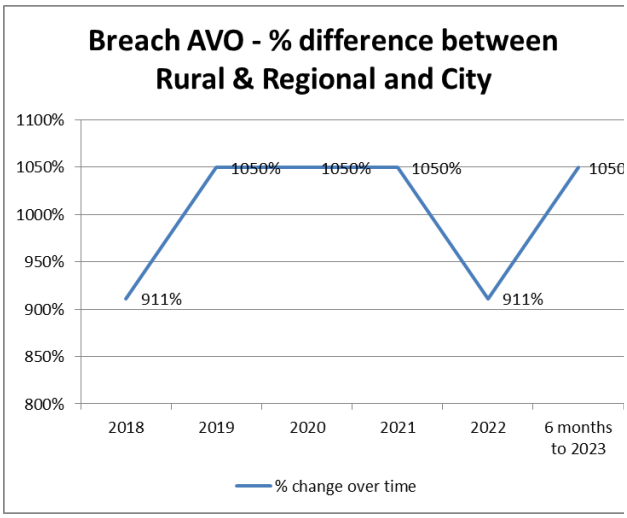
Assault Police - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	1261	1396	1433	1402	1535	660
Rural and Regional	1201	1089	1085	1190	1207	614
Total	2462	2485	2518	2592	2742	1274

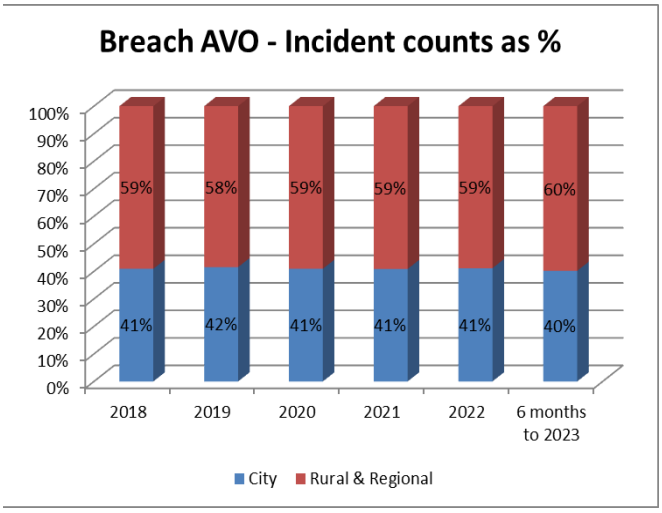
THE COUNTRY MAYORS ASSOCIATION OF NSW INC

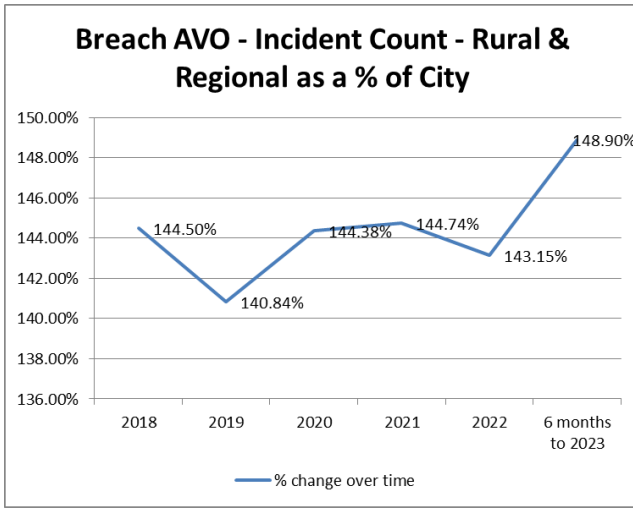
"What we want is nothing more than equity"

BREACH AVO









Breach AVO - Incident Count						
Location	2018	2019	2020	2021	2022	6 months to 2023
City	6450	7277	8030	8489	9062	4677
Rural and Regional	9320	10249	11594	12287	12972	6964
Total	15770	17526	19624	20776	22034	11641

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

"What we want is nothing more than equity"

SUMMARY AND RECOMMENDATIONS

As Chairman of the NSW Country Mayors Association (CMA), I offer this report seeking support to effect positive change for Regional, Rural and Remote NSW communities.

CMA conducts an Annual Survey of our members to ensure that we advocate for change in areas that are most of need in our communities. The results from this year's survey can be found on the CMA website https://nswcountrymayors.com.au/members-annual-survey/. Crime Law and Order has for the first time now been identified in the top 10 issues impacting our communities.

This report is a comprehensive factual representation of policing numbers, funds spent, distribution of workforce and statistical data on crime categories over a six year period comparing Metropolitan to Regional, Rural and Remote Local Government areas in NSW. The source of data used for this report is a combination of, NSW Annual Police Reports and the NSW Bureau of Crime Statistics and Research (BOCSAR).

According to the NSW Annual Police Report, In 2021/22 year, there were 17,659 police officers which equates to a ratio of residents to police officer (1:467). For that same period of time Queensland had a ratio of (1:324), the South Australian ratio was (1:301), and Victoria's ratio was (1:313). These ratio's highlight the increased workload of police officers in NSW when compared to other Eastern seaboard states of Australia.

The rates of crime in the majority of reportable categories in NSW are substantially higher in Regional, Rural and Remote Local Government areas, then the Metropolitan LGA's. We believe this is a strong lead indicator that there are inadequate policing resources to ensure equality of the reportable rates of crime in the Regional, Rural and Remote regions into the future. It is not unreasonable that the residents of Regional, Rural and Remote NSW communities should expect to have rates of reportable crime no greater than Metropolitan residents, to achieve that change is required.

The graphs in each reportable category show the incident counts and incident rates; as a percentage in the highest majority of these reportable areas both the incident rates and counts are higher then in the Metropolitan LGA's. These results are extremely alarming considering only an estimated one third of the population of NSW resides in Regional, Rural and Remote areas.

Recommendations:

1) That, the Country Mayors Association of NSW call on the all members of the NSW parliament to commit to bipartisan support to establish a Parliamentary Inquiry into and report on the rate of crime in all categories reported on by the Bureau of crime statistical and research (BOCSAR) in Regional, Rural and Remote New South Wales, specifically focussing on the inequity between Metro and Regional Local Government areas.
2) That, the Country Mayors Association of NSW calls on all members of the NSW parliament to commit to bipartisan support to increase spending on the NSW police force to increase front line policing numbers in Regional, Rural and Remote regions most at need.
3) That, the Country Mayors Association of NSW call on the NSW Government to commit to the minimum staffing agreements (known in the NSW Police Force as First Response Agreements) for non 24 hour police stations all of which are located in Regional, Rural and Remote Local Government areas.
4) That, the Country Mayors Association of NSW calls on the NSW Government to review the current formula used to assess staffing levels including the universally agreed outdated current model for those Local Government areas that do have a First Response Agreement in place.

THE COUNTRY MAYORS ASSOCIATION OF NSW INC

"What we want is nothing more than equity"

Suggested - Terms of Reference For the Parliamentary Inquiry:

The Country Mayors Association of NSW expects, at the very minimum, that the Inquiry should include public hearings in Rural, Regional and Remote NSW and that the Terms of Reference for the Parliamentary Inquiry should include:

1. That the body undertaking the Parliamentary Inquiry inquire into and report on law enforcement outcomes and access police and police services in Rural, Regional and Remote NSW, and in particular:

(a) Equitable and proportionate policing numbers and service to people living in Rural, Regional and Remote NSW;

(b) A comparison of physical policing numbers and crime statistics for people living in LGAs in Rural, Regional and Remote NSW compared to those living in Metropolitan NSW LGAs;

(c) Access to policing services in Rural, Regional and Remote NSW including service availability, barriers to access and quality of services;

(d) People's experience, wait-times and quality of service in Rural, Regional and Remote NSW and how it compares to Metropolitan NSW;

(e) An analysis of the planning systems and projections that are used by NSW Police in determining the provision of law enforcement services that are to be made available to meet the needs of residents living in Rural, Regional and Remote NSW;

(f) An analysis of the capital and recurrent law enforcement expenditure in Rural, Regional and Remote NSW in comparison to population growth and relative to Metropolitan NSW;

(g) An examination of the staffing challenges and allocations that exist in Rural, Regional and Remote policing and the current strategies and initiatives that NSW Police is undertaking to address them;

(h) Re-offending rates and related impacts on NSW Police, including the ability to retain police officers;

(i) Doli incapax, its application and its effectiveness in actually managing re-offending rates;

(j) The accessibility and availability of support services for members of the NSW Police Service;

(k) An examination of the impact of attrition within the NSW Police Service impacting the ability of those police remaining to effectively and safely undertake their duties;

(l) Analyse police staffing levels in Regional, Rural and Remote Local Government areas and report on the process of committing to a First Response Agreement for non 24 hour police stations;

(m) Review of the methodology used to asses staffing levels for Regional, Rural and Remote Local Government areas that currently have First Response Agreements in place.

(n) Investigate the functions being performed by NSW police officers on behalf of other agencies such as prisoner transport, mental health assistance and all other support functions that impact on the availability of general duties police officers and their response times in Regional, Rural and Remote Local Government areas, and;

(o) Any other related matters.

PARKER SCANLON

Surveying, Town Planning, Bushfire Assessment, Project Management

Statement of Environmental Effects

Rural Industry (Sawmill) & Roadside Stall
Lot 502 in DP746692 & Lot 1 in DP1259694

at ***NO.96 BANANA ROAD, MORORO, NSW 2469***

Date: 20 March 2023

Ref: B1755SEE-A

7 William Street, Hamilton NSW 2303
O Box 986 Hamilton NSW 2303
h: 4969 6995 Fax: 4969 6997
www.parkerscanlon.com.au

Document Control

VERSION	DESCRIPTION	ORIGINAL by	REVIEW by	RELEASE DATE
A	Statement of Environmental Effects	J.M	L.B	19/12/2022
B	Statement of Environmental Effects	J.M	L.B	20/03/2023

PROPOSAL SUMMARY

Prepared by:	Parker Scanlon Pty Limited
Contact:	Julie McKimm Town Planner Lisa Blandford Senior Town Planner Ph: (02) 4969 6995 Email: planning@parkerscanlon.com.au
Property Description:	Lot 502 in DP746692 and Lot 1 in DP1259694 No.96 Banana Road, Mororo, NSW 2469
Zone:	RU2 – Rural Landscape (Clarence Valley Local Environmental Plan 2011)
Project Description:	Rural Industry – Sawmill & Roadside Stall

Contents

1. PROPOSAL

1.1 DESCRIPTION OF PROPOSED DEVELOPMENT

This Statement of Environmental Effects (SEE) has been prepared to support the development application for: -

- Rural Industry – Sawmill, refer to Site Plan as **Figure 1** and **Attachment 1**, including;
  - Portable Sawmill Shelter;
  - Firewood and Portable Bandsaw Shelter;
  - Timber Storage Shed and Yard; and
  - Roadside Stall.

This application has been prepared and lodged following Clarence Valley Council's correspondence and issue of Order under the Environmental Planning & Assessment Act 1979 to cease current unauthorised operation on the subject site, refer **Attachment 2**.

1.2 OPERATIONAL DETAILS

The proposed sawmill will operate under the following conditions;

- Hours of Operation – Monday to Friday between 7.00am & 6.00pm and Saturday between 7.00am & 1.00pm. Sundays & Public Holidays- Closed.
- Hours of Timber Processing – 7.00am to 6.00pm and Saturday 7.00am to 1.00pm for approximately 3 hours per day during the nominated operating hours.
- Delivery of Materials (tabletop truck) to storage shed and yard or from storage shed and yard to customer – Monday to Friday 7.00am to 6.00pm and Saturday 7.00am to 1.00pm.
- Servicing of Machinery to occur in existing shed or in storage yard for larger equipment during the nominated the operating hours.
- Employee numbers – 4 employees, operations are run by the family who live onsite.

The following equipment and areas are used in the production of the timber materials;

- Portable Sawmill – used to process timber products, for example fencing materials and hardwood timber boards.
- Portable Sawmill Shelter – used for cutting timber products from the reclaimed logs which are sourced from various tree loppers or builders in the Clarence Valley area.
- Portable Bandsaw Shed – used to cut hardwood timber slabs.
- Firewood Shelter – a firewood block splitter is used in this area to cut up firewood.
- Dry Kiln Shipping Container – used when required to dry hardwood timber boards and camphor laurel slabs. Once dried in the kiln, they are transferred to timber slings and stored onsite as shown on Site Plan, refer **Attachment 1**. The kiln is solar powered.
- Thickennesser Shelter – this shelter is used part-time when required to dress and plane timber products.

Customers order timber products online or by telephone which are then delivered to the customer's nominated location via the tabletop truck. On a small number of occasions,

customers may visit the site to inspect the timber products, however, this is not on a regular basis.

The proposed roadside stall will be located adjacent to the site entry and street frontage as shown on the Site Plan, refer **Attachment 1**. Operating hours will be the same as the sawmill: Monday to Friday between 7.00am & 6.00pm and Saturday between 7.00am & 1.00pm. Sundays & Public Holidays- Closed. The stall will display and sell small timber items and farm fresh produce such as fruit, vegetables and eggs to the general public.

1.3 CONSULTATION

Formulation of the proposal has involved using/obtaining the following specialist reports and designs: -

- Noise Monitoring Report (see **Attachment 3**);
- Erosion and Sediment Control Plan (see **Attachment 5**).

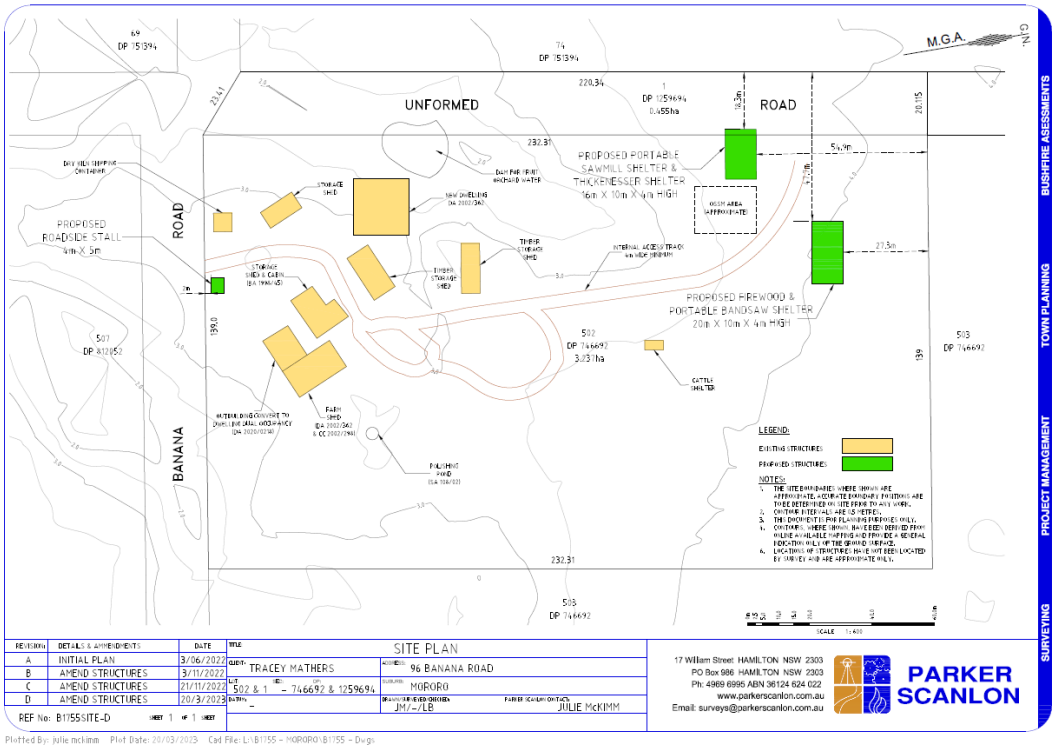


Figure 1 – Site Plan

2. SITE CONTEXT

2.1 SITE DESCRIPTION

The subject site is known as No.96 Banana Road Mororo and consists of Lot 502 in DP746692 and Lot 1 in DP1259694, refer to **Figure 1**. The site is a rectangular allotment with an area of 3.69 hectares. The property has a frontage of 162.4m to Banana Road. The site is located approximately 12km north of the township of Maclean within the Clarence Valley Shire Local Government Area LGA).

The land presently contains the following improvements: -

- single storey dwelling (DA 2002/362);
- detached dual occupancy (conversion of outbuilding under DA 2020/0218);
- Dry kiln shipping container and thickenesser shelter;
- Portable sawmill shelter;
- Storage and machinery sheds; and
- Rural type dams polishing pond.

Figure 2 – Subject Site (Nearmaps, March 2023)

2.2 PREVIOUS AND PRESENT SITE USE AND APPROVALS

The site consists of a detached dual occupancy arrangement with agricultural type sheds and shelters maintained in line with its rural and rural residential uses.

2.3 Surrounding Development and Land Use

Surrounding land consists of the following:

- To the North: Predominantly rural and forested areas zoned as RU1 Primary Production and RU2 Rural Landscape.
- To the East: Predominantly rural and forested areas zoned as RU1 Primary Production with the Mororo Creek Nature Reserve to the South-East zoned as C1 National Parks and Nature Reserves.
- To the South: Predominantly rural and forested areas zoned as RU2 Rural Landscape and C2 Environmental Conservation.
- To the West: Predominantly rural and forested areas zoned as RU2 Rural Landscape with an area of C3 Environmental Management further west.

Refer to **Figure 3**.

Figure 3 – Surrounding Land Use (SixMaps, March 2023)

2.4 Current Road Network

Banana Road is constructed of a gravel formation, operating as a local no through road, with direct access off the Pacific Highway.

2.5 Existing Vegetation & Natural Features

The site contains minimal vegetation within the proposed development site. There are larger tracts of vegetation to the south-east and north-west of the site. The site does contain a

natural unnamed watercourse and rural type dam, as shown on the Hydroline Spatial Mapping under the provisions of the Water Management (General) Regulation 2018. Refer to **Figure 4**. As shown on Clarence Valley Council's online mapping, the streams that traverse the site are primarily 1st order streams, with a small portion in the south-west of the site being classified as 2nd order streams. Mororo Creek sits to the north and north-east of the subject site, an approximate distance of 350m from the site.

The site or part thereof, does not occur within the Office of Environment and Heritage's current Biodiversity Values map (BOSET map), refer to **Figure 5**.

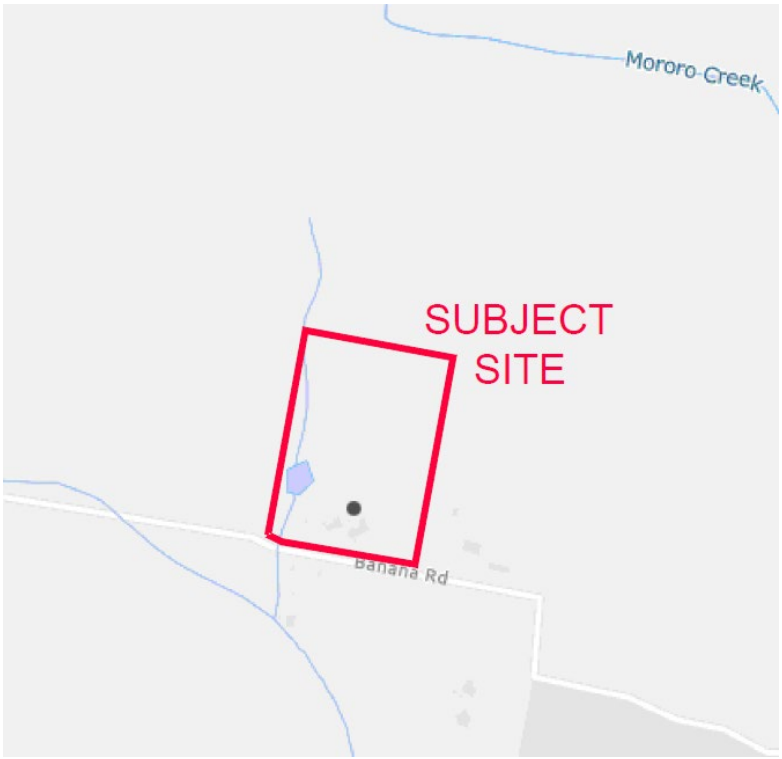


Figure 4 – Hydroline Mapping (NRAR Spatial Website, March 2023)

Figure 5 – BOSET Mapping (NSW ePlanning Spatial Website, March 2023)

2.6 TOPOGRAPHY, DRAINAGE AND FLOODING

The subject site slopes uniformly from the northern boundary, at about RL 4.0m, towards Banana Road (to the south), at about RL 2.0m.

The site is located in a flood prone area on Council's maps, see **Figure 6**.

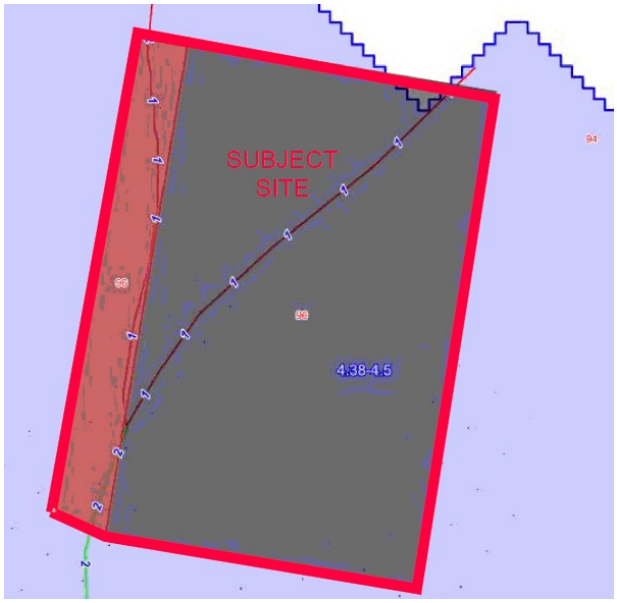


Figure 6 – Flood Mapping (Clarence Valley Council mapping, March 2023)

2.7 ACID SULFATE SOILS

The site is identified as having Class 4 acid sulfate soil conditions, as shown on Council's maps, refer **Figure 7**. Acid sulfate soils in a class 4 area are likely to be found beyond 2 metres below the natural ground surface.

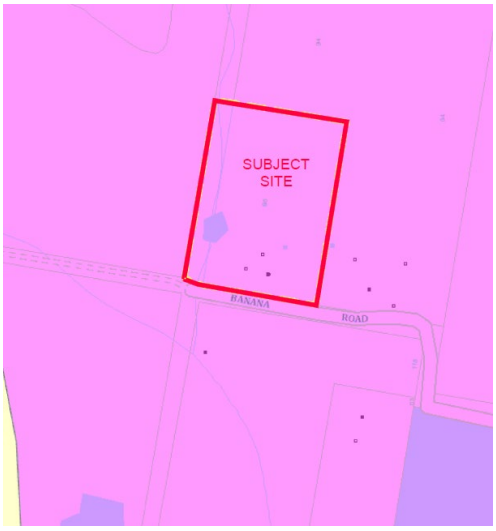


Figure 7 – Acid Sulfate Soil Map (NSW ePlanning Spatial Website, March 2023)

2.8 BUSHFIRE

The site is mapped as containing bushfire prone land, containing Vegetation Category 1 and Vegetation Buffer, refer **Figure 8**.

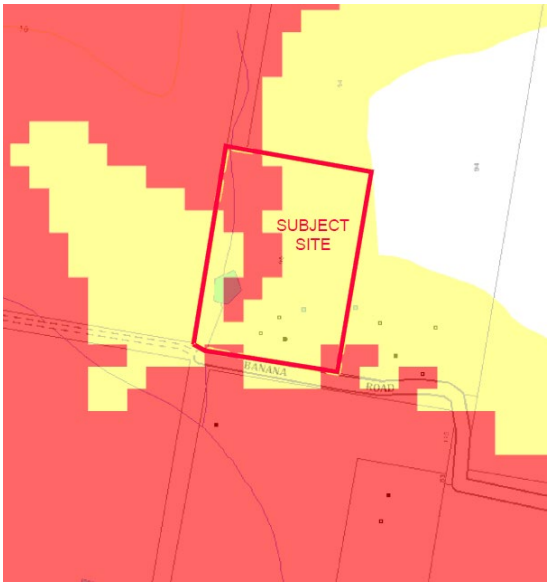


Figure 8 – Bushfire Mapping (NSW ePlanning Spatial Website, March 2023)

2.9 MINE SUBSIDENCE

The site is not located within a mine subsidence district. There are no requirements in this regard.

2.10 EXISTING SERVICES

The following services are available for connection at the site:

- Electricity (Essential Energy); &
- Telecommunications (Telstra).

No reticulated water, sewer or gas is available to the site, see **Attachment 4**.

It is anticipated that the existing services can be installed and/or extended to service the proposed development, if required.

3. STATUTORY PLANNING CONTROLS

This Statement of Environmental Effects is provided in accordance with Part 3, Clause 24 of the Environmental Planning & Assessment Regulation 2021. It is provided to facilitate the assessment of relevant issues in accordance with Part 4.15 of the Environmental Planning & Assessment Act 1979 (EP&A Act).

This statement is considered to have addressed the relevant impacts relating to matters such as site suitability, existing structures, previous and present uses, heritage, access and traffic, privacy, air and noise, soil and water, energy, and waste, among other impacts.

3.1 STATE ENVIRONMENTAL PLANNING POLICIES

The following section of this report addresses relevant State Environmental Planning Policies (SEPPs) to the development.

3.1.1 STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY AND CONSERVATION) 2021

Chapter 3 - Koala Habitat Protection 2020
Clause 3.3 – Land to which this Policy Applies.
The site is within the Clarence Valley LGA which is listed in Schedule 2 of SEPP (Biodiversity and Conservation) 2021. Accordingly, Chapter 3 of this SEPP applies.

Clause 3.5 – Land to which this Part applies
The site has a total area of 3.69 hectares which exceeds the one (1) hectare threshold that triggers Part 3.2 of SEPP – Koala Habitat Protection (2020).

There is minimal vegetation located on the development site and there is no proposal to remove any mature vegetation. Therefore, the proposal is not expected to impact upon any potential koala habitat.

3.1.2 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021

Chapter 3 – Hazardous and offensive development
Clause 3.3 defines a potentially offensive industry as, "*a development for the purposes of an industry which, when the development is in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the development from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land in the locality.*"

The proposed sawmill operation has the potential to emit a polluting discharge (noise) and therefore this Chapter of the SEPP (Resilience and Hazards) 2021 applies to the development. A Noise Monitoring Assessment was undertaken by Ambience Audio Services on 9 April 2022, refer **Attachment 3**. The report noted that the dominant noise source within surrounding properties was traffic noise from the nearby Pacific Highway.

Mitigation measures such as enclosing the eastern and southern sides of the sawmill shed could be implemented to reduce the impact of noise of the surrounding properties. It was noted that the operation of 5 tonne trucks four times per week was not expected to have any significant noise impact on nearby residential receivers.

Chapter 4 – Remediation of land

The site is not identified as being within an "investigation area" and is not known to have been used for a purpose listed in Table 1 of the "contaminated land planning guidelines" (Planning NSW Draft ref 2018-01). There is no indication of the site being previously used for potentially contaminating activities. The site is not listed on the EPA Contaminated Land Register, refer **Attachment 7**. Hence, no further consideration of SEPP (Resilience and Hazards) 2021 is required.

3.1.3 State Environmental Planning Policy (Transport and Infrastructure) 2021

Chapter 2 - Infrastructure

The proposal is not listed as a type of development in Part 2.3 of the SEPP, nor is it listed in Schedule 3 Traffic-generating development to be referred to Transport for NSW.

Division 5 Electricity transmission or distribution

Subdivision 2 Development likely to affect an electricity transmission or distribution network

Clause 2.48 Determination of development applications – other development

Under this clause of the SEPP, Council is required to give written notice of the development application to Essential Energy, inviting comments about potential safety risks, and consider any response received within 21 days after the notice is given.

3.2 CLARENCE VALLEY LOCAL ENVIRONMENTAL PLAN 2011

The development is subject to the provisions of the Clarence Valley Local Environmental Plan 2011 (CVLEP 2011). The CVLEP 2011 provides a planning framework for land use and development within the Clarence Valley LGA to facilitate development in an appropriate manner with due consideration for ecologically sustainable principles, minimising impact on neighbourhoods and avoiding adverse social and economic impacts.

The following table (**Table 1**) provides a summary of the proposal's compliance with the provisions of CVLEP 2011. Where further consideration is necessary, the relevant clause has been addressed in the section below the table.

Table 1: General compliance with Clarence Valley Local Environmental Plan 2011

Clause	Relevance	Compliance
Part 2 – Permitted or prohibited development		
Clause 2.1 – 2.9	Yes	The proposal is consistent with the site's RU2 zoning through the provision of rural type industry (sawmill) that does not conflict or deter from the surrounding rural use of land. There is no proposal for canal estate development.
Part 3 – Exempt and complying development		
Clauses 3.1 – 3.3	No	This proposal does not entail complying or exempt development.
Part 4 – Principal Development Standards		
Clauses 4.1 – 4.2D	No	There is no proposal to subdivide the subject site or construct a dwelling or dual occupancy.
Clause 4.3	No	There is no maximum height of building for the subject site specified within the CVLEP 2011. Further height provisions within the CVDCP 2011 will be addressed in Section 3.3 of this report.
Clauses 4.4 – 4.5	No	There is no maximum floor space ratio (FSR) for the subject site specified within the CVLEP 2011. Further FSR within the CVDCP 2011 will be addressed in Section 3.3 of this report.
Clause 4.6	No	Not applicable.
Part 5 – Miscellaneous Provisions		
Clauses 5.1 – 5.3	No	Not applicable.
Clause 5.4	Yes	Part of the proposal is for a roadside stall which is a miscellaneous permissible use under this clause of the CVLEP 2011. The roadside stall is proposed to be 5m x 4m to allow for the sale of timber products, fruit, vegetables and eggs produced at the property. The roadside stall does not to exceed a gross floor area of 20m^2.
Clause 5.5	No	Not applicable.
Clause 5.6	No	Not adopted.
Clauses 5.7 – 5.9	No	Not applicable.
Clause 5.9AA	No	Repealed.
Clause 5.10	No	There are no heritage items located on the site or in the vicinity of the site.
Clauses 5.11 – 5.13	No	Not applicable.
Clauses 5.14 – 5.15	No	Not adopted.

Clause	Relevance	Compliance
Clause 5.16	No	Not applicable.
Clause 5.17	No	Not applicable.
Clauses 5.18 – 5.20	No	Not applicable.
Clause 5.21	Yes	The subject site is shown as being partly within a Fluvial River Flood Extent 1 in 100 on Council's online mapping. CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, is inside the probable maximum flood line.
Clauses 5.22 – 5.25	No	Not adopted.
Part 6 – Urban Release Areas		
Clauses 6.1 – 6.4	No	Not applicable.
Part 7 – Additional Local Provisions		
Clause 7.1	Yes	The subject site is identified as having Class 4 acid sulfate soil conditions. The proposed works are not expected to require any works in excess of 2m below the natural ground level and are not expected to lower the watertable. No additional reports are considered necessary for submission.
Clause 7.2	Yes	The proposal would result in minor earthworks, which are ancillary to the development. An Erosion and Sediment Control Plan & checklist has been prepared for the development (see **Attachment 5**).
Clause 7.3	No	Repealed.
Clause 7.4	Yes	CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, is inside the probable maximum flood line. The proposed development is not for one of the purposes listed in Clause 3 of this part of the CVLEP 2011 and therefore no further investigation is required.
Clauses 7.5 – 7.12	No	Not applicable.

Part 2 - Permitted or prohibited development

Zoning

Land Use Table:

Under the CVLEP 2011, the subject site is zoned RU2 (Rural Landscape), see excerpt below.

Zone RU2 Rural Landscape

1 Objectives of zone

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To maintain the rural landscape character of the land.*
- *To provide for a range of compatible land uses, including extensive agriculture.*
- *To provide land for less intensive agricultural production.*
- *To prevent dispersed rural settlement.*
- *To minimise conflict between land uses within the zone and with adjoining zones.*
- *To ensure that development does not unreasonably increase the demand for public services or public facilities.*
- *To ensure development is not adversely impacted by environmental hazards.*

2 *Permitted without consent*

Environmental protection works; Extensive agriculture; Forestry; Home-based child care; Home businesses; Home industries; Home occupations; Home occupations (sex services); Horticulture; Viticulture.

3 *Permitted with consent*

Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat sheds; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Centre-based child care facilities; Community facilities; Correctional centres; Crematoria; Dual occupancies; Dwelling houses; Eco-tourist facilities; Environmental facilities; Farm buildings; Farm stay accommodation; Flood mitigation works; Function centres; Health consulting rooms; Helipads; Intensive livestock agriculture; Intensive plant agriculture; Landscaping material supplies; Neighbourhood shops; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Respite day care centres; Roads; Roadside stalls; ***Rural industries****; Rural supplies; Rural workers' dwellings; Secondary dwellings; Signage; Veterinary hospitals; Water recreation structures.*

4 *Prohibited*

Any other development not specified in item 2 or 3

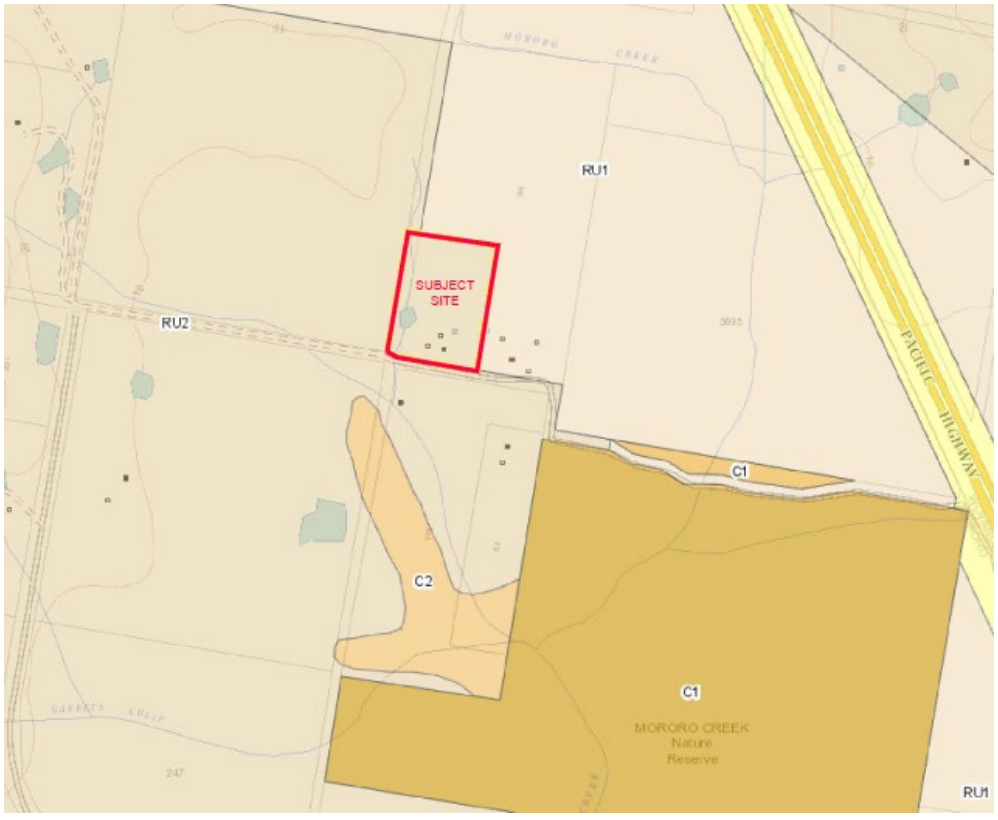


Figure 9: Extract CVLEP 2011 – Zoning Map

Comment:
As shown in **Figure 9**, the subject site is zoned RU2 (Rural Landscape). The site is nearby the following zones/uses: -

- RU1 Primary Production;
- C1 National Parks and Nature Reserves, being the Mororo Creek Nature Reserve;
- C2 Environmental Conservation; and
- SP2 Pacific Highway (No change is proposed to the Banana Road connection to the Pacific Highway).

The proposal for a "rural industry" (timber sawmill) is permissible with consent within Zone RU2 and meets the zone objectives by providing a rural industry that will maintain the rural character of the area and not conflict with any adjoining uses. There will be minimal environmental impact as a result of this development.

Part 5 – Miscellaneous Provisions

Controls relating to miscellaneous permissible uses
The proposal includes a roadside stall which is listed as a miscellaneous permissible use under Clause 5.4 of the CVLEP 2011. The stall is required to have a gross floor area of no greater than 20m^2.

The proposed roadside stall is 5m x 4m, or 20m^2, which complies with this requirement.

Heritage
The site is not located in the vicinity of any European heritage items listed in Schedule 5 of CVLEP 2011, nor is it located in a Heritage Conservation Area (refer Schedule 5 of CVLEP 2011) or a Heritage Precinct identified in CVDCP 2011.

An Aboriginal Heritage Management System search (AHIMS) was conducted on 20 March 2023 (see **Attachment 8**). There are no Aboriginal heritage items or places located on or within a 200m buffer of the subject site. The development is unlikely to have an adverse impact on any Aboriginal heritage items.

Flood Planning
The subject site is shown as being partly within a Fluvial River Flood Extent 1 in 100 on Council's online mapping. CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, the site sits inside the probable maximum flood line. There are no habitable structures proposed as part of the development, therefore no issues.

Part 7 – Additional Local Provisions

Acid Sulfate Soil Conditions
The subject site is identified as having Class 4 acid sulfate soil conditions. Acid sulfate soils are typically found from a depth of 2m in Class 4 areas.

The proposed development, given the minimal earthworks required for the proposal, would be unlikely to affect potential acid sulfate soils due to the low level of classification and depth of excavation required.

Floodplain Risk Management

The subject site is shown as being partly within a Fluvial River Flood Extent 1 in 100 on Council's online mapping. CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, is inside the probable maximum flood line.

The proposed development is not for one of the purposes listed in Part 3 of this clause of the CVLEP 2011 and is not for a habitable structure, therefore no further investigation is required.

3.3 CLARENCE VALLEY DEVELOPMENT CONTROL PLAN 2011

The Clarence Development Control Plan 2011 (CVDCP 2011) provides detailed controls for Council to consider in exercising its environmental assessment and planning functions. Detail regarding the development's compliance with CVDCP 2011 can be found within the DCP General Compliance Table (**Table 2**) below.

Table 2: General compliance with Clarence Valley Development Control Plan 2011

DCP Requirement	Relevance	Compliance
Rural Zones **Part C – General Development Controls for Rural Zones** **C4 Assessment Considerations in Determining Development Applications**		
C4.1. In rural zones, likely impacts of the development should include consideration of the following: *1) Impacts on primary production. This includes the impact of the proposed development on the use and productivity of the land for primary industry production and the economic viability and sustainability of that use.* *2) Impacts on the adjoining land. This includes impacts on the use of that land and on the productivity of the land for primary industry production and the likelihood of land use conflict.* *3) Impacts on areas of vegetation conservation value, scenic amenity and landscape value. Consideration should be given to protect areas with significant values.* *4) Impacts on water resources. This includes protection of water resources by limiting the creation of additional water rights through subdivision. Impacts on ground water resources should also be considered.* *5) Impacts on the availability of mineral, petroleum and extractive resources, such as gravel, sand or other extractive material.* *6) Impacts on riparian areas. This includes consideration of the need to protect riparian areas and for development to be adequately setback from streams. In determining the impacts on riparian areas the following need to be considered;* *a) Impacts on stream stability and function.* *b) Hazards associated with the location.* *c) Impacts on water quality and water flow.*	Yes	The proposal for a rural industry (sawmill) will have minimal impact on the primary production and productivity of the subject site and those sites surrounding it. There are no areas on the site which are heavily vegetated or considered to be areas of conservation or landscape value. There will be no additional water requirements for the rural industry. The proposed portable sawmill shelter does sit within 40m of a mapped hydroline within the site, however, it is classified as a 1st order stream and it is not expected to be impacted by the shelter and sawmill. There are no places or buildings of archaeological or heritage significance within the vicinity of the proposed development. The existing mature vegetation on the site and within the Banana Road road reserve, which will be retained as part of the proposal, will ensure there is minimal visual impact on the rural character of the area, as a result of the development.

DCP Requirement	Relevance	Compliance
d) Impacts on vegetation and habitat areas. *e) Protection of cultural and scenic values* *f) Public access considerations.* *g) The necessity for the development in the proposed location.* *7) Impacts on places and buildings of archaeological and heritage significance.* *8) Visual impacts of the proposed development on the rural character and amenity of the area, including the visual impact of any clearing, fencing and associated works.*		
C4.2. In rural zones, in determining development applications consideration of the suitability of a site for the proposed development should include consideration of the following: *1) The natural constraints and hazards of the land. This includes slope, soil stability, landslip, flooding and bush fire risk.* *2) The availability and adequacy of services. This includes:* *a) The adequacy of the water supply for both domestic and non-domestic consumption that does not rely on a surface of groundwater supply; that is, the water supply should be based on rainwater tanks and off-stream dams.* *b) The suitability of the land for effluent disposal.* *c) The adequacy of electricity supply.* *d) The adequacy of telecommunications.* *e) The adequacy of waste disposal.* *f) The cost of providing, extending and maintaining services and the likely demand for addition services should also be considered.* *3) The adequacy of vehicular access to the site. All weather two-wheel drive access must be provided.*	Yes	The proposal for a small-scale sawmill on the site will require minimal upgrades to the existing services. The site has a gentle slope from the rear boundary towards Banana Road, of less than 1%. The subject site is mapped as containing bushfire prone land and therefore a Bushfire Threat Assessment is being prepared to support the proposal. Discussions with Mr Chris Dear at Clarence Valley Council indicated that the application could be lodged without the Bushfire Report with the intention for the report to be submitted once completed. The subject site gains access directly from Banana Road which is a sealed, all-weather road. An internal access track for the development is shown on the Site Plan, refer **Attachment 1**. A Site Waste Minimisation and Management Plan has been prepared to outline the proposed waste disposal for the development, refer **Attachment 8**.
C4.3. A development application for land in a rural zone must include information on the following matters: *a) the existing use of the land and associated details of primary production or primary industry and the sustainability of that use; and* *b) extractive resources and impacts on these resources; and* *c) constraints and hazards associated with the land, such as slope, soil stability, landslip, flooding and bush fire risk; and* *d) groundwater resources and protection of these resources; and* *e) riparian areas, setbacks to streams, impacts on vegetation, public access, stream stability, water quality, water flow and protection of these areas; and* *f) assessment of the conservation value of native vegetation and measures to protect vegetation areas with significant values; and*	Yes	The subject site is currently used for rural residential purposes. The dwellings will remain on the property providing residences for the family which own and operate the proposed sawmill. There will be no additional water requirements for the industry or extraction of resources from the site. The site has a gentle slope from the rear boundary towards Banana Road, of less than 1%. The subject site is mapped as containing bushfire prone land and therefore a Bushfire Threat Assessment is being prepared, see above notes.

DCP Requirement	Relevance	Compliance
g) the scenic amenity and landscape values of the land and protection of these areas; and *h) the archaeological and heritage significance of the land and building and their protection; and* *i) the visual impact of the proposed development on the rural character and amenity of the area, including visual impacts of any clearing, fencing and associated works; and* *j) the impact of the proposed development on adjoining land, the primary production /industry use of the land and the likelihood of land use conflicts; and* *k) the availability of services and the likely demand for services; and* *l) the adequacy of the water supply for domestic and non-domestic consumption* *m) effluent disposal; and* *n) access to the land and adequacy of the access.*		The subject site gains access directly from Banana Road which is a sealed, all-weather road. An existing internal access track 4m wide to service the development is shown on the Site Plan, refer **Attachment 1**.
C5 Setbacks		
C5.1. All development in rural zones must comply with the following setbacks, except where setbacks are identified in another Part of this DCP or clause C5.7. Minimum setbacks are as follows: *Front – 10 metres* *Side – 3 metres.* *Setbacks are measured from the property boundary to the closest point of a wall, column, structural support or balcony.* *Patios no greater than 600 mm. above ground level will be permitted to extend 1.2 metres beyond the front setback but must not have balustrades.* *Where the proposed development, including sheds, is higher than 3.6 metres (measured to the roof ridgeline), the side and rear setback must be greater then 3 metres. The side and rear boundary setbacks are to be directly proportional to the height of the building; Eg. height 4.5 metres, setback is to be 4.5 metres.*	Yes	The proposed Portable Sawmill Shelter will be located; • 167m from the front boundary; • 54.9m from the rear boundary; • 18.3m from the western side boundary; and • 124m from the eastern side boundary. The proposed Firewood and Portable Bandsaw Shelter will be located; • 194m from the front boundary; • 27.3m from the rear boundary; • 47.7m from the western side boundary; and • 91m from the eastern side boundary. The setbacks exceed the minimum setback requirements under this section of the DCP.
C5.2. Where the established front setback is greater than 10 metres then the established front setback should be maintained. For example, a 20 metre front setback may be established in some rural areas. *Secondary Frontage Setbacks* *For development on corner lots, the secondary frontage must have a minimum setback of 6 metres from the property boundary.*	Yes	The existing dwelling that forms part of the dual occupancy closest to Banana Road is setback 13m from the front boundary. No structures are proposed to be constructed within this setback, with the exception of the roadside stall, which is located 2m from the front boundary. The subject site is not a corner allotment.
C5.3. Setback from Services *Buildings should not be built over any registered easement, sewer main or water main.* *All buildings should be setback a minimum of 1.5 metres from any sewer main that is less than 1.5 metres deep. Where the sewer is between*	No	Not applicable. The subject site is not serviced by reticulated water or sewer.

DCP Requirement	Relevance	Compliance
1.5 metres and 3 metres deep, the minimum setback from buildings should be 2.5 metres. Where the sewer is greater than 3 metres deep, the minimum setback for buildings will be determined by Council staff following an assessment of maintenance and access requirements. *For detailed engineering requirements for setbacks to sewer lines see Council's Policy for Building in Close Proximity to Sewers.* *Consult with Council's Engineering staff when the proposed development is close to any easement or required easement setback.*		
C5.4. All buildings must be setback 3.5 metres from the toe of any levee wall. *Any request for variation to setbacks from a levee wall must be referred to Flood Plain Services for comment.*	No	Not applicable. There are no levees within the vicinity of the subject site.
C5.5. Variation to the front setback will be considered on merit. *Any request to vary the front setback should meet the setback objectives and address the following;* *a) the position of adjacent buildings and their residential character.* *b) location of existing vegetation* *c) the effect on sightlines and visibility for pedestrians and vehicles.* *d) size, shape and grade of the lot.* *e) the facade of the proposed building or buildings which will face the street and the proposed landscaping which is visible from the street.*	No	Not applicable. No variation to the front setback is requested.
C5.6. Dwelling houses must be setback 40 metres from any waterway. *Note: On-site effluent disposal areas may be required to be setback more than 40 metres from an intermittent waterway and/or 100 metres from a permanent waterway. Consult Council's On-Site Waste Water Management Strategy.*	No	Not applicable. The proposal is not for a dwelling house.
C5.7. Additional setbacks may apply on classified roads.	No	Not applicable. The subject site is not located along a classified road.
C8 Provision of Essential Services		
C8.1. General *The controls in this part of the DCP provide further guidance in relation to clause 7.8 Essential Services of the Clarence Valley LEP 2011.* *Clause 7.8 requires Council to be satisfied that any utility infrastructure that is essential for the proposed development is available or that adequate arrangements have been made to make that infrastructure available. Such infrastructure includes the supply of water, electricity, the disposal and management of sewage, storm water management and telecommunications and suitable road access.*	Yes	The subject site is serviced by electricity and telecommunications networks, refer **Attachment 6**. The site also has provisions for onsite sewer management and rainwater tanks for water supply. There are no proposed impervious surfaces to be constructed and it is expected that there will be a negligible increase in the stormwater runoff on the site. Access is gained via Banana Road which is a sealed all-weather road. An internal

DCP Requirement	Relevance	Compliance
		access track for the development is shown on the Site Plan, refer **Attachment 1**.
C8.2. Supply of water *a) Subdivision and development must be connected to a reticulated town water supply system at a point acceptable to Council, where available. Variations to this requirement may be considered where reticulated services are not currently available to the property and extension of those services is not environmentally or economically realistic.* *b) Hydraulic details, prepared by a suitable qualified hydraulic consultant, must be provided for water supply work (including fire services) in all new multi dwelling housing and residential flat buildings. These details are to be submitted to Council for approval prior to issue of the Construction Certificate.* *c) In areas where a reticulated water supply is not available or connection to such is deemed unacceptable a domestic water storage capacity (i.e. for a dwelling house) of 45,000 litres must be provided.* *d) Where more than 2 Class 1a dwellings are to be erected on a property and any of those dwellings are more than 90 metres from a street hydrant, an on-site fire hydrant must be provided. The fire hydrant system shall comply with AS 2419.1.* *e) On land in bush fire prone areas that is not serviced by a reticulated water supply, a water supply reserve must be provided for fire fighting purposes. The water requirements for fire fighting purposes in TABLE C1 must be met.;* TABLE C1 **Development Type** / **Water Requirement** Dwellings on lots < 1,000m^2 — 5,000 litres/lot Dwellings on lots 1,000 -10,000m^2 — 10,000 litres/lot Dwellings on lots > 10,000m^2 — 20,000 litres/lot Refer to the NSW Rural Fire Service current publication, *Planning for Bushfire Protection 2006*.	Yes	The subject site is not serviced by reticulated water. The existing dwellings are serviced by water storage tanks. The development will not require additional water capacity. The site is mapped as containing bushfire prone land. As such, a Bushfire Threat Assessment is being prepared, see notes above.
C8.3. Disposal and management of sewage *a) Subdivision and development must be connected to a reticulated sewerage system where available. Where connection to a reticulated sewerage system is not available nor otherwise possible, wastewater disposal must comply with the Clarence Valley Council On-site Wastewater Management Strategy 2005.*	No	Not applicable. The existing dwellings are serviced by an onsite wastewater system. No change to the existing system is deemed required.
C8.4 Supply of electricity	No	Not applicable. The existing dwellings are serviced by electricity. No change to the

DCP Requirement	Relevance	Compliance
a) A mains power supply is to be provided to the boundary of any new lot to be created in rural subdivision. *b) Council may impose a requirement for a mains power supply to be provided for other development proposed in a rural zone. Refer also to C8.4(c) below.* *c) Alternative power sources for subdivision and development can be considered where it can be demonstrated that the economic cost and/or likely environmental impact of connection is unacceptable.*		existing provision of power is deemed required.
C8.5. Provision of suitable road access *a) For the purposes of clause 7.8(e) of the CVLEP 2011 "suitable road access" for the purposes of development in rural zones is deemed to be satisfied when the lot being developed has frontage to a sealed public road or a Category 1 unsealed road listed in Council's adopted Roads Policy.* *In addition, each lot in a proposed subdivision must have direct frontage to a sealed public road or an unsealed Category 1 road that is listed in Councils adopted Roads Policy.* *b) If subclause (a) can not be complied with an applicant may request that Council extend the sealed public road or the Category 1 unsealed road network to service the development. Any request under this clause must accompany the development application and must address the criteria set out in Councils Roads Policy.* *c) In relation to proposed dwelling houses on existing allotments only, where an allotment does not meet the requirements in (a) or (b) above Council may permit provision of vehicular access from a Category 2 road or by private access arrangements such as a legal right of way subject to the considerations at (e) - (i) below.* *Any request for Council to extend the Category 2 unsealed road network to service the development must accompany the development application and must address the criteria set out in Councils Roads Policy.* *d) A decision to extend the sealed public road or unsealed Category 1 and Category 2 road network must be made by resolution of Council, as such any application using (b) or (c) above will be reported to Council for determination.* *The applicant must note that the Roads Policy requires any additional lengths of sealed public road or unsealed Category 1 or Category 2 road to be constructed to current engineering standards at no cost to Council prior to being transferred to Council ownership or added to the scheduled maintenance list as a Category 1 or Category 2 road. This will be reflected in any conditions of consent should the road network extension be approved.*	Yes	The subject site has direct access to Banana Road which is considered to be a gravel, all-weather public road. No change to this access is proposed.

DCP Requirement	Relevance	Compliance
C8.6. Stormwater Management *Development must comply with the requirements of Part G Sustainable Water Controls and Part H Erosion and Sediment Control and the latest Northern Rivers Design Manuals.*	Yes	There are no proposed impervious surfaces to be constructed and it is expected that there will be a negligible increase in the stormwater runoff on the site. An Erosion and Sediment Control Plan & Checklist has been provided, see **Attachment 5**. The plan details the management of any sediment or material that may become dislodged during the operation of the sawmill to ensure the nearby watercourses are not impacted upon. The Checklist provided demonstrates the commitments of the operators to ensuring any silt or sediment does not run off the site or enter into the nearby watercourses.
C8.7 Provision of other services and infrastructure *Development must be serviced by telecommunications as further provided for in Part I10.*	No	Not applicable. The existing dwellings are serviced by a telecommunications network. No change to the existing provision is deemed required.
C9 Development on Flood Liable Land		
The CV LEP 2011 identifies flood prone land on the Flood Prone Land Map and is subject to clause 7.3 Flood planning and clause 7.4 Floodplain risk management. *Development of flood prone land must comply with the requirements of PART D Floodplain Management Controls of this DCP.*	Yes	The subject site is shown as being partly within a Fluvial River Flood Extent 1 in 100 on Council's online mapping. CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, is inside the probable maximum flood line. The proposed development is not for a habitable structure and therefore no further information is considered to be required.
C10 Controls for Bushfire Prone Land		
On bush fire prone land a development application must comply with the NSW Rural Fire Service Planning for Bushfire Protection 2006. *An Asset Protection Zone (APZ) and adequate access is required. Use of non-combustible materials may be required. It is advisable to consult the NSW Rural Fire Service.* *A Development Application for bush fire prone land must include information to show compliance with the NSW Rural Fire Service Planning for Bushfire Protection 2006.*	Yes	The site is mapped as containing bushfire prone land. As such, a Bushfire Threat Assessment is being prepared, see notes above.
C11 Development of Land with Acid Sulfate Soils		
Specific controls apply to disturbance of land classified and identified as acid sulphate soils on the CV LEP 2011 Acid Sulfate Soils Maps. *See CV LEP 2011 clause 7.1 Acid Sulfate Soils.*	Yes	The subject site is identified as having Class 4 acid sulfate soil conditions. The proposed works are not expected to require any works in excess of 2m below the natural

DCP Requirement	Relevance	Compliance
		ground level and are not expected to lower the watertable. No additional reports are considered necessary for submission.
C12 Sites Subject to Land Slip / Geotechnical Hazard		
Council's Geotechnical Risk Management Policy, including specific geotechnical report requirements, must be complied with where: *(a) Land has a potential for landslip due to natural slope and/or soil conditions (geotechnical hazards); and/or* *(b) Land has a potential for landslip due to coastal forces or river flow conditions; and/or* *(c) Land is identified as being of particular concern due to geotechnical hazards; and/or* *(d) Any developments that will or may generate a geotechnical hazard due to the work proposed, developments such as those involving excavation close to another property or near a large tree, deep excavations that may impact on adjoining property, deep filling or any other activity that will or may significantly increase the geotechnical risk to another property.*	No	Not applicable. The subject site has a less than 1% slope and is not known to be a landslip risk. The proposed development will not involve excavations close to another boundary or tree, deep excavations or deep filling.
C13 Sheds, Farm Buildings and Outbuildings		
C13.1. On land in the RU1, RU2 and RU3 rural zones sheds, farm buildings and outbuildings must comply with the following setbacks: • *Must be behind the front setback.* • *Side and rear boundary setbacks to be directly proportional to the height of the building. E.g. Building height 4.5m, side and rear setback to be 4.5m.*	Yes	The proposed structures for the operation of the sawmill are located behind the front building line of the dwellings located onsite. The roadside stall is located in front of the building line, however, this is permitted within the RU2 zone. The proposed Portable Sawmill Shelter will be located; • 167m from the front boundary; • 54.9m from the rear boundary; • 18.3m from the western side boundary; and • 124m from the eastern side boundary. The proposed Firewood and Portable Bandsaw Shelter will be located; • 194m from the front boundary; • 27.3m from the rear boundary; • 47.7m from the western side boundary; and • 91m from the eastern side boundary.
C13.2. Variations to these requirements will be considered where a shed /farm building /outbuilding is not highly visible from the street and reasonable side boundary setbacks are available to permit screening.	No	Not applicable. No variations to the setbacks are requested.

DCP Requirement	Relevance	Compliance
C13.3. Sheds, farm buildings and outbuildings on unsewered lots will only be approved where they will not adversely impact on the on site waste water system, including the reserve area. The site plan submitted with the Development Application must indicate the location of the existing septic tank and trenches/disposal area in relation to the proposed building, driveway and boundaries.	Yes	The existing dwellings are serviced by an onsite wastewater system as shown on the Site Plan, refer **Attachment 1**. No change to the existing system is proposed.
C13.4. Council will permit the occupation of a caravan or shed on an allotment where a dwelling is being constructed, subject to: *a) The occupation of the caravan or shed only being for a 12 months or less.* *b) The occupation being for the immediate family of the owner of the property or to a paid nightwatchman* *c) A shower, basin, and toilet connection to either sewerage or an approved onsite effluent disposal system.* *d) Construction of the dwelling has commenced.* *e) Ongoing commitment to dwelling construction.* *f) Before occupation the access road and on-site water supply that meets the NSW Rural Fire Service requirements must be in place.*	No	Not applicable.
C13.5. Some sheds, farm buildings and outbuildings may not require approval of a Development Application if exempt development requirements/development standards can be met. *Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 ("Codes SEPP") to determine whether the development may be carried out as exempt development.*	No	Not applicable.
C13.6 Definitions. For the purposes of this clause the definition of an 'outbuilding' included in the Codes SEPP (State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 applies. *'Farm building' is defined in the CV LEP 2011.*	Yes	The definitions are noted but are not applicable to the proposal.
C14 Waste Management		
C14.1 Any waste that is generated must be disposed of in accordance with the Protection of the Environment & Operations Act 1997 and Regulations and the Local Government Act 1993. *Waste management must be based on the principles of waste avoidance and maximising reuse and recycling of materials. All demolition and construction waste should be separated for reuse or recycling wherever possible.* *Details of the waste management strategy for a development (including demolition, construction and operational phases) must be submitted to Council when a development application is lodged.*	Yes	A Site Waste Minimisation and Management Plan has been prepared to outline the proposed waste disposal for the development, refer **Attachment 8**.

DCP Requirement	Relevance	Compliance
All applications for development, except for minor construction and demolition works involving a construction footprint of less than 50m2, must be accompanied by a Waste Management Plan addressing the requirements of Council's Waste Not Development Control Policy (available on Council's website at www.clarence.nsw.gov.au). The waste management facilities proposed as part of the development must also be clearly illustrated on the plans of the proposed development.		
C14.2 Liquid Waste *Any processes that generate liquid wastes must have measures in place to dispose of the waste. A trade waste application must be made to Council under section 68 of the Local Government Act when liquid trade waste is proposed to be discharged to Council's sewer. Application forms are available from Council and provide details that must accompany the application prior to any work being undertaken. Typically, such waste will need pre-treatment to remove oils, greases etc., using an approved device.*	No	Not applicable. No liquid waste is expected to be generated by the proposal.
C14.3 Solid Waste *Provision must be made for waste to be disposed of in a safe, tidy and environmentally responsible manner. The principles of waste avoidance, reuse and recycling must be followed to develop a sustainable approach to waste management.*	Yes	A Site Waste Minimisation and Management Plan has been prepared to outline the proposed waste disposal for the development, refer **Attachment 8**.
Part E – Heritage Conservation **E3 Where do the controls heritage conservation apply?**		
This Part of the DCP applies to the following land within the Clarence Valley Local Government Area: *(i) land upon which an item or a draft item of environmental heritage as listed under Schedule 5 of the Clarence Valley Local Environmental Plan 2011 is situated; or* *(ii) land that is located within one of the Heritage Conservation Areas or a draft Heritage Conservation Area as contained in Schedule 5 of Clarence Valley Local Environmental Plan 2011- refer also to Schedule F1 Heritage Conservation Areas; or* *(iii) land that is located adjacent to, or within the vicinity of a heritage item or heritage conservation area (or within the visual catchment of a heritage site).*	No	Not applicable. The site is not located in the vicinity of any European heritage items listed in Schedule 5 of CVLEP 2011, nor is it located in a Heritage Conservation Area (refer Schedule 5 of CVLEP 2011) or a Heritage Precinct identified in CVDCP 2011. An Aboriginal Heritage Management System search (AHIMS) was conducted on 20 March 2023 (see **Attachment 7**). There are no Aboriginal heritage items or places located on or within a 200m buffer of the subject site. The development is unlikely to have an adverse impact on any Aboriginal heritage items.
Part F – Parking and Vehicular Access Controls **F2 Number of Car Parking Spaces**		
1) The number of car parking spaces required for different land uses should be provided in accordance with TABLE F1. *2) When calculating the number of car spaces required, any part spaces must be rounded up to the nearest whole number.*	Yes	The proposal, being a rural industry, is required to provide 1 space per 100m^2 with no specific requirements for delivery/service vehicles.

DCP Requirement	Relevance	Compliance
3) Where a land use is not included in TABLE F1 consult Council for requirements, which will usually be based on the RTA publication, "Policies, Guidelines and Procedures for Traffic Generating Developments". *4) All car parking spaces must be provided on-site.* *5) Large scale development may require a Parking Study to determine the number of car parking spaces. Where developments are subject to a parking study, the applicant will be required to undertake a parking study of a similar type of development, in a similar location, to determine the number of parking spaces required for the proposed development. See Clause F10.* *6) Car parking for disabled persons must be provided where disabled access to the building is required. The minimum number of car spaces to be provided for people with access disabilities must meet the requirements of the Building Code of Australia (BCA).* *7) Car parking standards apply to extensions to an existing building and to a change of the use of a building or land. If the number of spaces required exceeds that provided by the existing use, then the additional spaces must be provided or a variation to DCP requirements obtained.* *8) Where the proposed development incorporates multiple uses, the parking requirement for the total development will be the sum of the parking spaces required for each of the individual land uses.* *9) Stacked car parking will not be accepted.* *10) Adequate spaces for service vehicles likely to be located on-site need to be provided according to relevant vehicle types and sizes.* *11) The number of delivery/service vehicles required for should be provided in accordance with TABLE F2.*		Given the nature of the operation with no customers attending the site and the fact that those running the proposed sawmill also reside at the property, onsite parking is considered to already be provided by way of the car parking for the existing dwellings.
F3 Variations to Car Parking Requirements		
Council may allow variations to the requirements of TABLE F1 in the following circumstances: *a) the proposed development is a minor addition to an existing building and is not likely to generate additional parking demand, or the calculation of the parking requirement is less than 1 car space.* *b) The peak demand for parking generated by the proposed development is outside the hours of 8:30 AM and 5:30 PM, and adequate on-street car parking is available and in proximity to the proposed development.* *The following matters must be considered in determining an application to vary the DCP requirements:* *i. The location, type and scale of the proposed development,* *ii. The existing level of on-site car parking on the development site.*	Yes	The proposed development is not likely to generate additional parking demand as those who reside on the site are also the only employees for the proposed sawmill. It is therefore considered that the existing car parking on the site is suffice.

DCP Requirement	Relevance	Compliance
iii. The compatibility of the car parking location and design with adjoining properties. *iv. The nature and volume of traffic on the adjoining street network.* *v. The geometry and width of the adjoining street network.* *vi. The availability and accessibility of public car parking areas.* *vii. Comments from the NSW Roads and Traffic Authority, if applicable.* *Council will consider provision of parking spaces on land other than that the subject of the development proposal, if the alternative location is convenient to the subject development site and will satisfy the parking requirements. A formal agreement between Council and the landowner to the effect that the land intended for parking will not be sold without Council consent and/or a restriction on the title is required.*		
F4 Car Parking Space Dimensions		
1) Car parking spaces and aisle widths must be designed in accordance with Australian Standard 2890 *2) Parking spaces to be provided for disabled persons in accordance with Australian Standard 2890.* *3) Two way aisles are not recommended for parking angles other than 90 degrees. The most efficient parking is generally 90 degree parking with 2-way access aisles.* *4) The use of blind aisles is not permitted where the aisle is longer than 15 metres from the nearest circulation aisle, unless provision is made for cars to turn around at the end and drive out forwards. In blind aisles the end spaces must be made 1 metre wider than the adjacent spaces.* *5) Parking space dimensions and aisle widths must also be in accordance with the class of user, as identified in AS 2890.*	No	Not applicable. No additional car parking spaces are proposed.
F5 Manoeuvring, Loading & Unloading		
1) All commercial development must provide on-site loading and unloading facilities in designated loading bays. *2) Loading bays must be designed to cater for the needs of a particular development proposal, taking into consideration the type of development and the anticipated types of service vehicles..* *3) On-site loading and unloading facilities must comply with Australian Standard AS2890.* *4) Reference should be made to Australian Standard AS2890:Commercial vehicles facilities parking.* *5) The number and size of loading bays will be assessed by Council on the type and scale of the development proposal. The applicant must submit details of the estimated frequency of deliveries and the type of service vehicles proposed to be used.*	Yes	Given the size of the property and the nature of the industry, it is not considered that formal loading bays are required for the trucks delivering timber to or from the site. The trucks will park at a nominated location along the existing access track for the purpose of loading and unloading timber and timber products.

DCP Requirement	Relevance	Compliance
6) For small scale retail, commercial and industrial developments one loading bay, 3.5m x 7.5m, must be provided. *7) The use of loading bays must not conflict with the safe and efficient circulation of other vehicles and pedestrians.* *8) Loading bays must provide sufficient manoeuvring areas and allow all service vehicles to enter and leave the site in a forward direction.* *9) For large development, (determined by Council), loading bays should operate independently of other parking areas; i.e. separate access points.* *10) Service vehicles must be able to sufficiently manoeuvre to and from loading bays in accordance with AUSTROADS Design Vehicular and Turning Templates.* *11) Where redevelopment of existing premises is proposed, and the loading, unloading and manoeuvring provisions can not be met, Council may consider a variation to the DCP requirements where the applicant can demonstrate that public safety will not be compromised.*		
F6 Access to the Site		
Vehicle access *1) All vehicles must enter and leave the site in a forward direction. This requirement does not apply to dwelling houses.* *2) Access points are to be located where they cause the least interference to pedestrian and vehicle movement.* *3) The width and location of access driveways must be in accordance with the requirements of AS 2890. Also consult the NR Design Manuals.* *4) Access points must not be closer than 6 metres to an intersection measured from the property boundary.* *5) The location of new entry/exit points must achieve a minimum of potential conflict with existing access points.* *6) Where more than 50 parking spaces are required, or a high traffic turnover is likely, e.g. Service stations, a separate entrance and exit are to be provided.* *7) Where access is to the development site is possible from a road other than a main or arterial road, then this access is to be used.* *8) The potential for on-street queuing should be eliminated by providing an adequate standing area within the car park.* *9) At entry and exit points, the ramp or access driveway should be graded to minimise problems associated with crossing the footpath and entering the traffic in the frontage road.* *10) The maximum gradient on ramps or access driveways must be 1 in 20 (5%) across the property line or at the building alignment and for at least the first 6 metres into the car park.* *11) All gradients of car parking surfaces, ramps and access driveways must be in accordance with AS 2890 Also consult the NR Design Manuals.*	Yes	The subject site has direct access to Banana Road with the existing gate being located 40.1m from the western side boundary. The existing access and internal accessways allow for all vehicles to enter and exit the site in a forward direction. The existing internal access is a minimum 4m wide. No change to this access is proposed.

DCP Requirement	Relevance	Compliance
Sight Distances *12) Design of parking areas and vehicle access must ensure that there is adequate sight distances to traffic on the frontage road and to pedestrians on the frontage road footpath.* *13) The minimum sight distances must be in accordance with AS2890.1 – Off-Street Car Parking, Figure 3.2.* *Pedestrian access* *14) Adequate pedestrian access to the site is required.*		
F7 Car Park Design		
Design and Safety *1) Car parks must be designed to provide a safe environment for users. The design of the car park and surrounding landscape should provide clear sightlines into and throughout the car park.* *2) The layout of the car park should make it easy to enter, leave and drive around the parking area. The design should minimise the probability of vehicle/vehicle conflict and vehicle/pedestrian conflict.* *3) Parking areas must be designed to reflect the specific requirements of the particular development proposal, the nature of the existing and anticipated surrounding development and the characteristics of the site.* *4) A parking area should be integrated into the development so that it does not dominate the streetscape. This can be achieved by appropriate design and landscaping.* *Parking directions and signs* *5) Parking spaces should be clearly line marked and signposted where appropriate.* *6) Where designated car spaces are provided, such as, visitor and disabled persons parking signposting must clearly indicate these spaces.* *7) Arrow marking on the surface of aisles and driveways should be used to indicate the circulation pattern and whether one-way or two-way movement.* *8) Car park entries and exits must be clearly marked.* *Lighting and ventilation* *9) Covered or enclosed car parks must have adequate lighting and ventilation, preferably by natural means.* *10) Where car parks are to be used at night, adequate artificial lighting must be provided for the whole parking area.*	No	Not applicable. No additional car parking spaces are proposed.
F8 Pavement Construction		
1) All parking areas must be constructed with a base course pavement of an adequate depth to suit the type of expected traffic, both number and type of vehicles.	No	Not applicable. No additional car parking spaces are proposed.

DCP Requirement	Relevance	Compliance
2) All parking areas must be surfaced with either two coat bitumen seal, asphaltic concrete, concrete or interlocking pavers. *3) All vehicle crossings are to be constructed in concrete or interlocking pavers.* *4) For dwelling houses in rural zones F8.2 and F8.3 do not apply, pavement construction and vehicular crossing requirements will be determined in relation to expected traffic.* *5) In choosing the pavement type suitable for the proposed development the following factors should be considered:* *a) anticipated vehicle volumes and types:* *b) Run-off gradients and drainage requirements.* *c) Construction constraints.* *d) California Bearing Ratio (CBR) of subgrade (natural soil).* *6) Pavement thicknesses for parking areas will be assessed on a site specific basis and must be to the satisfaction of Council.* *7) Parking areas surfaced with bitumen or asphaltic concrete are to be designed and constructed in accordance with the Northern Rivers Development and Design Manual Sections D1 and D2.* *8) Concrete interlocking paver parking areas and vehicle crossings are to be designed and constructed in accordance with guidelines published by the Cement and Concrete Association of Australia.*		
F9 Car parking on flood liable		
Basement level car parking on flood liable land will need to be justified. This justification will need to address the need for pumps and protection from inflow waters based on design flood levels.	No	Not applicable. No additional car parking or basement parking is proposed.
F10 Traffic impact on large-sale development		
Large scale development or development located on land adjacent to a classified road may require a Traffic Impact Assessment prepared in accordance with the RTA Guidelines for Traffic Generating Development. *For details refer to the Infrastructure SEPP 2007, Division 17 Roads and traffic, Subdivision 2 Development in or adjacent to road corridors and road reservations.* *Traffic–generating development may require referral to the Roads and Traffic Authority (RTA).*	No	Not applicable. The proposal is for a small-scale sawmill operation with access from a local no-through road.
Part G – Sustainable Water Controls **G2 What type of development must comply with Sustainable Water controls?**		
'Sustainable water controls' apply to: *a. All new development, other than dwelling houses and dual occupancies.* *b. Additions to development other than residential development, where the cumulative increase in the roofed and/or impervious area is equal to or greater than 150m2 or is a 50% or greater increase in the roofed and/or impervious area.* *c. All subdivisions except:*	Yes	The development proposed is not a dwelling house or dual occupancy, therefore Part G of the CVDCP 2011 applies.

DCP Requirement	Relevance	Compliance
i. *where no additional lots are created;* ii. *strata subdivisions;* iii. *where no road or stormwater drainage works are required;* iv. *or* v. *where lots are greater than 1 hectare.*		
G3 What Sustainable Water Controls apply?		
All development specified in G2 must meet the following requirements: a. *Installation of 3 Star rated fixtures, as required by clause G4.* b. *Compliance with 'sustainable water requirements' as specified in TABLE G1.* c. *For subdivision compliance with water quality targets, as specified in TABLE G2, or Council may specify water quality targets which vary from those default performance targets where the activity represents an increased risk of threat to water quality. For other types of development Council will apply other appropriate water quality targets in use.*	Yes	The proposal does not include the installation of any additional fixtures. Table G1 indicates that the development is required to comply with 1 – Development with no increase in impermeable surface post development or Subdivision under 5 lots. Given that there is no increase to impervious areas on the site, it is considered that the minor increase in stormwater runoff will be captured on the site and re-used as part of the operations as per the existing arrangements.
Part H – Erosion and Sediment Control **H2 What development does the erosion and sediment controls apply to?**		
The erosion and sediment controls of this DCP apply to all building works and subdivision that has the potential to involve the: a. *Disturbance of the soil surface or placement of fill on a site, which will change the natural contours of the land; Or* b. *Change in the rate and/or volume of runoff flowing from or land, or directly or indirectly entering a watercourse.*	Yes	Noted.
H3 Erosion and Sediment Control Plans OR 'Deemed to Comply Statements'		
Either an Erosion and Sediment Control Plan (ESCP) or a Deemed to Comply Statement must be submitted with a Development Application. *An Erosion and Sediment Control Plan (ESCP) is a document/plan which details control measures to be implemented on a site to minimise the potential for erosion and sedimentation to occur.* *Clause H6 Principles of Erosion and Sediment Control and clause H7 General Erosion and Sediment Controls must be used when preparing an Erosion and Sediment Control Plan (ESCP) for a site.* *An ESCP can vary from a simple standard sketch with accompanying notes for minor activities to complex engineering plans and associated documentation for major activities.* *The detail required will depend on the scale of the proposed development. Council officers are available for advice if required.* *See clause H5 for 'deemed to comply requirements'.* *The conditions of consent that are to be applied to Development Applications that include building works are listed in clause H8 and for*	Yes	An Erosion and Sediment Control Plan & Checklist has been prepared, refer **Attachment 5**. The Plan and Checklist demonstrate the operator's commitment to minimise erosion and sediment leaving the site and entering nearby watercourses.

DCP Requirement	Relevance	Compliance
conditions for subdivision creating more than 2 lots see clause H9. *TABLE H1 identifies what type of ESCP is required.* *Any request to vary the erosion and sediment control requirements must be in writing and must be justified.* *A copy of an example 'standard' ESCP is provided as SCHEDULE H1.*		
H4 Erosion and Sediment Control Plan (ESCP) Requirements		
An ESCP must be approved and measures installed before commencement of any site works. *The following steps should be taken in preparation of an effective erosion and sediment control plan:* *1) Investigate site characteristics, (slope, soil types, etc.)* *2) Integrate clearing and grading with site layout design.* *3) Determine existing and proposed drainage patterns.* *4) Select erosion control practices.* *5) Select sediment control practices.* *6) Outline site rehabilitation program.* *A detailed ESCP, i.e. not a 'standard' ESCP, must be prepared by a person with suitable qualifications, experience and a demonstrated knowledge of water and soil management.* *The degree of detail submitted to Council with an ESCP depends on the scale of the proposal, the complexity of the site characteristics and the potential environmental impact. See TABLE H1.* *A 'detailed' ESCP must include the following:* • *Plan(s).* • *Supporting information.* • *Construction details, calculations and notations.*	Yes	As above, an Erosion and Sediment Control Plan & Checklist has been prepared, refer **Attachment 5**. The Plan and Checklist demonstrate the operator's commitment to minimise erosion and sediment leaving the site and entering nearby watercourses.
H5 Deemed to Comply Requirements		
Applicants who choose to utilise the Deemed to Comply option are not required to submit an ESCP but must instead submit a signed Deemed to Comply Statement to Council stating that the following requirements will be met. *1) All erosion and sediment control measures are to be installed prior to the commencement of any work, including cutting and filling.* *2) All sediment control measures are to be constructed to prevent sediment from leaving the site or entering downstream properties, drainage lines or watercourses.* *3) Disturbance of the site must be minimised.* *4) A properly installed sediment control fence must be installed at the downslope perimeter of the disturbed area to prevent sediment and other debris from leaving the site. Sediment fencing is to be trenched in at least 150mm and buried and the ends turned upslope.* *5) Where the catchment area is more than 0.5 ha direct, up slope runoff around the site, by the use of a diversion bank or channels. These devices may require measures to control erosion depending on the volume of flow anticipated.*	Yes	This is not applicable, as an Erosion and Sediment Control Plan has been prepared for the development, refer **Attachment 5**.

DCP Requirement	Relevance	Compliance
6) Vehicular access is to be restricted to one stabilised access point which is to be constructed of 40mm crushed stone aggregate or recycled concrete 150mm deep, 2.5m wide and extend from the kerb line to the slab or building line or for at least 15m on rural allotments. *7) Stockpiles of erodible materials (sand, soil, spoil and vegetation) must be protected by a sediment fence or bund. If the stockpile area is prone to high winds or is to be there for a long time then the stockpile must be covered.* *8) Stockpiled material must be stored clear of any drainage line and within the property boundary. NOTE: stockpiles are not permitted on footpaths or roads.* *9) Immediately following installation of the roof cladding, all guttering and downpipes are to be connected to the stormwater system. Inspection of the frame is not to be arranged until this is completed.* *10) All erosion and sediment control measures are to be regularly maintained in good working order at all times and inspected for adequacy following any rainfall event.* *11) All trenches within the development site are to be backfilled and compacted to a level of 75mm above adjoining ground level. This may not apply on public land, consult with Council staff.* *12) All disturbed areas are to be made erosion resistant by revegetation (i.e. min. 70% coverage), turfing or stabilised by paving on completion of the works and prior to occupation and/or use of the building.* *A copy of the Deemed to Comply Statement is included as SCHEDULE H2*		
Part J – Advertising and Advertising Structures **J2 Advertising structures not requiring development approval**		
The objectives for advertisements and advertising structures in rural zones: *(a) To ensure that advertising complements the development on which it is displayed and the character of the surrounding locality.* *(b) To ensure that the number of advertisements and advertising structures does not lead to 'visual clutter'.* *(c) To ensure that advertising does not have an adverse affect on an area, due to size, appearance and illumination.*	Yes	The proposal includes a Business Identification sign located on the side of the Dry Kiln Shipping Container along Banana Road, see **Attachment 1**. The sign is 4m x 4m and will be constructed of non-reflective materials. The signage will complement the rural environment in which it sits by the usage of appropriate colours and materials.
J2 Advertising structures not requiring development approval		
Building identification signs and business identification signs are permitted in rural zones without consent. *Advertising structures and signs that meet the exempt development criteria in clause 3.1 of the CV LEP 2011 and meet the exempt development standards in Schedule 2 of the LEP do not require development consent.* *Exemptions for signage also apply under the Codes SEPP, i.e. State Environmental Planning policy (Exempt and Complying Development Codes) 2008.*	No	The proposal includes a Business Identification sign located on the side of the Dry Kiln Shipping Container along Banana Road, see **Attachment 1**. The sign is 4m x 4m and will be constructed of non-reflective materials. The sign is not considered to be exempt development under Clause 2.85 of the SEPP (Exempt and Complying) 2008, therefore the applicant requests Council

DCP Requirement	Relevance	Compliance
		consider the signage as part of this application.
J3 Assessment of development applications for advertisements and advertising structures		
A development application for an advertisement and /or advertising structure will be assessed under the criteria set out in SCHEDULE J1, in line with the provisions of SEPP 64 (State Environmental Planning Policy No 64-Advertising and Signage). *Development consent for an advertisement and /or advertising structure will not be granted unless the impact of the advertisement and /or advertising structure is assessed by Council as to be acceptable in terms of the criteria in SCHEDULE J1.* *Where the Development Application is for an advertising structure, a Construction Certificate will be required to be obtained.*	Yes	The proposal includes a Business Identification sign located on the side of the Dry Kiln Shipping Container along Banana Road, see **Attachment 1**. The sign is 4m x 4m and will be constructed of non-reflective materials. The signage will complement the rural environment in which it sits by the usage of appropriate colours and materials and being affixed to a building/structure.
J4 Above awning advertisements		
J4.1. Advertisements must be carefully designed for the building on which they are to be displayed and must be appropriate in terms of style, detail and colour. *A development application is required for advertisements to be positioned above the awning of a building. The advertisement is to be attached to the building itself within structural elements, such as pediments, gables, or horizontal panels below the cornice of the building.*	No	Not applicable.
J5 Pole Signs		
Pole or pylon advertising structures and associated advertisements require the submission and approval of a development application. These will be assessed on their merits. *Council will specifically consider the impact of the structure on the amenity of the locality, the size, shape and scale of the proposed advertisement and height of the structure in comparison to buildings located on and around the subject land.* *The advertising structure and advertisement must be wholly located within the boundary of the subject land.*	No	Not applicable.
J6 Advertisements and advertising structures fronting classified roads		
All advertisements and structures fronting classified roads require the approval of a development application.	No	Not applicable. The site does not front a classified road.
Part R – Controls for Biodiversity and Habitat Protection **R1 Where do controls for biodiversity and habitat protection apply?**		
The biodiversity and habitat controls apply to land likely to have existing native vegetation in the Clarence Valley LGA in the following zones:	Yes	The subject site is zoned as RU2 Rural Landscape and therefore the biodiversity

DCP Requirement	Relevance	Compliance
• *RU1 Primary Production.* • *RU2 Rural Landscape.* • *R5 Large Lot Residential.* • *IN1 General Industrial* • *IN4 Working Waterfront.* • *SP1 Special Activities.* • *SP2 Infrastructure.* • *SP3 Tourist.* • *RE1 Public Recreation.* • *RE2 Private Recreation.* • *E2 Environmental Conservation.* • *E3 Environmental Management.* • *W1 Natural Waterways.* • *W2 Recreational Waterways.* • *W3. Working Waterways.*		and habitat controls of this part of the CVDCP 2011 apply.
R4 Biodiversity planning principles		
Development proposals are to be consistent with biodiversity principles listed below: *A. The 3 principles of Ecologically Sustainable Development are to be followed in the implementation of this plan:* *1) The precautionary approach* *2) Inter-generational equity* *3) Conservation of biodiversity and ecological integrity* *B. Development should be consistent with overarching biodiversity strategies.* *Development should be consistent with, and contribute to targets, set out in the CVC Biodiversity Management Strategy 2010 the North Coast Biodiversity Management Plan and NSW and Commonwealth biodiversity strategies and legislation.* *C. Development should maintain or improve vegetation condition.* *The carrying out of development should maintain or improve the extent of vegetation cover throughout the Clarence Valley LGA. Clearing must be minimised and will only be permitted where satisfactory arrangements have been made for provision of compensatory habitat.* *D. Habitat retention is the first priority.* *Prevention of habitat loss and degradation from development is the first priority and is significantly more cost-effective and less risky than recovery and restoration actions. Key habitats for threatened or significant fauna must be retained. High conservation value habitats must be retained.* *E. Environmental impacts should be avoided at the source.* *Priority should be given to avoidance of impacts at their source, whether through the redesign of a project or by regulating the timing or location of activities. If it is not possible to avoid significant impacts, opportunities should be sought to reduce the impacts, ideally to the point that they are no longer significant or where absolutely necessary and technically feasible, biodiversity loss can be offset.* *F. Development should not contribute to habitat fragmentation.* *In general, larger, less disturbed and better-connected natural areas are more likely to retain a higher degree of biodiversity in the*	Yes	There are no areas on the site which are heavily vegetated or mapped areas of biodiversity value, refer **Figure 5**. No mature vegetation or trees are proposed to be removed as part of the development. The proposed structures will be constructed on highly disturbed areas on the site with little habitat or biodiversity values. Therefore, environmental impacts will be avoided.

DCP Requirement	Relevance	Compliance
long term. Development proposals should not contribute to habitat fragmentation. *G. Endangered Ecological Communities must be retained Ecological communities listed as endangered must be retained.* *H. Measures should be taken to mitigate edge effects and other threats to small patches of retained habitat. Small isolated patches of habitat are often vulnerable to edge effects and other threats from the adjacent landscape. However such areas commonly support a wide range of native species, represent examples of communities that have been disproportionately cleared, provide refuge habitat and "stepping stones" for fauna and flora to disperse across the landscape.* *I. Indirect impacts on biodiversity should be avoided. Indirect impacts of development on biodiversity must be minimised and effectively mitigated.* *J. Degraded habitat forming part of a development site should be rehabilitated. Degraded habitats that are not part of the development footprint should be rehabilitated.* *K. The costs of ongoing management of biodiversity values should be met by the development.*		
R5 Site investigation and analysis		
R5.1 How to determine your development footprint *This part of the DCP provides for the assessment of native vegetation and habitat by means of a Baseline Ecological Assessment and potential impacts of proposed development on habitat – refer to the various Biodiversity themes (Clause R6). It also introduces the concepts of:* *i. The development footprint of proposed development ; and* *ii. Threshold (including threshold category and threshold criteria) in relation to the development footprint.* *A Baseline Ecological Assessment in accordance with Section 1 of the Biodiversity Information for Applicants (BIFA) will normally be required if the development footprint affects native vegetation. The site investigation and analysis shall classify the habitat of the development footprint based on the findings of the ecological assessment and the criteria or thresholds outlined in Clause R6 and tables 1 to 7 as being an area that is either:* • *Green flag area - area that can be developed (least impact).* • *Amber flag areas – areas with low conservation value where development can occur with identified impacts minimised and any loss of habitat offset* • *Red flag areas - areas with high conservation value status where retention of habitat is essential* *In general, Green flags represent areas such as cleared land with little or no native vegetation*	Yes	The footprint for the proposed structures is 360m^2 and a preliminary assessment of the development sites in accordance with Tables 1 through 7 of this part of the CVDCP 2011 indicates that the area is classified as green flag areas. Therefore, no further investigation is required.

DCP Requirement	Relevance	Compliance
and have no specific requirements for habitat retention or protection. *Amber flags indicate lands or types of habitat with relatively low condition vegetation where the impact of development is considered sustainable if impacts on biodiversity are minimised and offset (within or outside of the development site). In such cases, the proponent should consider reducing the extent of habitat loss by revising the* *Development Footprint but may proceed on the basis of offsetting the proposed loss in accordance with the Biodiversity Offsets Policy.* *Red flag areas represent areas of high conservation value that must be retained, protected and managed.*		
R5.1A Baseline Ecological Assessment Exemptions *Notwithstanding R5.1, Council will not require a Baseline Ecological Assessment to be submitted with a development application for a single dwelling in the following circumstances:* *1) The allotment is vacant* *2) The allotment has a dwelling eligibility* *3) The dwelling is sited as such to minimise any clearing required to meet bushfire asset protection and other planning requirements* *4) All reasonable opportunities are taken to off-set on site any native vegetation removal that is required.*	No	Not applicable.
R5.2 Summary of broad steps *The following is a summary of the main steps in relation to the biodiversity controls for undertaking development in areas of native vegetation and associated habitat.* *Step 1 – determine if a proposed development is in a "green flag" area. If so no further assessment of biodiversity required under this DCP.* *Step 2 – where Native vegetation will be impacted by the proposed development complete Baseline Ecological Assessment and determination of development footprint process having regard to the applicable biodiversity theme tables featured in Clause R6 of the DCP.* *The proposed development and site should be assessed against the applicable biodiversity theme tables featured in Clause R6 of the DCP to determine the threshold. Refer also to Section 1.1.2 of the BIFA guidelines.* *Step 3 – plan/prepare development application in accordance with Clause R7 and Table 8.*	Yes	A preliminary assessment of the development sites in accordance with Tables 1 through 7 of this part of the CVDCP 2011 indicates that the area is classified as green flag areas. Therefore, no further investigation is required.
R6 Biodiversity Thresholds		
Development must comply with biodiversity thresholds in TABLES 1 to 7 inclusive. *The following biodiversity themes are included in TABLES 1 - 7.* *1. Bushland* *2. Wildlife corridors* *3. Threatened and significant fauna* *4. Koala habitat* *5. Flying fox camps* *6. Threatened and significant flora*	No	Not applicable, see Part R5.2 above.

DCP Requirement	Relevance	Compliance
7. Waterways and riparian areas		
R7 Development design and preparation of a development application		
The following section outlines what is required once the site analysis and classification of the habitat within the development footprint into Green, Amber or Red has been undertaken. *Information to be submitted at the development application stage is specified in TABLE 8.* *For proposals that do not trigger any red or amber flags in the biodiversity themes specified in TABLES 1 - 7 only a minor environmental impacts statement, site plan and aerial photo is required.* *This part of the DCP endeavours to ensure a consistent approach to conserving ecological values. Providing the information outlined will enable council to determine if the proposed development meets the aims of the CVLEP 2011.* *All development applications must include and submit the information outlined in table 8 to show how the proposal is consistent with the biodiversity theme controls in TABLES 1 - 7.* *You will need to consult the following guidelines;* *1) CVC Baseline Ecological Assessment Guidelines.* *2) CVC Threatened and Significant Flora and Fauna Species Assessment and Management Plan Guidelines.* *3) CVC Biodiversity Offsets Policy Guidelines.* *4) CVC Biodiversity Offset Management Plan Guidelines.* *5) CVC Habitat Restoration Plan Guidelines.* *In cases where complex issues arise or where further clarification is required Council staff should be consulted before submitting a Development Application.*	No	Not applicable, see Part R5.2 above.

3.4 INTEGRATED DEVELOPMENT

The following table (**Table 3**) provides an assessment of the development against the integrated development provisions in Section 4.46 of the Environmental Planning & Assessment Act 1979. Where the development is identified as integrated development, it is discussed in further detail underneath the table.

Table 3: Consideration of Integrated Development Provisions

Act	Provision	Approval	Relevant
Coal Mine Subsidence Compensation Act 2017	s 22	Approval to alter or erect improvements, or to subdivide land, within a mine subsidence district	No
Fisheries Management Act 1994	s 144	aquaculture permit	No
	s 201	permit to carry out dredging or reclamation work	No
	s 205	permit to cut, remove, damage or destroy marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease	No
	s 219	permit to: a) set a net, netting or other material, or b) construct or alter a dam, floodgate, causeway or weir, or c) otherwise create an obstruction, across or within a bay, inlet, river or creek, or across or around a flat	No
Heritage Act 1977	s 58	approval in respect of the doing or carrying out of an act, matter or thing referred to in s 57 (1)	No
Mining Act 1992	ss 63, 64	grant of mining lease	No
National Parks and Wildlife Act 1974	s 90	grant of Aboriginal heritage impact permit	No
Petroleum (Onshore) Act 1991	s 16	grant of production lease	No
Protection of the Environment Operations Act 1997	ss 43 (a), 47 and 55	Environment protection licence to authorise carrying out of scheduled development work at any premises.	No
	ss 43 (b), 48 and 55	Environment protection licence to authorise carrying out of scheduled activities at any premises (excluding any activity described as a "waste activity" but including any activity described as a "waste facility").	No

Act	Provision	Approval	Relevant
	ss 43 (d), 55 and 122	Environment protection licences to control carrying out of non-scheduled activities for the purposes of regulating water pollution resulting from the activity.	No
Roads Act 1993	s 138	consent to: (a) erect a structure or carry out a work in, on or over a public road, or (b) dig up or disturb the surface of a public road, or (c) remove or interfere with a structure, work or tree on a public road, or (d) pump water into a public road from any land adjoining the road, or (e) connect a road (whether public or private) to a classified road	Yes
Rural Fires Act 1997	s 100B	authorisation under section 100B in respect of bush fire safety of subdivision of land that could lawfully be used for residential or rural residential purposes or development of land for special fire protection purposes	No
Water Management Act 2000	ss 89, 90, 91	water use approval, water management work approval or activity approval under Part 3 of Chapter 3	No

Roads Act 1993 - s 138:
Clarence Valley Council is the approval body for Banana Road. An approval is required under Section 138 of the Act to:

(a) erect a structure or carry out a work in, on or over a public road, or
(b) dig up or disturb the surface of a public road, or
(c) remove or interfere with a structure, work or tree on a public road, or
(d) pump water into a public road from any land adjoining the road, or
(e) connect a road (whether public or private) to a classified road

Comment: The Section 138 approval will be obtained for the development, specifically the roadside stall, prior to the issue of a Construction Certificate.

4. ASSESSMENT OF ENVIRONMENTAL IMPACT

The proposal is for a small-scale rural industry (sawmill), run by a local family and is considered to have minimal environmental impact as further detailed in this section of the Statement of Environmental Effects.

4.1 HERITAGE

There are no European or Aboriginal Cultural Heritage items located on the site or in the vicinity of the site. An Aboriginal Heritage Information Management System (AHIMS) search was conducted on 20 March 2023 (refer to **Attachment 8**) and confirms there are no Aboriginal places or sites located on, or within 200 metres of the subject site.

4.2 ACCESS AND TRAFFIC

The subject site has direct access to Banana Road which is a gravel, all-weather local road. There are no proposed amendments to the existing access that the subject site currently utilises from Banana Road which offers sufficient sightlines in both directions.

4.3 VEGETATION

The site is highly disturbed, contains no significant vegetation and has some scattered mature trees and is currently maintained for rural use. There is no proposal to remove any of the mature vegetation located on the site for the development.

4.4 BUSHFIRE

The site contains bushfire prone land; containing Category 1 Vegetation and Vegetation Buffer, refer to **Figure 8**. As discussed with Council Officer, Mr Chris Dear, a Bushfire Assessment Report is being prepared and will be provided during the assessment phase of this application.

4.5 FLOODING

CVLEP 2011 mapping indicates that the subject site sits outside of the flood planning area, however, is inside the probable maximum flood line. The proposed development is not for one of the purposes listed in the CVLEP 2011, nor is it for a habitable structure and therefore no further investigation is required.

4.6 AIR AND NOISE

This development will have a minimal increase on the noise generated within the immediate vicinity of the site. Noise Monitoring Assessments were undertaken in April 2022 and March 2023, refer **Attachment 3.** The report indicated that with minimal mitigation measures, including the siting of the work areas, enclosing two sides of the sawmill shelter and sound absorbing material to the ceiling and walls of the shelter, the proposal can stay within the maximum noise levels required within the rural residential area that it sits within.

4.7 Soil and Stormwater Management:

Soil conditions in general will not be detrimentally affected at this site by the development, including the associated construction works. Sediment and erosion control measures will be put into place during the construction phase, and the operators have shown their commitment to this by the preparation of a Sediment and Erosion Control Plan and Checklist, refer to **Attachment 5**. Any disturbance of soil will be contained within the respective property boundaries of the site.

There is expected to be a negligible increase in stormwater runoff. Any stormwater overflow will be managed and re-used onsite as per the current arrangements.

4.8 Waste Management

There will be minimal waste generated from the approval of the development. A designated waste storage area will be erected and remain in place until construction works have ceased. Hard waste will be separated on site and removed by appropriate contractors for recycling. In contrast, soft waste will be disposed of through appropriate waste management facilities.

Refer to Site Waste Minimisation Management Plan in **Attachment 8** for further details.

4.9 Social & Economic Impacts

The development is not expected to have an adverse social impact on the locality. The surrounding area is predominantly used for agricultural and rural residential purposes and the addition of a rural industry complements the character of the area.

The proposal will result in positive economic impacts within Mororo and surrounding areas. The proposal will help to support the local economy through the operation of a small scale timber sawmill.

4.10 Site Suitability

The site is suitable for the proposed development for the following reasons:-

- it is zoned RU2 Rural Landscape. The proposal for a rural industry and roadside stall is permissible within this zone and is a compatible land use;
- it contains no items or sites of heritage or cultural significance;
- it does not threaten flora and fauna species;
- it is readily serviced by essential utilities, including:
    - o electricity;
    - o telecommunications; and
    - o stormwater drainage.

4.11 Public Interest

The proposal is likely to result in positive social and economic impacts, with minimal impact on the surrounding environment. The development generally complies with the applicable

legislation and planning controls for development in the RU2 zone. The development is therefore considered to be in the public interest, as outlined in this report.

5. CONCLUSION

The proposal involves the construction of new shelter structures to allow for the operation of a rural industry (sawmill), along with a small roadside stall for the sale of timber products, fruit, vegetables and eggs.

The proposal is consistent with the objectives of the RU2 Rural Landscape zone of the CVLEP 2011, as it provides a suitable business operation and respects the amenity and character of the surrounding locality.

Furthermore, the proposal complies with the controls within the CVDCP 2011.

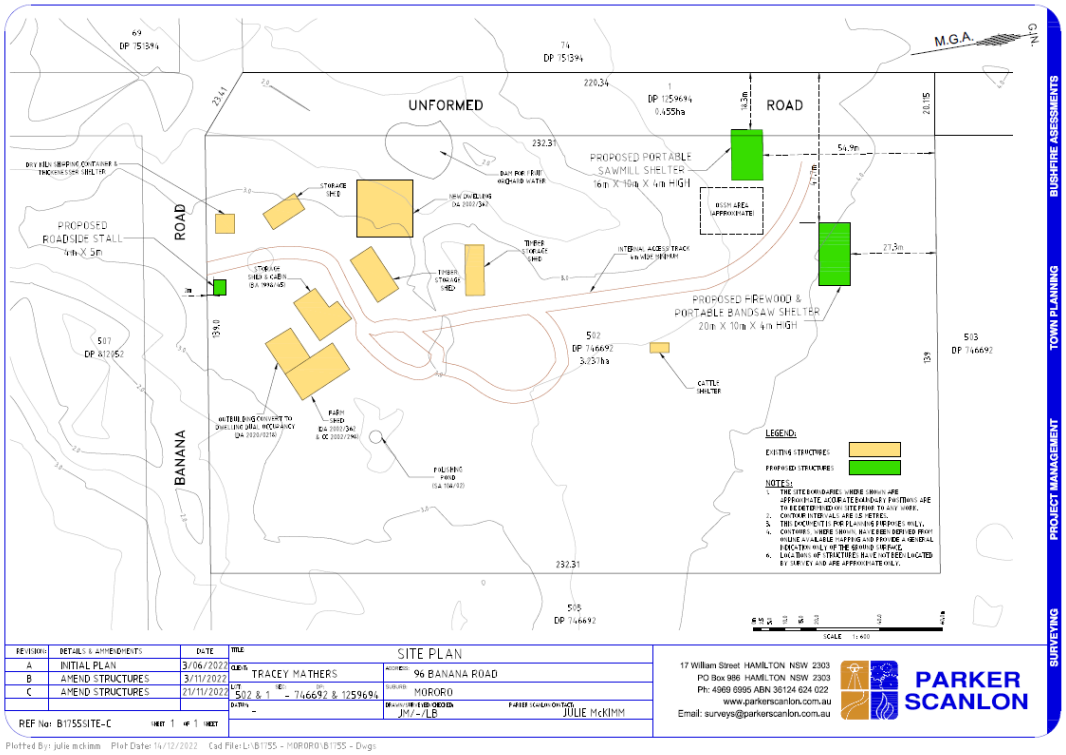
In summary, the proposal is: -

- an orderly development of the land, in accordance with the objectives of the EP&A Act;
- unlikely to have detrimental environmental or social impacts;
- likely to generate positive short term, and facilitate long term economic impact;
- reinforces an appropriate land use in the locality;
- able to be undertaken in a controlled manner with minimal environmental impacts;
- not likely to create any land use conflicts; and
- not likely to adversely impact upon the amenity of the locality.

Therefore, Council is encouraged to approve the development, subject to appropriate conditions of consent.

6. ATTACHMENTS

Attachment 1: Site Plan



PARKER SCANLON

Attachment 2: Clarence Valley Council Correspondence

clarence VALLEY COUNCIL

Reference: EP&A2022/0002
Contact: C. Landers

12 April 2022

T A Mather
PO Box 10
HARWOOD NSW 2465

Under Division 9.3 and Schedule 5 of the Environmental Planning and Assessment Act 1979
ORDER NUMBER 1

Property: **96 Banana Road MORORO NSW 2469**
Lot 502 DP 746692

Details of the Order:
We refer to a Notice dated 10 March 2022 advising you of Council's intention to issue you with an Order under the *Environmental Planning and Assessment Act, 1979*.

We have fully considered all matters and the representations received by your representative Lisa Blandford of Parker Scanlon dated 23 March 2020.

COUNCIL ORDERS YOU:

1. Not to conduct or to stop conducting sawmill or log processing works activities on the premises.

Compliance Time
This Order must be complied with within thirty (30) days of its service on you.

Reasons for this Order
The reasons for this Order are:

1. Development consent is required for a sawmill or log processing works but has not been obtained.
2. A sawmill or log processing works is defined as a type of rural industry which requires development consent within the RU2 Rural Landscape zone under the *Clarence Valley Local Environmental Plan 2011*.

Non-Compliance
Failure to comply with this Order is an offence.

The maximum penalty for this offence is:
1) In the case of a corporation:
   a) $2 million, and

Locked Bag 23 GRAFTON NSW 2460
ABN 85 864 095 684 p 02 6643 0200 w 02 6642 7647 e council@clarence.nsw.gov.au w www.clarence.nsw.gov.au

b) for a continuing offence – a further $20,000 for each day the offence continues, or

2) In the case of an individual:
   a) $500,000, and
   b) For a continuing offence – a further $5,000 for each day the offence continues.

A penalty infringement notice may also be issued to you if you fail to comply with this Order. The prescribed penalty is:

1) In the case of a corporation:
   a) $6,000, or
2) In the case of an individual:
   a) $3,000.

Appeal
You may appeal to the Land and Environment Court, under section Division 9.3 of the Act, against the Order or a specified part of the Order within twenty-eight (28) days after the service of this Order on you.

Authority for Order
This order has been issued under delegated authority from Council.

If you require further information, please contact Council's Development and Land Use Planning section on (02) 6643 0200.

Yours faithfully

Murray Lane
Manager Development and Land Use Planning

PARKER SCANLON

Attachment 3: Noise Monitoring Assessment

Ambience Audio Services

Acoustical Measurement and Analysis

15 Tamarind Close
Richmond Hill NSW 2480
ambienceaudio.com.au
Phone: 0429 405 070

Results and Assessment of Noise Monitoring
Banana Road Timbers
96 Banana Road
Mororo NSW 2469

Prepared for

P & T Mather
96 Banana Road
Mororo NSW 2469

Document Control						
Rev. No	Date	Prepared By	Reviewed By	Approved for and behalf of AAS		Notes
0	09/04/2022	Garry Hall	Garry Hall	Garry Hall		Measurement and assessment of machinery noise levels
Draft	16/03/2023	Garry Hall	Garry Hall	Garry Hall		Inclusion of background noise monitoring, machinery noise levels
Final	18/03/2023	Garry Hall	Garry Hall	Garry Hall		

LIMITATION

This report has been conducted specifically for the sawmilling operations at 96 Banana Road Mororo. The results are specific to the measured background noise levels, the measured machinery noise levels, location and layout of the building containing the sawmilling equipment, and the location of the closest affected residential dwellings. The results and recommendations are not to be relied upon for any other situation.

PARKER SCANLON

Attachment 4: Services and Infrastructure

BEFORE YOU DIG www.byda.com.au

Job No 32074169

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Christine Nicholson	**Caller Id:**	3004774	**Phone:**	(02) 4969 6995
Company:	Not supplied				
Address:	17 William Street Hamilton NSW 2303	**Email:**	christine.nicholson@parkerscanlon.com.au		

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

User Reference: Job B1755
Working on Behalf of: Private
Enquiry Date: 02/06/2022
Start Date: 06/06/2022
End Date: 06/06/2022
Address:
96 Banana Road
Mororo NSW 2469
Job Purpose: Excavation
Onsite Activities: Manual Excavation
Location of Workplace: Private
Location in Road:

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Not supplied

Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.1100.com.au**
- **For more information on safe excavation practices, visit www.1100.com.au**

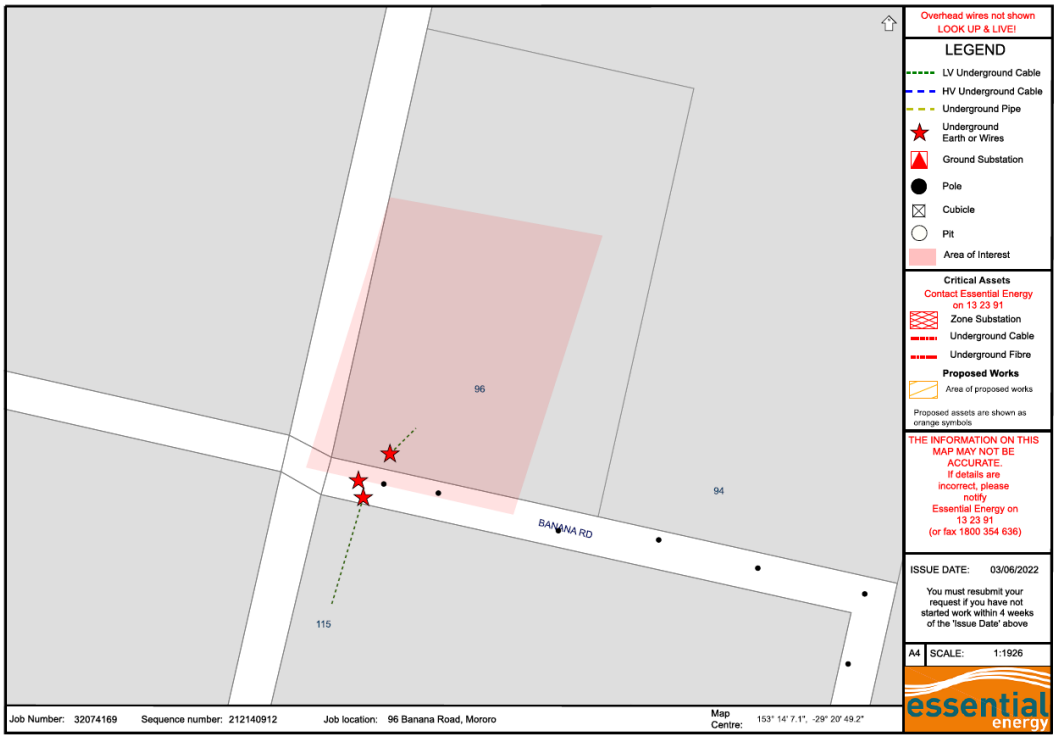
Asset Owner Details

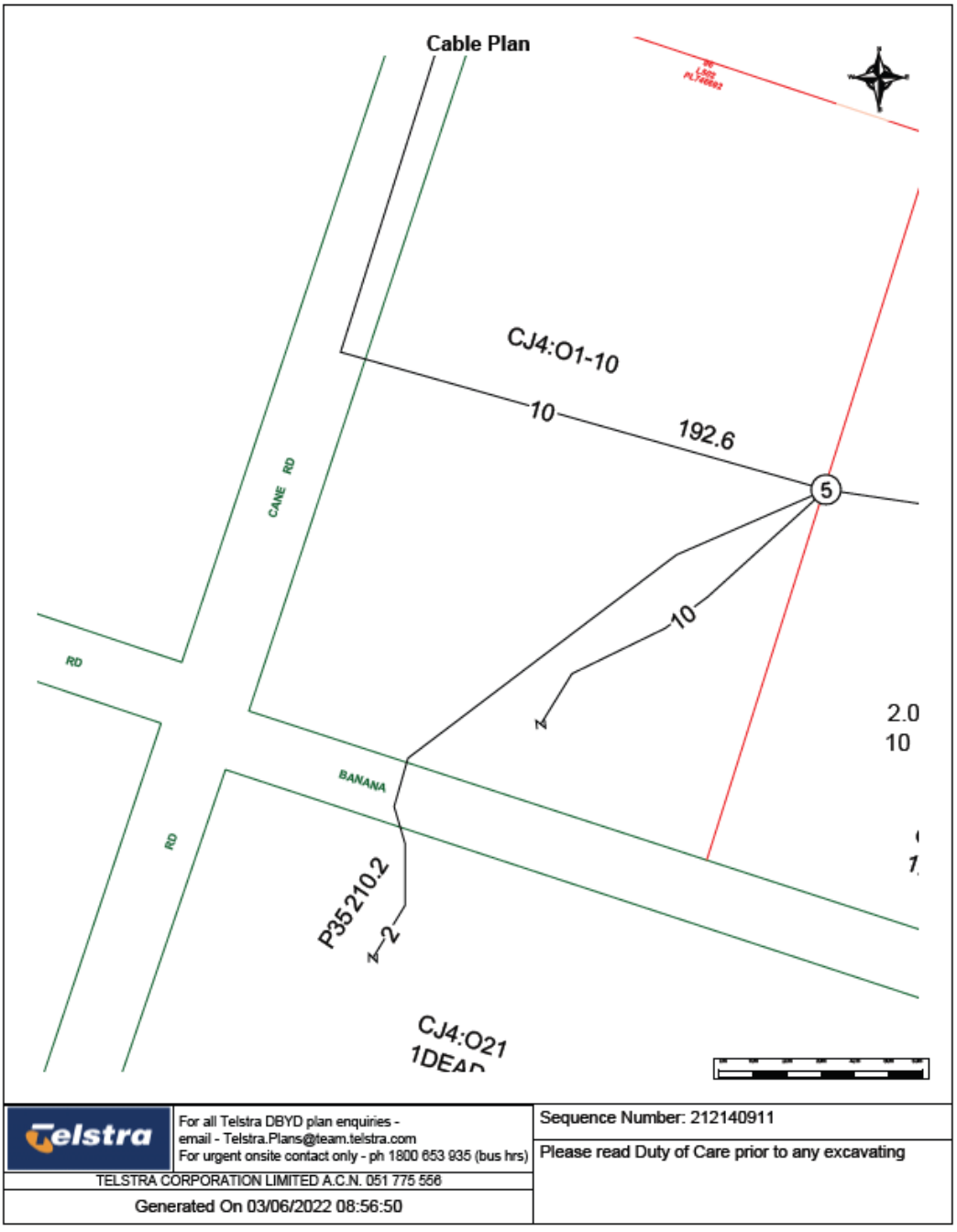
The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash # require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
212140912	Essential Energy	13 23 91	NOTIFIED
212140911	Telstra NSW North	1800 653 935	NOTIFIED

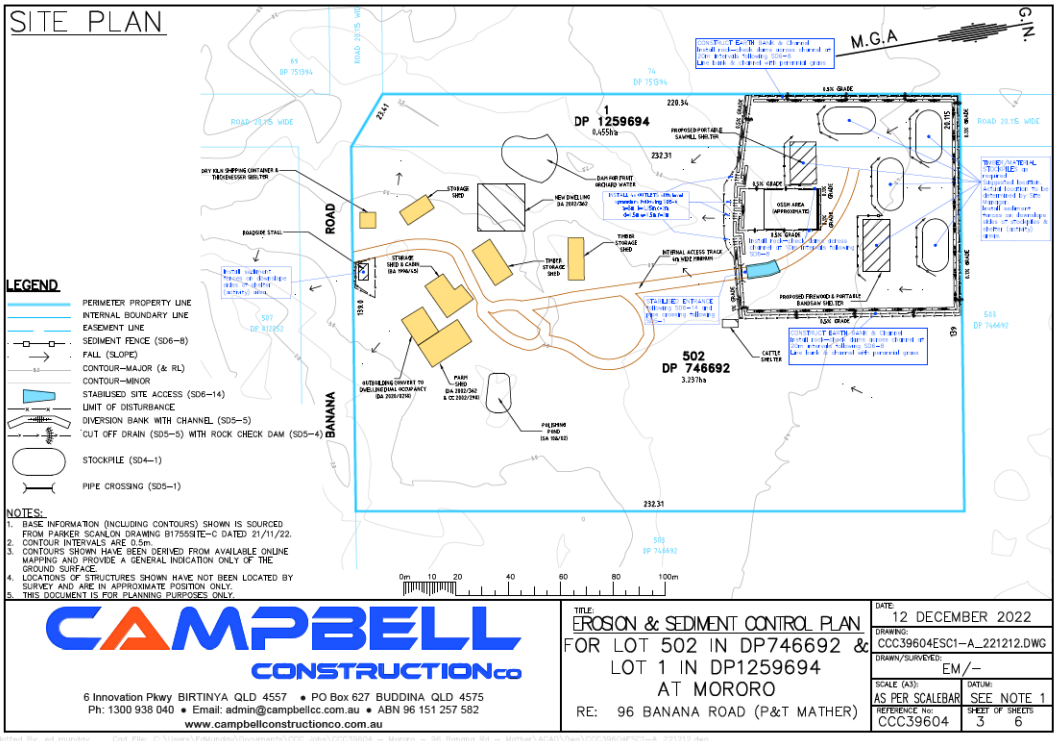
END OF UTILITIES LIST

Lodge Your Free Enquiry Online – 24 Hours a Day, Seven Days a Week


Overhead wires not shown
LOOK UP & LIVE!
LEGEND
LV Underground Cable
HV Underground Cable
Underground Pipe
Underground Earth or Wires
Ground Substation
Pole
Cubicle
Pit
Area of Interest
Critical Assets
Contact Essential Energy on 13 23 91
Zone Substation
Underground Cable
Underground Fibre
Proposed Works
Area of proposed works
Proposed assets are shown as orange symbols
THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)
ISSUE DATE: 03/06/2022
You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above
A4 SCALE: 1:1926
96
94
115
BANANA RD
Job Number: 32074169
Sequence number: 212140912
Job location: 96 Banana Road, Mororo
Map Centre: 153° 14' 7.1", -29° 20' 49.2"
essential energy


Cable Plan
CJ4:O1-10
10
192.6
5
CANE RD
RD
10
2.0
10
BANANA
RD
P35 210.2
2
CJ4:O21
1DEAD
Telstra
For all Telstra DBYD plan enquiries -
email - Telstra.Plans@team.telstra.com
For urgent onsite contact only - ph 1800 653 935 (bus hrs)
Sequence Number: 212140911
Please read Duty of Care prior to any excavating
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556
Generated On 03/06/2022 08:56:50
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.
It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.
Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.
Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.
Page 1 of 1

Attachment 5: Erosion & Sediment Plan & Statement



PARKER SCANLON

clarence VALLEY COUNCIL

Contact Details:
Postal Address: Locked Bag 23,
GRAFTON NSW 2460
Telephone: (02) 6643 0200
Email: council@clarence.nsw.gov.au

Office Locations:
2 Prince Street, Grafton
50 River Street, Maclean

Statement for Sediment and Erosion Control

1. All erosion and sediment control measures are to be installed prior to the commencement of any work, including cutting and filling.
2. All sediment control measurers are to be constructed to prevent sediment from leaving the site or entering downstream properties, drainage lines or watercourses.
3. Disturbance of the site must be minimised.
4. A sediment control fence must be installed at the downslope perimeter of the disturbed area to prevent sediment and other debris from leaving the site. Sediment fencing is to be trenched in at least 150mm and buried with the ends turned upslope.
5. Where catchment area is more than 0.5Ha direct up slope runoff around the site, by the use of a diversion bank or channels. These devices may require measures to control erosion depending on the volume of flow anticipated.
6. Vehicular access is to be restricted to one stabilised access point which is to be constructed of 40mm crushed stone aggregate or recycled concrete 150mm deep, 2.5m wide and extend from the kerb line to the slab or building line or for at least 15m on rural allotments.
7. Stockpiles of erodible materials (sand, soil, spoil and vegetation) must be protected by a sediment fence or bund. If the stockpile area is prone to high winds or is to be there for a long time then the stockpile must be covered.
8. Stockpiled material must be stored clear of any drainage line and within the property boundary. NOTE: stockpiles are not permitted on footpaths or roads.
9. Immediately following installation of the roof cladding, all guttering and downpipes are to be connected to the stormwater system. Inspection of the frame is not to be arranged until this is completed.
10. All erosion and sediment control measures are to be regularly maintained in good working order at all times and inspected for adequacy following any rainfall event.
11. All trenches within the development site are to be backfilled and compacted to a level of 75mm above adjoining ground level. This may not apply on public land, consult with Council staff.
12. All disturbed areas are to be made erosion resistant by revegetation (i.e. min 70% coverage), turfing or stabilised by paving on completion of the works and prior to occupation and/or use of the building or, all necessary erosion and sediment control devices are to be left in place.

I agree to install and implement all of the above measures to control erosion and sediment at the development described in the development application.

Name *(please print)*: Mrs Tracy Ann Mather

Signed by Applicant: _____ Date: 22/11/22

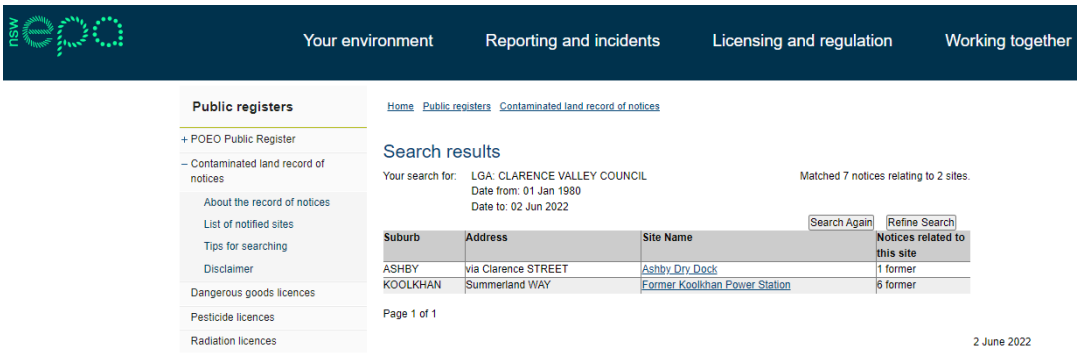
Privacy Advice

The personal information that Council has collected or is collecting from you is personal information for the purposes of the Privacy and Personal Information Act 1998 (PPIPA). Council will only use this information in accordance with the PPIPA.

The supply of this information by you is voluntary. However, if you cannot provide or do not wish to provide the information sought, the Council may be limited in dealing with your application/request. Council requires this personal information from you in order to process your application.

You may make application for access or amendment to your personal information held by Council. Council will consider any such application in accordance with the PPIPA. Council is to be regarded as the agency that holds the information.

Attachment 6: EPA Search



Your environment | Reporting and incidents | Licensing and regulation | Working together

Public registers

+ POEO Public Register
– Contaminated land record of notices
About the record of notices
List of notified sites
Tips for searching
Disclaimer
Dangerous goods licences
Pesticide licences
Radiation licences

Home Public registers Contaminated land record of notices

Search results

Your search for: LGA: CLARENCE VALLEY COUNCIL
Date from: 01 Jan 1980
Date to: 02 Jun 2022

Matched 7 notices relating to 2 sites.

Search Again | Refine Search

Suburb	Address	Site Name	Notices related to this site
ASHBY	via Clarence STREET	Ashby Dry Dock	1 former
KOOLKHAN	Summerland WAY	Former Koolkhan Power Station	6 former

Page 1 of 1

2 June 2022

Attachment 7: Aboriginal Heritage Information Management System Searches

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : B1755
Client Service ID : 764964

Julie Mckimm
17 William Street
Hamilton New South Wales 2303
Attention: Julie Mckimm

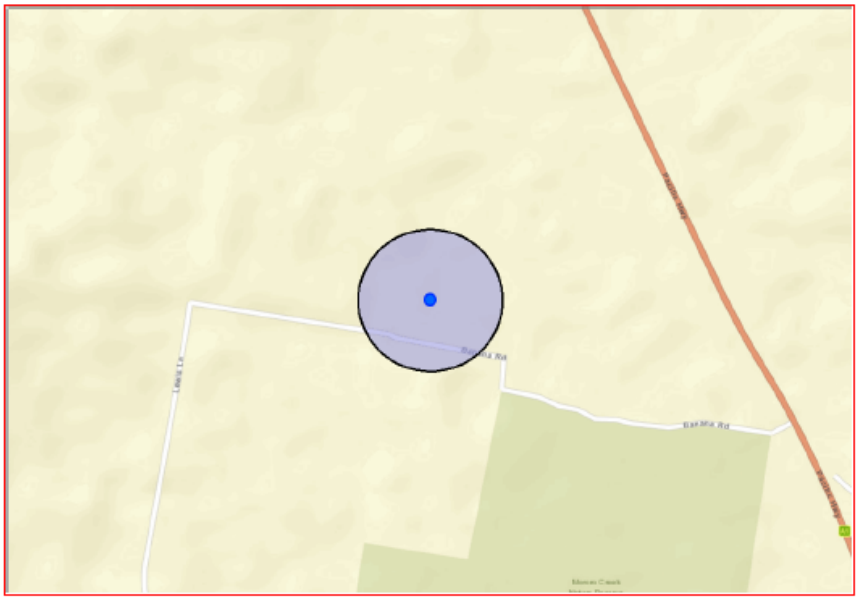
Email: planning@parkerscanlon.com.au

Date: 20 March 2023

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 96 BANANA ROAD MORORO 2469 with a Buffer of 200 meters, conducted by Julie Mckimm on 20 March 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Attachment 8: Site Waste Minimisation Management Plan

Print form

clarence VALLEY COUNCIL

Contact Details:
Postal Address: Locked Bag 23, GRAFTON NSW 2460
Telephone: (02) 6643 0200
Facsimile: (02) 6642 7647

Office Locations:
2 Prince Street, Grafton
50 River Street, Maclean

Waste Management Plan Template

Applicant Details

Applicant Details	
Name	
This development achieves the waste objectives set out in Clarence Valley Council's Waste Not Development Control Policy. The details on this form are the provisions and intentions for minimising waste relating to this development. All records demonstrating lawful disposal of waste will be retained and kept readily accessible for inspection by regulatory authorities such as council, OEH or WorkCover NSW.	
Signature	
Date	

Estimated Waste Generated by Ongoing Operation

Will you be using Council's kerbside domestic waste collection service? Yes/~~No~~
If "No" complete table below if "Yes" continue on next page.

Show the total volume of waste expected to be generated by the operation of the development and the waste storage requirements

	Co-mingled Recyclables	Other (ie Paper/ Cardboard)	Greenwaste Waste	Non Recyclable Waste	Other
Amount generated (L per unit per day)	Sawdust 100%	NIL	~~Woodchip~~ N/A	NIL	
Amount generated (L per development per week)	$2m^3$		$3m^3$		
Any reduction due to compacting equipment	NIL	N/A	N/A	N/A	N/A
Frequency of collections (per week)	1 a week		1 a week.		
Number and size of storage bins required	N/A	N/A	N/A	N/A	N/A
Area required for storage bins (m^2)	N/A				~~N/A~~
Area required for manoeuvrability (m^2)	~~N/A~~ refer to Map				

SECTION 4.15 EVALUATION

Application Details

Application No:	**DA2023/0175**
Date Lodged:	29 March 2023
Description of Proposal:	Rural Industry (Sawmill) shelters signage and Roadside Stall
Property Description:	Lot 502 DP 746692 & Lot 1 DP 1259694 96 Banana Road MORORO NSW 2469
Applicant:	Banana Road Timbers Pty Ltd
Cost of Works:	$5,000.00
Council Assessing Officer:	Patrick Ridgway, Senior Development Planner
Potential Reportable Donations / Gifts:	No
Date of Report:	8 November 2023

Summary

Key Issues:	• Insufficient information has been submitted for Council to properly assess the application in regard to noise and amenity impacts • The current road access is unsuitable for the increased traffic demand generated by the development • Historical and ongoing land use conflicts • Issues raised in submissions
Number of submissions received:	There are four submissions made objecting to the proposal on behalf of nearby residents
Recommendation:	Refusal

1. Background

1.1 Site Description

Number 96 Banana Road, Lot 1 DP 1259694 and Lot 502 DP 746692, is zoned RU2 – Rural Landscape under the provisions of the *Clarence Valley Local Environmental Plan 2011* and has and area of 3.24 hectares. Access to the site is currently via an access road known as Banana Road which is a Crown Road reserve and not a Council maintained road. Banana Road is accessed from the Motorway from the Iluka Road Interchange and traverses through Mororo Creek National Park Reserve. There is a 3rd order stream that traverses the road about halfway along its length with a culvert crossing over the stream.

Aerial photo

1.2 Site History

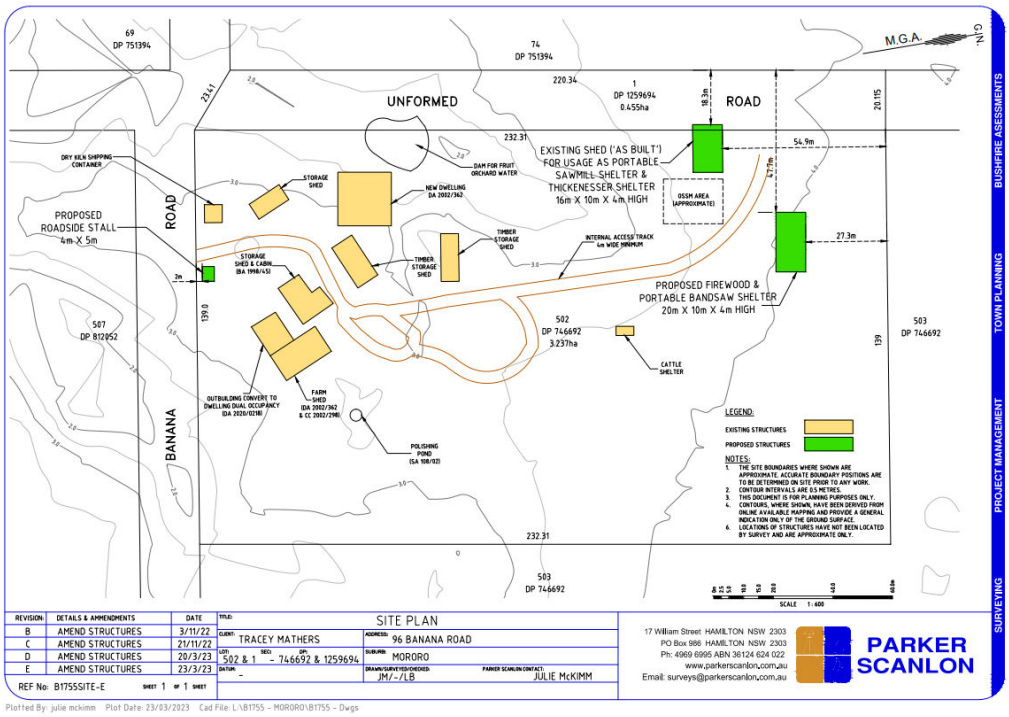
Council approved the subdivision of lot 500 DP718854 under DA87/1108 on 29 January 1987. Condition 5 of the approval required that access from the dedicated Crown road between portions 69 and 74 as Public Road, extending from Lewis Lane to the western side of portion 68 (the road was gazetted on 17 February 1989). Condition 4 required the access to Lot 502 to be constructed to Council's specifications and satisfaction. The lot was released on the basis that the road was on a ridge and is gravelled. This predates the purchase of the lot by the Mathers. at the time the lots were released by Council, the gravel access to the site was considered adequate and no further works were required.

Council approved a further subdivision of lot 503 DP746692 on 15 June 1989 to excise 12.2ha for a subdivision with proposed access off Lewis Lane.

Further applications have been approved by Council for dwellings in the area and not requiring any further upgrade of the road through to Lewis Lane, the default access via Banana road reserve has been used as the primary access road.

2. The Development

Development application DA2023/0175 was lodged on 29 March 2023 for a Rural Industry – Sawmill and includes a; Portable Sawmill Shelter; Firewood and Portable Bandsaw Shelter; Timber Storage Shed and Yard; and Roadside Stall. This application has been prepared and lodged following Clarence Valley Council's correspondence and issue of Order under the *Environmental Planning and Assessment Act 1979* to cease current unauthorised operation on the subject site. A full description of the proposal is provided in the Statement of Environmental Effects.



Numerous noise complaints have been received from the neighbours in regard to the sawmilling of timber and other timber processes on the property dating back to 2016 (These are summarised in **Table 2**). The owners of the site operate 'Banana Road Timbers Pty Ltd' from the site which is advertised in the Yellow Pages, White Pages and on various social medial sites. Notably, there are a number of properties that are in very close proximity to the site and the impacts from the activities of the sawmill, timber processing, deliveries and customer pick ups will be difficult to mitigate impact on the rural lifestyle amenity of the neighbours.

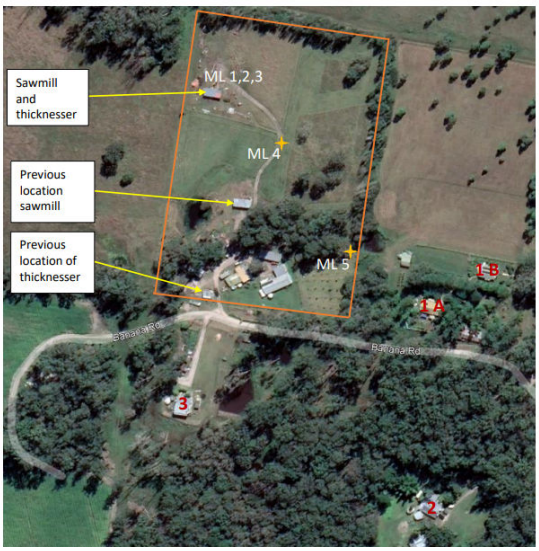
Machinery used at the site in the past has included a 'Lucas Portable Sawmill', timber thicknesser, chainsaws, portable bandsaw, dry kiln shipping container and mechanical block splitter. Deliveries of timber logs and milled timer products (such as hardwood decking, cladding and weatherboard skirting), to and from the site, are undertaken in a five-tonne tabletop truck owned by the business as well as from customer pick up of milled timber products.

Notably there are seven properties/dwellings located within 1km of the property which are listed below in order of approximated distance of the dwelling to the proposed sawmill shed site:

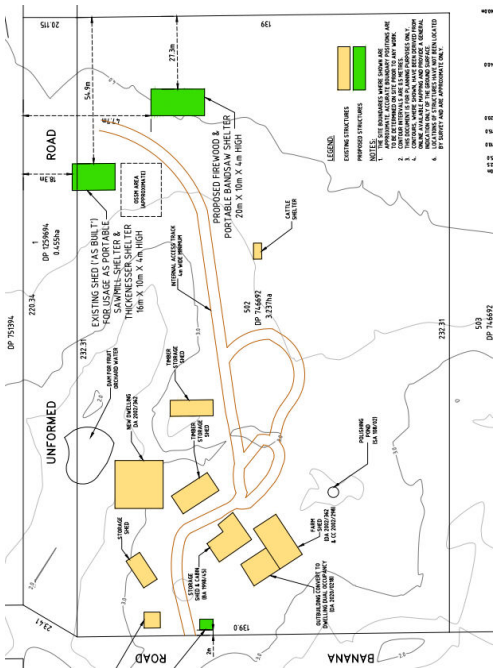
- 115 Banana Road, 100m
- 94 Banana Road; 90m
- 83 Banana Road; 190m,
- 5695 Banana Road, 230m
- 69 Lewis Lane; 620m
- 301 Lewis Lane; 750m
- 283 Lewis Lane, 913m

The arial view in **Figure 1** shows the general location of the properties/dwellings.

Figure 3 below shows the location of measured receivers to the sawmill. **Figure 4** shows the proposed layout for the development application



Noise measurement sites



Site layout – new sheds shown in 'green'

Notably Four (4) submissions objecting to the proposal; Two (2) individual submissions and a submission on behalf of two (2) neighbours, were made on behalf of four (4) of the closest property owners. A summary of the matters raised in the submissions is provided in **Table 2** in the background section of this report.

A noise assessment report has been submitted with the application, and the following extracts are provided from the report:

- *The main noise sources observed during several site visits were road traffic noise from the Pacific Motorway, which varied depending on wind direction, and seasonal insects. Other observed noise sources included wind in trees, frogs, birds, chickens, dogs barking and distant overhead aircraft.*

- *The predicted noise levels at receiver locations are based on the highest measured noise levels for each of the machines that may operate in the semi enclosed shed. Banana Road Timbers is a one and two man operation and only 1 machine would be operational at any one time.*
- *Calculations indicate sawmilling operations will be at least 4 decibels below the Project Noise Trigger Level of 40 dB(A) Leq, 15min at the closest affect receivers and will comply with noise criteria in the NSW Government Noise Policy for Industry (Oct 2017).*
- *Recommendations:*
    - *At the time of the measurements, only a section of the southern wall had been enclosed. To achieve sufficient barrier reduction to the receivers 2 and 3, the entire southern wall will be required to be enclosed.*
    - *Adding sound absorbing material to the ceiling and walls will reduce noise levels within the shed. The owner has suggested old carpet. Attention should be given to fire proofing the carpet.*

On assessment by Council's Environmental Health Officer, it was requested that a noise assessment be submitted by a suitably qualified consultant that is accredited by The Association of Australasian Acoustic Consultants or Australian Acoustical Society, to ensure that the noise impacts have been properly assessed.

Comment:

In response the applicant provided the following response to this request: *The Noise Monitoring Assessment was undertaken by Garry Hall of Ambience Audio Services Garry has completed a Bachelor of Engineering Technology (specialising in Acoustics and Vibration) at Central University, Rockhampton QLD in 2000, refer to attached transcripts. He is not accredited with either The Association of Australasian Acoustic Consultants or Australian Acoustical Society, however, holds the necessary qualifications and experience should he wish to be. As shown in his attached curriculum vitae, Garry has decades of experience in noise measurements, monitoring, reports and management plans including those undertaken for Rappville Sawmill, Richmond Quarry and Northern Rivers Quarry and Ashphalt. His clients include Byron Bay Shire Council, Richmond Valley Council and Lismore City Council. It is therefore considered that Garry has the necessary qualifications and experience to undertake the noise monitoring for the proposed development.*

Conclusion

A noise assessment report has been submitted with the application, which assessed the predicted noise levels at receiver locations are based on the highest measured noise levels for each of the machines that may operate in the semi enclosed shed.

The report findings indicated that sawmilling operations will be at least 4 decibels below the Project Noise Trigger Level of 40 dB(A) Leq,15min at the closest affect receivers and will comply with noise criteria in the NSW Government Noise Policy for Industry (Oct 2017). The following recommendations were made

- *At the time of the measurements, only a section of the southern wall had been enclosed. To achieve sufficient barrier reduction to the receivers 2 and 3, the entire southern wall will be required to be enclosed.*
- *Adding sound absorbing material to the ceiling and walls will reduce noise levels within the shed. The owner has suggested old carpet. Attention should be given to fire proofing the carpet.*

Comment:

The report has been assessed by Council's Environmental Health Officer who noted that the consultant used was not one accredited by The Association of Australasian Acoustic Consultants or Australian Acoustical Society. To ensure that the noise impacts have been properly measured and considered the applicant was requested to submit a report from an accredited consultant. This was not provided by the applicant.

In response to the information request, the applicant provided the following response : *The Noise Monitoring Assessment was undertaken by Garry Hall of Ambience Audio Services Garry has completed a Bachelor of Engineering Technology (specialising in Acoustics and Vibration) at Central University, Rockhampton QLD in 2000, refer to attached transcripts. He is not accredited with either The Association of Australasian Acoustic Consultants or Australian Acoustical Society, however, holds the necessary qualifications and experience should he wish to be. As shown in his attached curriculum vitae, Garry has decades of experience in noise measurements, monitoring, reports and management plans including those undertaken for Rappville Sawmill, Richmond Quarry and Northern Rivers Quarry and Ashphalt. His clients include Byron Bay Shire Council, Richmond Valley Council and Lismore City Council. It is therefore considered that Garry has the necessary qualifications and experience to undertake the noise monitoring for the proposed development.*

With respect to the noise consultant and their relevant experience, given that the noise and amenity impacts of the development are of particular concern, as raised by the closest neighbours, the acceptance of the noise assessment report from a non-accredited consultant should not be supported. In assessing the impacts of this development, Council should be certain that the noise impacts are properly measured and assessed by a suitably accredited consultant so that it can make a suitably informed decision on the potential impacts.

A summary of the other information that has been submitted to address Council's additional information requests to address Council's concerns are summarised in **Table 1** below:

Table 1 – summary of submissions

Additional information	**Response & Comment**
Removal of waste	*The only waste products from the timber processing operation are sawdust and woodchip. These are collected and transported to storage onsite by means of a covered truck. The waste product is then picked up by a local operator of a macadamia farm for immediate use in managing the trees by spreading around the existing 180,000 trees and for supplementing potting mix for the seedlings.* Comment The traffic generated by the collection of waste will be an additional traffic generating activity. The frequency of waste removal is unknown.
Amended hours of operation	*The proposed hours of operation vary each day; however, the sawmill will operate for 3-5 hours somewhere between the following hours:* • *Monday to Friday between 7.00am & 6.00pm;* • *Saturday between 7.00am & 1.00pm;*

	• *Sundays & Public Holidays - Closed. The proposed roadside stall will also be open during the above hours.* Comment The applicant was advised that the uncertainty of the operation hours, which allow for operating hours of up to 11 hours a day and 4 hours in Saturday, could not be supported and amended hours are proposed: The proposed operating hours for the current development application for the sawmill were amended to: • 8.00am to 11.00am and 4.00pm to 6.00pm Monday to Friday and • 8.00am to 11.00am on Saturdays, being closed on Sundays and Public Holidays. The proposed hours will allow the business to operate for a total of 5 hours per weekday and 3 hours on a Saturday. There is still some uncertainty as to the extent and type of activities that will be undertaken on the site as well as the amount of traffic during the operation hours. The proposed hours provide little certainty to address the potential ongoing amenity impacts should not be supported.
Land Use Conflict Risk Assessment (LUCRA)	The applicant has provided a LUCRA assessment as requested. This provides an assessment of the potential conflicts, management strategy, risk ranking and performance target and concludes: *The site is zoned RU2 Rural Landscape under the Clarence Valley LEP 2011 (CVLEP 2011). Rural Industries and roadside stalls are permissible with consent from Clarence Valley Council in this zone.* *The CVLEP 2011 definition of a rural industry, "means the handling, treating, production, processing, storage or packing of animal or plant agricultural products for commercial purposes, and includes any of the following— (a) agricultural produce industries, (b) livestock processing industries, (c) composting facilities and works (including the production of mushroom substrate), (d) sawmill or log processing works, (e) stock and sale yards, (f) the regular servicing or repairing of plant or equipment used for the purposes of a rural enterprise.* *The proposal for a sawmill is therefore considered to be a rural industry and is permissible in the zoning. The Risk Ranking Table, refer Table 4, shows that the current risk rankings range from 16 to 8, the highest risk being in the conflict area of noise impacts. Taking into consideration the mitigation measures and ongoing operational monitoring, performance targets of 12 to 5 are achievable, refer Table 5. The proposal is considered to provide acceptable solutions to reduce the impacts on alternate land uses in the vicinity of the property. Other uses within the vicinity of the subject site include agricultural and horticultural (fruit and sugar cane farms), large lot lifestyle lots and rural industries (quarry). It is considered that, with the mitigation measures and operational procedures proposed, the development can operate in the area with minimal impacts on the surrounding uses of the site.* Comment

	It is noted that most of the performance targets will only be met through diligent management of the operations on site. The owners have a history of non-compliance from previous operations and it is questionable if the performance targets will be met for this reason alone. A chronology of complaints and actions is discussed further under Issue 4. Given the proximity of other properties/dwellings to the site it would also be unreasonable for Council to expect that the performance targets could be met for this type of activity i.e. the onus on owners to maintain this level of diligence will be very difficult to achieve.
Processing and output of product has not been provided	*It is estimated that the sawmill will process 20 cubic metres of logs per week to produce 6 cubic metres of sawn timber per week. This equates to the processing of 1,000 cubic metres of logs to produce 300 cubic metres of sawn timber per annum.* <u>Comment</u> While it is acknowledged that the owners only intend to operate the sawmill and timber processing at a small scale, the ability for Council to regulate or limit the amount of processing undertaken on the property will be difficult to achieve. It would only take two or three full loads to meet the estimated 20m^3 of logs per week. Many more trips than this could be undertaken over the operating hours and there is the potential for the amount of processing and output to greatly exceed this amount. It is also noted that the consent for the activity will stay with the land should the owners sell the property and it would be open for a new owner to upscale the business and Council would have limited authority to regulate the scale of operation other than within the approved hours of operation. The proposed limits of the potential output of operation of the rural industry are ambiguous and it is open for the land owner to increase this without further approval.

The proposed rural industry use should not supported based on the comments in **Table 1** above and, even though the predicted noise from the sawmill and thicknesser shelter may be managed to an acceptable level (based on a one or two man operation and only and one machine operating at any one time), there are other amenity impacts that should be considered in regard to noise impacts which include the use of chainsaws, mechanical block splitter, loading and unloading of logs, timber thicknesser, chainsaws, portable bandsaw, dry kiln shipping container and milled timber. Traffic impacts from deliveries and customer pick ups will also impact on surrounding residents from the daily operation of the business.

In this regard the proposal is not consistent with the objectives of the RU2 Rural Landscape zone, as detailed in both the Objecives of the RU2 Zone of LEP and Clause C1 of the DCP.
The proposal does not:

- maintain the rural landscape character of the land;
- provide for a range of compatible land uses, including extensive agriculture; and
- minimise conflicts between land uses within the zone and with adjoining zones.

The proposed is not:

- responsive to site constraints and the surrounding environment;
- of a high quality and sensitive to the rural character of the locality in which it is being developed;
- functional and appropriate for the type of land use /activity being provided; and

- provide adequate buffers to residential development to reduce conflicts between rural/agricultural uses and residential amenity.

It is recommended that this application not be supported as the development in this locality and proximity of other dwellings/properties, is not considered suitable for the ongoing use of a sawmill and timber processing activities and high probability of potential of ongoing adverse amenity impacts that the development will have.

Issue 2. The current road access is unsuitable for the increased traffic demand generated by the development

The existing lot has access via Banana Road, which is an unmaintained Crown Road. Currently Council has no requirement to maintain the road. Like similar Crown Road reserves, Crown land will not accept intensification of use on land that requires access via a Crown Road. As such, if the application is approved the road will need to be transferred to Council. The owners are aware of this requirement as it was required under a former approval for a dual occupancy on the lot under DA2020/0218.

The existing access road (Banana Road) to the site has multiple sections with restricted width. As proposed, deliveries will be made via a 5 tonne 'tabletop' tuck and there has been no detail provided on the size/nature of this heavy vehicle (HV). The applicant was requested to provide a Traffic Impact Assessment with detail on the size, type and frequency of vehicles associated with the sawmill operation and assess the suitability of the existing access width/clearance to accommodate the maximum sized vehicle that will service the site. Details were also requested on the design of the existing culvert crossing within the access and its maximum load capacity. this information was not provided.

Based on the increase in frequency of HV traffic movements along Banana Road, it would be required that the roadway be widened in some sections and existing pavement be upgraded to current Council standards. The existing road will need to be widened to 6.0m (unsealed) carriageway where possible (limited impact on existing vegetation) to allow two-way traffic. The maximum distance between widenings to enable vehicles to pass is 200m as per the Planning for Bushfire Protection Guidelines 2019. Furthermore, an adequate turnaround area needs to be constructed/provided as per the Planning for Bushfire Protection Guidelines 2019. The current road access is unsuitable for the increased traffic demand generated by the proposed development therefore not complying with Clause 7.8 of the LEP or Clause C8.5 of the Clarence Valley Rural Zones Development Control Plan. Under Clause 7.8 development consent must not be granted to development unless the consent authority is satisfied that suitable road access, that is essential for the proposed development, are available or that adequate arrangements have been made to make them available. This requirement has not been satisfied by the development.

Concept plans were also requested to show the proposed lengths/areas of widening and indicate the areas of existing vegetation impacted by the required widening. Based on previous survey provided by the property owner, lengths/portions on the existing road carriageway are not located within the existing road reserve. The applicant was advised that a boundary adjustment will be required, or road re-constructed within the road reserve.

The applicant provided the following response:

Traffic Impact Assessment – Part F10 of the Clarence Valley DCP 2011 provides, "Large scale development or development located on land adjacent to a classified road may require a Traffic Impact Assessment prepared in accordance with the RTA Guidelines for Traffic Generating Development."

The proposal is not considered to be a major development, being a rural industry that is owned and operated by the family that live on the property. There will be a small tabletop truck measuring 7.5m x 2.1m (measures between a light rigid and medium rigid truck) used for the delivery of materials to and from the site. These deliveries will not exceed two (2) truck movements per day of operation (one out and one in).

Traffic Impact Assessments are, in accordance with Council's DCP, only required for major developments and even then, not in every circumstance. The proposal is not considered to be a major development and it is not deemed warranted to request the provision of one for this development.

As outlined above, the proposed development will only increase vehicle movements by two additional truck movements per day by a small tabletop truck which is smaller than a medium rigid truck. There will also be the occasional standard car for those visiting the roadside stall to make purchases.

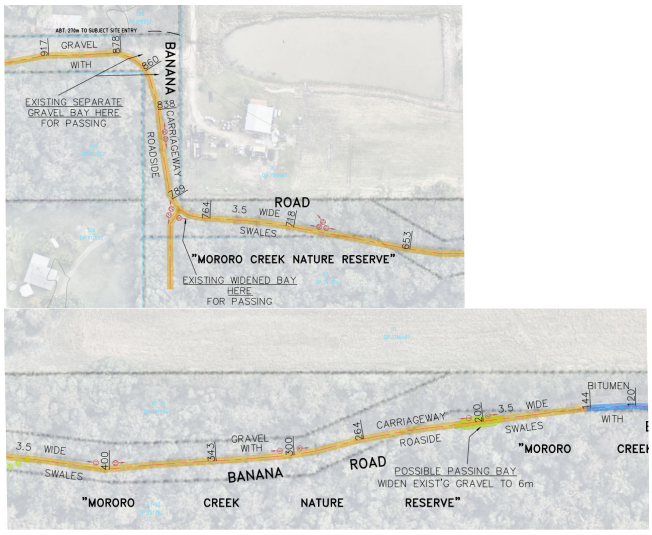
The driveway crossing and internal access is a minimum 4m wide which provides ample distance for turning by trucks and cars.

Access - The owners have observed additional households being accommodated in separate domestic facilities on neighbouring land on both casual & permanent rental arrangements, and the regular use of Banana Road by heavy articulated vehicles from adjoining agricultural activity. These appear to have been permitted without any requirement to contribute to upgrading Banana Road in the same manner as they have been requested.

The owners object to being solely targeted by Council to upgrade Banana Road when it already functions satisfactorily, and particularly when their neighbours stand to benefit without contribution in reasonable proportion to their ongoing use of the road. Therefore, the owners have independently requested Council (by letter dated 20 June 2023) to resolve how it should equitably and reasonably assess DA2023/0175 for access to and from the site, including the removal of the need for provision of a Traffic Impact Assessment.

During the site meeting, the maintenance of the culvert along Banana Road was discussed. The owner has since confirmed that the crew who were in attendance for the most recent maintenance on the culvert were Gary Bolt, Ross McGann and Adele McGeary who we believe to be Clarence Valley Council employees. This would indicate that Council is the responsible party for maintaining Banana Road.

A detailed survey of the road was subsequently provided by the applicant and an extract of the road plans are provided below (**Figures 5,6 and 7)**.



Extracts of road alignment and road reserve location provided by the applicant

Comment:

Notably, Crown Lands has approached Council to accept the transfer of Banana Road in 2009, and in 2013 they advised Council of the intention to seek the Minister for Lands consent to transfer Banana Road, Mororo to Council as a public road. On both occasions (Item 09.127/09 and 13.165/13) Council made the following resolutions to not accept the road:

COUNCIL RESOLUTION - 09.127/09
(Crs McKenna/Dinham)

That Council not seek the transfer of approximately 785 metres of Crown Road known locally as Banana Road, Mororo from the Department of Lands.

Voting recorded as follows:
For: Councillors Williamson, Dinham, Howe, McKenna, Simmons, Comben and Toms
Against: Nil

COUNCIL RESOLUTION – 13.165/13
(Crs Challacombe/Toms)

That Council:

1. **Formally refuse the transfer of the Crown road known as Banana Road, Mororo from the Department of Trade and Investment.**

2. **Write to the Minister of Lands and the Member for Clarence to register its strong opposition for the transfer of Banana Road from Crown Lands to Council.**

Voting recorded as follows:
For: **Councillors Williamson, Baker, Challacombe, Howe, Hughes, Kingsley, McKenna, Simmons and Toms**
Against: **Nil**

The basis for the staff recommendation in those reports included:

- The original subdivision approval for these lots was conditionally approved that the access to the lots was to be through to Lewis Lane to the West. At the time the lots were released by Council, the gravel access to the site was considered adequate and no further works were required. The road has not been constructed and the residents use Banana Road for access.
- There is an existing 2 span concrete deck bridge within the Crown section of Banana Road. This bridge was damaged during flood activities and also due to machinery traversing the structure. In good faith Council has included the repair of the Banana Road bridge in its 2013 flood damage claim. This was done to facilitate access to Natural Disaster Relief and Recovery Arrangements (NDRRA) funding for the landholders. This process does not invoke a responsibility on Council; it merely undertakes the works as an agent for Roads and Maritime Services (now Transport for NSW). It is estimated that the repairs (in 2013) to the bridge would be in the vicinity of $75,000.
- When requests are received for the transfer of sections of unmaintained road to Council's maintained road register, several criteria are required to be addressed. The normal criterions used in these circumstances include, but not limited to; means of residential access; maximum maintained length; dedication as public road; located within the road boundaries; construction standards; and no timber bridges. This section of Banana Road does not meet several of the required criteria and would require the necessary upgrades.

A cost estimate of the necessary upgrades has not been completed, but it is anticipated that the costs (in 2013) would exceed $50,000.

- In previous discussions with officers from State Government, Council officers have advised that it would agree to take responsibility for the road, subject to the prior repair / reconstruction of the bridge to an appropriate Council standard.

In its letter dated 19 October 2012, the Department of Primary Industries – Catchments and Lands (Lands) advised that the costs to repair the bridge were beyond the capacity of the Lands group and as such they were requested to seek approval for the enforced transfer of the road to Council. Further, Lands advised that in their view Council was best placed to make decisions and obtain funding for local

roads and the transfer of Banana Road to Council was appropriate given the circumstances. Council subsequently replied to Lands advising its position of rejection was unchanged.

Conclusion

There is quite a history regarding the use of Banana Road which has been used as a default access to the originally intended access from the original subdivision approval through to Lewis Lane. At the time the lots were released by Council, the gravel access to the site was considered adequate and no further works were required. The current access is shown below in 'red' and the intended road is shown in' blue' in **Figure 8** below:

Figure 8 - current access is shown below in 'red' and the intended road is shown in blue

In regard to the culvert structure/creek crossing, other than the information provided above, Civil services do not have any documentation on the design of the culvert structure, nor its design load capacity. The original information request regarding load rating of the culvert would still need to be addressed. Additionally, it has also been raised that given the crossing is over a third order stream it therefore need to satisfy any requirements of NSW Fisheries and DPE - Water.

The information provided by the applicant has not adequately addressed the information requested by way of a Traffic Impact Statement.

The decision on whether Council will accept a road as either Category 1 or Category 2 is at the discretion of Council and will be based on the access, development, and maintenance implications of the access as outlined in Council's Road Policy.

Note:
1. Category 1 unsealed roads are roads that Council; Has resolved to maintain prior to 2014; or resolves to maintain as a Category 1 road if the road meets the design criteria and accepted as an additional length of roads for inclusion in Council's roads to the maintenance schedule.
2. Category 2 unsealed roads are Public roads that Council has not previously maintained and are not constructed to an identified public road standard but still meet minimum access standards. They are not

included in a scheduled grading program and maintained on an as needs basis and as Council funding permits.

The current road access is unsuitable for the increased traffic demand generated by the proposed development therefore not complying with Clause 7.8 of the LEP or Clause C8.5 of the Clarence Valley Rural Zones Development Control Plan. Under Clause 7.8 development consent must not be granted to development unless the consent authority is satisfied that suitable road access, that is essential for the proposed development, are available or that adequate arrangements have been made to make them available. This requirement has not been satisfied by the development.

The transfer of the road to Council is not recommended for the following reasons:

- Council has not been provided with sufficient information in regard to the suitability for the additional traffic above the existing daily traffic movements for a 'rural industry',
- The road is currently constructed below the Norther Rivers Design Construction design standards, Council's adopted standard,
- The road is not located wholly within the road reserve and the applicant is not proposing to realign the road – this will likely be at further cost to Council if transferred,
- the environmental impacts of the road realignment on Mororo Creek Nature Reserve / National Park and native vegetation clearing have not been provided,
- The road crosses a 3rd order stream ad no assessment has been provided on the design of the existing culvert crossing within the access road reserve and its maximum load capacity.
- The reasons and resolutions previously made by Council to not accept the transfer of the road should be upheld.

Issue 3 - Historical and ongoing land use conflicts

A chronology of the non-compliance issues is provided below:

- Following complaints received, Council issued a Proposed Development Order No. 1 to 'cease using the premises for sawmill and log processing' works without development approval on **8 September 2016.**
- Council was advised that the use of land for milling logs had ceased by letter dated **16 September 2016.**
- Council received a letter dated **3 November 2017** that timber processing and sawmilling had continued at the property.
- Complaints were continued to be received in **January 2018** and a second Proposed Development Order No. 1 was issued on **4 January 2018** to cease using the premises for the purposes of a *sawmill or log processing works*.
- A response was received from the owners on **24 January 2018** that the use of a portable 'Lucas Sawmill' at the property was to cease immediately.
- A further complaint was lodged on **7 March 2019** that milling of fence posts were being undertaken at 96 Banana Road and A further Proposed Development Order No. 1 was issued on 1 **May 2019** requiring the owners to cease using the premises for the purposes of a *sawmill or log processing works.*
- A response from the owners was provided on **1 June 2019** that the use of the portable Lucas Sawmill was to cease and the machinery be relocated to a property in Ashby. The owners advised

that they would be submitting a development application once the process of purchasing a section of Crown Road Reserve was processed by DPI Crown Lands.

- Further complaints were received in **October 2019** and on inspection the owners advised that some equipment on the property was being used for domestic and private purposes.
- Council received a development application on **30 April 2000** (DA2020/0218) for the conversion of an outbuilding to create a dual occupancy on the property and development consent was issued on 10 December 2020. Notably the consent required works on Banana Road requiring that the road be upgraded to meet the minimum requirement access standards of Council and the NSW Rural Fire Service, relocate the road to be within the road reserve and the transfer of the road reserve to Council (as a requirement of NSW DPI Crown Lands for works on and use of a Crown road reserve). Council is not aware if any works have been undertaken nor has an Occupation Certificate been issued for this development.
- Complaints and Development Control Order issued on 12 April 2022 to not to conduct or to stop conducting sawmill or log processing works activities on the premises.
- This application was received by Council on **29 March 2023**.

Comment

The issuing of intention notices and orders allows the owner to respond to Council before Council considers issuing formal development control orders; failure to comply with an order can have significant financial and legal consequences for the recipient. This development application has been lodged in response to the development control order.

The use of the property has a history of non-compliance with land use planning approvals. Council has given the owners more than sufficient time to address the non-compliance issues and, based on the information in this report, the impacts are not likely to be able to be satisfactory addressed or resolved. If the application is refused, Council will be in a position to justifiably enforce the non-compliances and take formal legal action should the land continue to be used unlawfully for a rural industry.

3. Statutory Assessment

Section 4.15(1) of the Act, sets out the matters a consent authority must take into consideration in determining a development application as follows:

(a)(i) any environmental planning instrument

State Environmental Planning Policies

State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021, Chapter 3, applies to the proposal and were considered in the assessment. The proposed development is located within the RU2 Rural Landscape

Chapter 3 - Koala Habitat Protection 2020 Clause 3.3 – Land to which this Policy Applies.

The site is within the Clarence Valley LGA which is listed in Schedule 2 of SEPP (Biodiversity and Conservation) 2021. Accordingly, Chapter 3 of this SEPP applies.
Clause 3.5 – Land to which this Part applies

The site has a total area of 3.69 hectares which exceeds the one (1) hectare threshold that triggers Part 3.2 of SEPP – Koala Habitat Protection (2020).

There will be minimal impacts from the improvements to site if the application is approved, however the has not provided an evaluation of the potential impacts for the proposed development from road widening works or bridge upgrades that may be required along the access road. There is insufficient information to properly assess the environmental impacts of the development.

State Environmental Planning Policy (Primary Production) 2021

The aims of this SEPP are to:

- identify and protect State significant agricultural lands and to determine whether development of such lands are compatible with agriculture uses and would result in a public benefit.
- Allow for circumstances under which emergency livestock activities can occur.
- Regulate sustainable aquaculture

The proposal would not impact on any additional land currently managed for agriculture and the proposal would not be incompatible with continued agricultural land use of the site.
Having regard to the management of noise and amenity impacts, there are likely to be conflicts in not being able to sufficiently mitigate land use conflicts. Limiting the hours that the rural industry will operate is not likely to provide certainty in relation to the impacts and will be difficult to regulate and enforce. Given the close proximity of rural dwellings to the site the proposal is not considered compatible with surrounding agricultural uses and the application is recommended for refusal.

State Environmental Planning Policy (Resilience and Hazards) 2021

Hazardous and Offensive Development Application Guidelines list waste industries as potentially offensive development. Hazardous and offensive industries, and potentially hazardous and offensive industries, relate to industries that, without the implementation of appropriate impact minimisation measures, would, or potentially would, pose a significant risk in relation to the locality, to human health, life or property, or to the biophysical environment. The quantities of dangerous goods proposed to be onsite do not trigger the thresholds listed in the Policy and, consequently, does not define the proposal as a 'potentially hazardous industry' or 'hazardous storage establishment'.

The proposed sawmill operation has the potential to emit a polluting discharge (noise) and therefore this Chapter of the SEPP (Resilience and Hazards) 2021 applies to the development.
A consent authority must conder the matters listed in clause 3.12 including any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application), and

Having regard to the management of noise and amenity impacts, there are likely to be conflicts in not being able to sufficiently mitigate land use conflicts. Limiting the hours that the rural industry will operate is not likely to provide certainty in relation to the impacts and will be difficult to regulate and enforce. Given the close proximity of rural dwellings to the site the proposal is not considered compatible with surrounding agricultural uses and the application is recommended for refusal.

This SEPP requires that the consent authority is satisfied that the site is either suitable for the proposed use in its current state, or, can be made suitable after remediation. The site has been significantly altered from its natural state and there is no history on the site for a potentially contaminating use and after carrying out the initial evaluation there is sufficient information demonstrating that the land is suitable for the proposed use in accordance with the Policy. No further investigation is required.

Clarence Valley Local Environmental Plan 2011

Table 1 – LEP Summary Table

Zone of the land	The site is located within the RU2 Rural Landscape zone pursuant to Clause 2.3 of the Clarence Valley Local Environmental Plan 2011. Rural Industries are permitted with consent within the RU2 zone.
Definition of development	***rural industry*** means the handling, treating, production, processing, storage or packing of animal or plant agricultural products for commercial purposes, and includes any of the following— (a) agricultural produce industries, (b) livestock processing industries, (c) composting facilities and works (including the production of mushroom substrate), (d) sawmill or log processing works, (e) stock and sale yards, (f) the regular servicing or repairing of plant or equipment used for the purposes of a rural enterprise.
Is the development permissible in the zone?	Yes

Satisfies the zone objectives	**Objectives of zone** • To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • To maintain the rural landscape character of the land. • To provide for a range of compatible land uses, including extensive agriculture. • To provide land for less intensive agricultural production. • To prevent dispersed rural settlement. • To minimise conflict between land uses within the zone and with adjoining zones. • To ensure that development does not unreasonably increase the demand for public services or public facilities. • To ensure development is not adversely impacted by environmental hazards. The impacts and neighbour concerns have been discussed in this report and approval would be contrary to the objectives of the RU2 zone to: • *To maintain the rural landscape character of the land.* • *To provide for a range of compatible land uses, including extensive agriculture.* • *To minimise conflict between land uses within the zone and with adjoining zones.*
Satisfies Clause 4.3 (Height of Buildings)	Yes
Satisfies Clause 7.1 (Acid Sulfate Soils)	The subject site is identified as containing Class 4 potential acid sulfate soils. The proposed development does not required any excavation of soil on the site. No acid sulfate soils will potentially be disturbed. There is no requirement for an earthworks management plan.

Satisfies Clause 7.8 - (Essential Services)	Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the proposed development are available or that adequate arrangements have been made to make them available when required— (a) the supply of water, (b) the supply of electricity, (c) the disposal and management of sewage, (d) stormwater drainage or on-site conservation, (e) suitable road access. As discussed above the road is not considered to be suitable for the proposed development and the provisions of this clause have not been met by the development. The existing lot has access via Banana Road, which is an unmaintained Crown Road. Currently Council has no requirement to maintain the road. Like similar Crown Road reserves, Crown land will not accept intensification of use on land that requires access via a Crown Road. As such, if the application is approved the road will need to be transferred to Council. The owners are aware of this requirement as it was required under a former approval for a dual occupancy on the lot under DA2020/0218. The existing access road (Banana Road) to the site has multiple sections with restricted width. As proposed, deliveries will be made via a 5 tonne 'tabletop' tuck and there has been no detail provided on the size/nature of this heavy vehicle (HV). The applicant was requested to provide a Traffic Impact Assessment with detail on the size, type and frequency of vehicles associated with the sawmill operation and assess the suitability of the existing access width/clearance to accommodate the maximum sized vehicle that will service the site. Details were also requested on the design of the existing culvert crossing within the access and its maximum load capacity. This information was not provided.

(a)(ii) **any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved, and**

There are no draft environmental planning instruments applicable to the subject site or proposed development.

(a)(iii) **any development control plan, and**

Rural Zones Development Control Plan

The proposed development has been assessed having regard to the relevant desired outcomes and prescriptive requirements within the Rural Zones Development Control Plan (DCP).

There are no specific requirements for Rural Industries under the Rural Zones DCP however the proposed development conflicts with the objectives for development in rural zones, Clause C1, in that it is not:

a) responsive to site constraints and the surrounding environment;
b) of a high quality and sensitive to the rural character of the locality in which it is being developed;
c) functional and appropriate for the type of land use /activity being provided; and
d) provide adequate buffers to residential development to reduce conflicts between rural/agricultural uses and residential amenity.

Comment: There are a number of properties that are in very close proximity to the site and the impacts from the activities of the sawmill, timber processing, deliveries and customer pick ups will be difficult to mitigate impact on the amenity, rural character and lifestyle of the neighbours. This is evident from the submissions objecting to the development. It would also be unreasonable for Council to expect that the performance targets could be met for this type of activity i.e. the onus on owners to maintain this level of diligence will be very difficult to achieve. There are limited measures that can be adopted or put in place to provide adequate buffers to residential development to reduce conflicts between rural/agricultural uses and residential amenity.

The proposal is also inconsistent with the DCP provisions regarding suitable road access.
For the purposes of clause 7.8(e) of the CVLEP 2011 "suitable road access" for the purposes of development in rural zones is deemed to be satisfied when the lot being developed has frontage to a sealed public road or a Category 1 unsealed road listed in Council's adopted Roads Policy.
A decision to extend the sealed public road or unsealed Category 1 and Category 2 road network must be made by resolution of Council, as such any application using (b) or (c) above will be reported to Council for determination. The applicant must note that the Roads Policy requires any additional lengths of sealed public road or unsealed Category 1 or Category 2 road to be constructed to current engineering standards at no cost to Council prior to being transferred to Council ownership or added to the scheduled maintenance list as a Category 1 or Category 2 road.
The DCP has a note that 'no further development may occur where the allotment is serviced by a Crown Road.
The road is not suitable for the development and it proposed that the road not be upgraded o the required standards.

(a)(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and

N/A

(a)(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), that apply to the land to which the development application relates,

Section 4.15(1)(a)(iv) of the Act requires the consent authority to consider any prescribed matters under the Environmental Planning and Assessment Regulations 2021. Council has assessed the development in accordance with all relevant matters prescribed by the Environmental Planning and Assessment Regulation 2021. There are no prescribed matters relevant to the application.

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.

Table 3 -Consideration of impacts (further discussion for complex DA's required under Table)

Likely impacts of the Development	
Impact	**Consideration**
Natural Environment	The proposed use of the land will have a minor impact on the land in and natural environment with the exception of the potential noise impacts. The environmental impacts of the road realignment on Mororo Creek Nature Reserve / National Park and native vegetation clearing have not been provided with the application.
Built Environment	The lot has approval for a dual occupancy and there are a number of sheds on the property that are used for timber storage. The proposal is to include new sheds for the sawmill and thicknesser machine which will not be out of character wit the surrounding built environment.
Social Impacts	The proposed rural industry use should not supported based on amenity impacts in regard to noise impacts which include the use of chainsaws, mechanical block splitter, loading and unloading of logs, timber thicknesser, chainsaws, portable bandsaw, dry kiln shipping container and milled timber. Traffic impacts from deliveries and customer pick ups will also impact on surrounding residents from the daily operation of the business. It is recommended that this application not be supported as the development in this locality and proximity of other dwellings/properties, is not considered suitable for the ongoing use of a sawmill and timber processing activities and high probability of potential of ongoing adverse amenity impacts that the development will have.
Economic Impacts	If the application is approved the economic benefits will be minor given the small scale of the operation. The economic impacts may be more substantial should the sawmill raise the level of production.

(a) the suitability of the site for the development,

The proposal is not considered appropriate for the locality. The proposed rural industry use should not supported based on amenity impacts in regard to noise impacts which include the use of chainsaws, mechanical block splitter, loading and unloading of logs, timber thicknesser, chainsaws, portable bandsaw, dry kiln shipping container and milled timber. Traffic impacts from deliveries and customer pick ups will also impact on surrounding residents from the daily operation of the business.

It is recommended that this application not be supported as the development in this locality and proximity of other dwellings/properties, is not considered suitable for the ongoing use of a sawmill and timber processing activities and high probability of potential of ongoing adverse amenity impacts that the development will have.
Approving the application will allow for further intensification of the road that is not maintained and is over a Crown Road reserve. Intensifying the use will likely result in further damage to the road and to the

detriment of existing road users. No improvements to the road is proposed by the development and the road is not suitable for the proposed additional use.

(b) any submissions made in accordance with this Act or the regulations,

The application was advertised and notified to adjoining and nearby landowners in accordance with the requirements of the adopted Community Participation Plan. Council received four (4) submissions on behalf of nearby residents. These objections are discussed below.

Table 4 – Summary of submissions Table

There are four submissions made objecting to the proposal on behalf of nearby residents and these are provided in **Attachment B**. A summary of the objections are provided below in **Table 2**;

Table 2 – summary of objections

Objection	Summary
Damage to Banana Road	Not designed for level of traffic generated Has not been approved under DA2020/0218 dual occupancy Residents of Banana Road have been responsible for the upkeep of the road
Will create congestion and unsafe conditions	Banana Road is a single lane road with no passing bays; road users are required to drive into the side drain or bush to allow passing Non-resident vehicles using the road travel at high speeds which is unsafe for pedestrians and children on bikes Damage from heavy vehicles creates unsafe driving conditions from potholes The actual increase in truck movements on Banana Road represents a major safety issue for local residents and especially considering that the access is only 4 metres wide with no passing areas and blind corners. The further approval of a road side stall selling timber items and garden produce will potentially add a considerable amount of vehicular traffic to Banana Road (a no through gravel road) that will further endanger local resident traffic.
Danger to wildlife in Mororo Creek Nature Reserve	Additional traffic creates a danger to wildlife including a wide variety of snakes (including the rare Golden Crown Python), Koala, sugar gliders, echidna and other fauna as well as a diverse range of flora. The road crosses an important koala corridor
The proposal does not provide a suitable area for parking and turning of vehicles	This is problematic for customers travelling to the site The submitted Statement of Environmental Effects (SEE) maintains that there is no need for on-site parking for the proposed roadside stall. This is ludicrous when you visit the site that currently has:- a) no room for road side parking; and b) no turn around area at the end of the road.
Food debris	During the February/March 2022 flood water and debris from the property washed into the nature reserve and onto adjacent properties Additional waste and pollutants will result from the next flood event if the proposal is approved
Loss of Amenity	The owners purchased the property to enjoy a lifestyle of peaceful rural living, privacy

	and minimal traffic Farming activities are expected, though traffic generated from the business will impact on the amenity through invasion of privacy and safety to children Noise generated from the sawmill, roadside stall and traffic will impact on the amenity The sawmilling machines operated at all hours of weekdays and weekends
Rural character of the area	The character of the area is rural rather than industrial The shipping container/roadside stall belongs in an industrial area and not a rural area The current state and organisation of 96 Banana Road is unsafe and encourages vermin which impact on neighbouring properties
Stop Work Orders and non-compliant	Despite 96 Banana Road being issued with numerous stop work orders due to illegal operation of the sawmill and regardless the sawmilling business has continued; Council should immediately enforce the order The owners continue to reside in an 'as built' outbuilding and have failed to comply with the conditions of consent under DA2020/0218 for retrospective approval of a dwelling
Crown Road Issues	In relation to this access matter Clarence Valley Council issued DA2020/0218 on 10th December -2020 for conversion of "as built outbuilding to dwelling to create dual occupancy." A Condition of that consent requires the transfer of the Crown Road section of Banana Road to Council as Council Public Road. This transfer would involve various applications to be made to Council to upgrade the road to Council's standard prior to such transfer. This has not occurred. The second problem with this access arrangement is that the concrete Mororo Creek Bridge/Culvert floods under heavy rain and cuts off both the sawmill property and 3 other properties that use it. Larger pipes are required due to an increase in stormwater in Mororo Creek due to the recent construction of the Pacific Highway. SES Yamba has also had to carry out a rescue operation in this neighbourhood after heavy rain in the last major rainfall event. The submitted SEE states in part that:- "There are no proposed amendments to the existing access that the subject site currently utilises from Banana Road which offers sufficient sightlines in both directions." This statement is clearly untrue as the 90 degree bends are virtually blind corners. The SEE claims that there will be 4 truck movements per week by 5 tonne trucks. This is blatantly untrue and our clients suggest that truck movements are up to 4 times per day by an 8 tonne truck. Some of these movements also occur on a Sunday and out of hours (such as 6am).
Contamination	A Preliminary Site Investigation for contamination has not been carried out.
Works near streams	The application should be referred to Natural Resources Access Regulator (NRAR) under the Water Management Act 2000 given that there is an existing dwelling and the sawmill operating within 40 metres of a first order stream.
Land use conflict	At a minimum a Land Use Conflict Risk Assessment (LUCRA) should be required. Whilst the submitted Noise Monitoring report states that the noise levels at the adjoining dwellings are acceptable the fact is that the neighbours amenity is severely compromised when the sawmill is operating. For instance, neighbours can't sit

	outside when sawmill operating. This is exaggerated for our client who has had a stroke and brain injury.
Waste management	Despite statements made in the submitted Waste Management Plan (WMP) the operators of the sawmill have continuously burnt the sawmill waste on-site. There would also be further truck movements generated if sawmill and woodchips were taken from the site as claimed. If approved this process of burning needs to be stopped and correct practice of removal from site (as stated in submitted WMP) enforced by Council.
Output	The amount of timber that the sawmill is allowed to process per week/year has not yet been mentioned. The submitted SEE claims that the sawmill only operates 3-4 hours per day. However, given the proposed operating hours are 7am to 6pm (Monday-Friday) and 7am-1pm (Saturday) there is obviously potential for increasing the current output of timber from this existing operation without any approval. This needs to be addressed in any approval.
Source of logs	Currently "dieback logs" are being transported to this site through the Mororo Nature Reserve. This also presents a risk to the diversity on that site. All logs into a registered sawmill should be stamped, tagged and logged for tax purposes.
Fencing	Our client has 5 grandchildren who play in the yard and there should be suitable secure fencing of the sawmill area to ensure that children can't access the site machinery.
Shipping container and signage	The submitted SEE states that, apart from the roadside stall, there are no structures within the front set-back (10 metres), However, the existing container (used as a dry kiln) is clearly within this 10 metres setback (see submitted Site Plan) and should be moved. In addition, the DA proposes a 4m x 4m sign be attached to the side of the aforementioned container. This is a huge sign clearly out of place at the end of a no through road. It should be downsized to something more appropriate if Council approves this proposal.
Road sealing	The recent extensive upgrade to the gravel pavement surface of Banana Road will present a potential dust hazard with the potentially large increase in the amount of traffic on this road. We submit that if this DA is approved then the access road should be bitumen sealed, as well as realigned to remove the existing blind corners.

Comment

The issues raised in the objections have been discussed in this report and support and justify the recommendation reasons for refusal:

That Council refuse Development Application DA2023/0175 for the following reasons:

- Following a request for information under Clause 36 of the *Environmental Planning and Assessment Regulation 2021* insufficient information has been submitted for Council to properly consider the application including:
  a) a Traffic Impact Assessment to assess the suitability of the road and traffic impacts has not been provided as per Clauses C4.1 and C4.2(3) of the Rural Zones Development Control Plan (the DCP);

b) the noise and amenity impacts have not been adequately addressed as per Clause C4.3(i) of the Clarence Valley Rural Zones Development Control Plan 2011;
c) a Noise assessment report from a suitably accredited consultant has not been provided;
d) the proposed hours of operation are uncertain in regard to potential impacts;
e) the proposed limits of the operation of the rural industry are ambiguous; and
f) the impacts of clearing of native vegetation for road improvements has not been provided.

- The proposed development is not consistent with the following Objects of the *Environmental Planning and Assessment Act 1979*:
  a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;
  b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;
  c) to promote the orderly and economic use and development of land;
  g) to promote good design and amenity of the built environment.
- The proposed development conflicts with the Objectives of the RU2 Rural Landscape Zone under the *Clarence Valley Local Environmental Plan 2011* in that it does not:
  a) maintain the rural landscape character of the land;
  b) provide for a range of compatible land uses, including extensive agriculture; and
  c) minimise conflicts between land uses within the zone and with adjoining zones.
- The proposed development conflicts with the objectives for development in rural zones, Clause C1, in that it is not
  e) responsive to site constraints and the surrounding environment;
  f) of a high quality and sensitive to the rural character of the locality in which it is being developed;
  g) functional and appropriate for the type of land use /activity being provided; and
  h) provide adequate buffers to residential development to reduce conflicts between rural/agricultural uses and residential amenity.
- The current road access is unsuitable for the increased traffic demand generated by the proposed development therefore not complying with Clause 7.8 of the *Clarence Valley Local Environmental Plan 2011* or Clause C8.5 of the Clarence Valley Rural Zones Development Control Plan 2011.
- The applicant is not proposing to upgrade the relevant access road (Banana Road, being an unmaintained Crown Road) to Council's standards as required under the Roads Policy and approval would require the transfer of the road to Council, which Council has resolved to not support at previous meetings (Items 09.127/09 & 13.165/13).
- The site is not considered suitable for the proposed development in regard to ongoing negative impacts from operational noise from the proposed Rural Industry on nearby dwellings.
- Having regard to the matters for consideration under Section 4.15 of the *Environmental Planning and Assessment Act 1979* the proposal is not considered to be in the public interest as the application does not satisfactorily address Council's concerns and will likely result in a negative impact for the community.

(c) the public interest.

The application does not satisfactorily address Council's criteria and would provide a development outcome that would result in a negative impact for the community. Approval of the proposal would not be in the public interest as it is generally inconsistent with the relevant state legislation, Local Environmental Plan and local development controls as adopted by Council.

The proposed development is not consistent with the following objects of the EP&A Act:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,
(c) to promote the orderly and economic use and development of land,
(g) to promote good design and amenity of the built environment,

4. Conclusion

The development does not meet the desired outcomes of Council's planning controls and is not satisfactory having regard to the matters for consideration under Section 4.15 of the *Environmental Planning and Assessment Act 1979.*

Note: At the time of the completion of this planning report, no persons have made a *Political Donations Disclosure Statement* pursuant to Section 10.4 of the *Environmental Planning and Assessment Act 1979* in respect of the subject planning application.

5. Recommendation

THAT Development Application No. DA2023/0175 for Rural Industry (Sawmill) shelters signage and Roadside Stall at 96 Banana Road MORORO NSW 2469 (Lot 502 DP 746692 & Lot 1 DP 1259694) be refused for the following reasons.

- Insufficient information has been submitted for Council to properly consider the application in regard to noise impact assessment, traffic impacts, hours or operation and impacts on clearing for road improvements
- The proposed development is not consistent with the following Objects of the *Environmental Planning and Assessment Act 1979*.
- The development is not consistent with the objectives of the Clarence Valley Rural Zones DCP.
- The development is not considered to be of an appropriate scale and form for the site and the character of the locality. The development will result in unacceptable adverse impacts upon the natural or built environments.
- The development is not considered suitable for this location and is not within the public interest.
- The development will be difficult to monitor and regulate and will likely not be sufficiently managed.

Feedback from Crime Prevention Strategy 2023-2026

Submitter	Feedback	Comment
Robyn Smith Grafton	* Graffiti - I note the inclusion on page 4 of a painted mural that has been replaced now due to vandalism. I acknowledge that graffiti isn't really a reported crime to the police and low in the statistics. Maybe Council could encourage the reporting of graffiti and actively encourage community to take pride of areas and initiate cleaning of high traffic areas eg bridge walkways. Community groups that use areas with high level of graffiti could be encouraged to have a working bee and be offered an incentive to adopt an area to keep clean. eg this area maintained by a walking group, girl guides or whoever.	Council has introduced a new Streetscaping Team. The streetscape team will plan and lead a range of capital and maintenance projects in our towns, villages, parks and open spaces. This team will have an impact on beautify our towns, villages and park spaces.
	CCTV expansion to include areas of high vandalism. Open communication with small business owners, Council & Police about problem areas to focus on. Share information about implementing & installing crime prevention security equipment.	The CPS was developed in partnership with local police and the priorities of the strategy were identified through analysis of current data and statistics. Council promotes the 'If you see something, say something' campaign, encouraging community to report illegal activity (including graffiti) to police or council via the website or customer service. Council works with local Police as partners and have recently delivered a presentation at the Grafton Chamber of Commerce meeting, topics included CCTV and business security. In terms of funding for the implementation of CCTV, the only funding stream currently available is through the NSW Government. The Department of Communities and Justice, offers the 'Community and Small Business CCTV Fund' which nominates eligible Local Government Areas (LGA). Unfortunately, Clarence Valley is not a nominated LGA and therefore can not apply for funding. https://www.crimeprevention.nsw.gov.au/cctvfund
	Reporting regards enforcement of "no alcohol zones" - is it actually done? where/ how often? Or is it just token signs.	Rangers and Police can enforce. The signs are an essential aspect to enable enforcement under the LG Act. Effort in this regard is typically in support of Open Spaces and Community Engagement teams for anti-social behaviour on parks and reserves that are 'alcohol prohibited areas' (different but similar to AFZs).

		CVC are reviewing the Alcohol Free Zones this financial year under the Op Plan. Preliminary consultation with Police has commenced. Review will include broader stakeholder and community consultation as well.
	Open up Communication about excessive speed areas in the Valley, negligent driving areas eg public parks	Driving – NSW police related information
	Consider name & shame - if people are actually caught undertaking minor crime and undertaking community service	Matter for NSW Police
South Grafton Progress Association (Robert Cook) South Grafton	See letter – below The 'very basic measures' Council have outlined in the CPS focus on implementing situational crime prevention techniques, that reduce the opportunity for crimes to occur. This approach is the recommended framework provided by the NSW Department of Attorney General and Justice. In terms of funding for the implementation of CCTV, the only funding stream currently available is through the NSW Government. The Department of Communities and Justice, offers the 'Community and Small Business CCTV Fund' which nominates eligible Local Government Areas (LGA). Unfortunately, Clarence Valley is not a nominated LGA and therefore can not apply for funding. https://www.crimeprevention.nsw.gov.au/cctvfund The mere presence of CCTV in local areas does not prevent crimes from occurring, however it may act as a deterrent. According to the National Crime Prevention Framework 'CCTV may be effective in reducing some forms of property crime in certain circumstances. However, its is most effective when used in conjunction with other initiatives as part of an integrated approach. (Australian Institute of Criminology, 2012). The use of CCTV predominately benefits police in the investigation of criminal offences and is regularly used to 'identify offenders, secure guilty pleas, verify witness statements or identify potential witnesses' (Australian Institute of Criminology, 2019). With regards to Police sharing information on social media sites, NSW Police must adhere to policy and procedure when sharing information with the community. Council can not comment on or influence these policies at a State Government level. In addition, Council can not affect the current process NSW Police adopt when community are required to make a report to police. Council promotes the 'If you see something, say something' campaign, encouraging community to report issues to police or council. Council will include a reminder to record he event number in the information and collateral that is disseminated to the community moving forward In the past NSW Police have held Community Safety Precinct Committee meetings, however this initiative is no longer supported due to lack of community involvement and changing operational requirements. Police and CVC staff have attended local Chamber of Commerce meetings together to provide information and present on specific issues. Council works in partnership with local Police and can make themselves available to the South Grafton Progress Society if requested	

SGPA
South Grafton Progress Associaton

The South Grafton Progress Association would like to provide this submission to Council.

The objective of these observations and recommendations are to provide a safe environment for our citizens and to provide confidence that their safety is important and that the Council will work productively with Police to that end.
SGPA agrees with the very basic measures that Council have outlined in the 'Draft Crime Prevention Strategy 2023-2026' recently published.
Significant variations that we believe need reconsidering:

A. **CCTV**
The strategy makes these points -
"Council working with the Chamber of Commerce to identify funding"
"The presence of CCTV does not prevent crime from occurring"
Our members and Business owners and residents do not agree with both points.
Firstly it is not for Chamber of Commerce to seek funding for measures to safeguard people and property in the LGA
The CVC must be on the front foot and seek funding to implement a city wide CCTV system that is integrated into our streetscape on footpaths and roadways and incorporated into every new and refurbished infrastructure project.
CCTV needs to be evaluated in the same way as water; sewer and telecommunications are seamlessly integrated as an essential facility.
Secondly the premise that CCTV does not reduce a crime from being committed is wrong.
What evidence does Council have to make such a statement? The visibility of CCTV camera in shops and on streets is a strong deterrent to would be property and personal crime perpetrators. Many cities and towns are benefiting in crime reductions by installing CCTV cameras on roundabouts and even mobile units in crime hot spots. To say that visible CCTV does not prevent crime is like saying traffic signs such as "speed cameras operating" or "danger slippery surface" do not draw attention and alter the reader's actions. CCTV needs to be considered standard infrastructure and throughout many countries it is. eg UK, USA, Singapore etc.

B. **Publish crime activity** – Council can assist by encouraging Police to provide prompt information to the public on criminal activity.

Citizens have a right to be safe and if a crime, stealing, property damage etc has taken place in a street; this info needs to be made available to those residents near the area so they can take precautions and be alert, and they may have information that can assist police.
Property in the local area is not safe with over 85% of survey responders reported extreme concern regarding property theft and break and enters. (refer pages 27/28 Draft Crime Prevention Strategy)
A Facebook site "Clarence crimes and information" has been running for some time.
This is an excellent page and brings victims and the community together by promptly allowing victims to report property loss and provide the platform for the community to respond.SGPA has spoken to Facebook users and in many cases the culprit has been identified and the goods have been recovered. Victims can activate the site much faster than the time consuming process of reporting the matter via Police channels.

C. **The current procedure of reporting property crime via Police channels if far from satisfactory**. This may be outside CVC controls and the best CVC can do is promote this view to Police at regular meetings.
Council can promote via social media the importance of victims asking for an '***event number'*** from Police whenever a crime is reported.
It is only crimes where an '***event number'*** is issued that are included in Police crime statistics.
A monthly formal meeting consisting of the following representatives should be activated

- Police
- CVC
- Business owners
- Community members
- Media – eg 2gf; 103.1; Independent
- MINUTES MUST BE ISSUES

Yours Sincerely
Robert Cook
Secretary
SGPA

Feedback from Disability Inclusion Action Plan 2023-2026

Submitter	Feedback	Comment
Glenn Redmayne Broadway NSW	I commend staff on the work and engagement to produce a solid plan that will create the foundation of inclusion, well done. The community confirmed improved beach access and experience (66%) as an inclusion priority. Actions to address this vary though there is a welcome commitment to access improvements to viewing platforms at 2 beaches. It's not clear the extent to which this will facilitate a full experience including access to the beach itself. Also welcomed is commitment to future improvements at Main beach Yamba and Minnie waters. However, without details specifying the scope of accessibility improvements, the planning and delivery stages it is again unclear to what extent this plan will deliver on equitable beach access. The next DIAP is due mid 2026 giving this plan 30months shelf life. Without explicit details the risk is Council won't have materially progressed the intended outcome in the life of this plan only to be revisited again in the next DIAP. Such projects are time consuming and require budgeting over successive years to complete. I believe this aspect needs elevating with clear, stronger delivery commitments incorporated in the final plan presented to Council for adoption.	Council notes your feedback which was considered. The beach access actions were kept broad until planned site investigations were conducted and detailed plans were produced – then specific actions could be developed. The date for the review of the DIAP in 2026 is a date set by NSW Government that Council must comply with as per legislation in NSW Disability Inclusion Act 2014.
Saira-Jane Booler Nymboida NSW	See submission letter below	Council notes your feedback which was considered. This feedback was provided in the original round of consultation as a letter and face to face meeting and was fed into the development of the document. Open Spaces have received this feedback as well.

Good morning, Councilors.

I would like to introduce myself; my name is Saira-Jane Booler, and I am the Early Childhood Community Building Capacity Facilitator for Northcott, partner to the NDIS. I have been conducting a project around inclusive play spaces in our community. I have spent some time using the Everyone can play audit tool to assist me in navigating the inclusiveness of the playgrounds in Grafton as well as my 30 + years of working as an Early Childhood Teacher. During this project I have met with families of children living with disability and they all spoke of the immediate need of having at least one park that is completely fenced to ensure the safety of their children.

Often children with disability have the tendency to run or have natural curiosity to wander with little self-awareness for their own personal safety. Some of the families also discussed while managing a child who is wheelchair bound it gives them limited ability to be able to supervise their other children, making an enclosed playground imperative to their safety.

I had the pleasure of meeting with Richie Williamson last week and he discussed with me his involvement with the Jacaranda Park some eight years ago when he was the Mayor. I shared my findings and thoughts concerning the Jacaranda Park and he agreed that fences should completely secure the park with gates like a childcare setting where adults only can open, to give parents and carers peace of mind when visiting the Park.

I have some other ideas I would like to advocate for a more inclusive space and would like to take this opportunity to offer my assistance on upgrading the Jacaranda Park as it is stated in the Clarence Valley Council's *playground policy.* "All abilities Playgrounds" and comes under the Regional Playground definition – **a playground that services a region or portion of local government planning area.**

"These large sized playgrounds offer a range of activities for all ages and maximum infrastructure and are designed as a one-off park and play environment with a high level of landscaping, public art and supporting facilities.

I propose that if the fencing could be addressed first and then we could look at some other areas of improvement.

These improvements are as follows:

> **Visuals** – Visual supports are a communication tool that can be used with autistic people. They can be used in most situations, are adaptable and portable. All the inclusive parks I visited in neighboring NSW towns have installed visuals in their parks. It would be wonderful if we could too.
>
> **Visual supports can help to:**

- Provide structure and routine.
- Encourage independence.
- Build confidence.
- Improve understanding.
- Avoid frustration and anxiety.
- Provide opportunities to interact with others.

Public Art – Jacaranda Park would benefit greatly from some local Aboriginal art, most of the parks I visited in other regions had Aboriginal art relevant to the history of their areas, some even had interactive story telling audio stations, which would be of such benefit to a child in a wheelchair who has limited access to the other more physical activities. Richie discussed new grants that will be coming available in September 2023, and I thought this could be a pathway to encouraging local artists to contribute to Jacaranda Park to provide a sense of community and belonging for all that use the park. Although it is wonderful that there is a Yarnin Circle already completed I couldn't help feeling it was rather dull being constructed in concrete, I was imagining some beautiful paintings or sculptures of native Flora and Fauna to improve the visual aesthetics.

Water Feature – The water feature at Jacaranda Park does not seem to be functional? I was wondering if there were any plans to rectify this, water is a great therapeutic resource for children with specific disabilities due to its sensory aspects. There may be a grant that could be applied for to get this great resource up and going. Children with disabilities benefit from the therapeutic aspect of water, however, parents often struggle to get their disabled child to swimming pools, or water holes due to the complexity of the child's diagnosis, and limited ability to be able to adequately supervise their disabled child and other children. Having a Water Feature at a park, is more accessible for parents with children with disabilities, making the community a more accessible place for children with disabilities.

I look forward to working with you on these much-needed upgrades to Jacaranda Park.

As I stated earlier if I can assist with any of the points I have made regarding improvements to our Regional "All Abilities Playground" Jacaranda Park. Please don't hesitate to get in touch with me on the details below.

I would like to take this time to thank you for taking the time to hear me out and considering these matters. I believe Grafton is very much an up-and-coming city, that the whole Community should be proud of and able to enjoy regardless of individual ability.

Clarence Valley Coastline and Estuaries Coastal Management Program

Stage 2: Vulnerabilities and Opportunities

Draft Report

October 2023

Disclaimer:

This report has been prepared on behalf of and for the exclusive use of Clarence Valley Council and is subject to and issued in accordance with the agreement between Clarence Valley Council and Hydrosphere Consulting. Hydrosphere Consulting accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party.

Acknowledgement of Country:

Clarence Valley Council and Hydrosphere Consulting acknowledge the Yaegl peoples, Traditional Custodians of the lands discussed in this Scoping Study and pay tribute and respect to the Elders both past and present and emerging of the Yaegl nations.

Hydrosphere Consulting Pty Ltd
Suite 6, 26-54 River Street
PO Box 7059, BALLINA NSW 2478
hydrosphere.com.au

JOB 22-009: CLARENCE VALLEY COASTLINE AND ESTUARIES COASTAL MANAGEMENT PROGRAM
STAGE 2: VULNERABILITIES AND OPPORTUNITIES

REV	DESCRIPTION	AUTHORS	REVIEW	APPROVAL	DATE
0	Draft for CVC and DPE review	R. Campbell	U. Makings, M. Howland	M. Howland	28 Sept 2023
1	Draft for CEMC review	R. Campbell	M. Howland	M. Howland	22 Oct 2023

EXECUTIVE SUMMARY

Clarence Valley Council (CVC) will prepare a Coastal Management Program (CMP) for the Clarence Valley coastline and estuaries (CMP for the Clarence Coastline and Estuaries) to provide a long-term coordinated strategy for managing the coastal zone. Stage 1 of the CMP development (the Scoping Study) provided a review of progress of actions in the existing management plans for the coastal areas and identified the scope of the new CMP. This report addresses Stage 2 of the CMP process for the Clarence Valley coastline.

Stage 2 of the CMP development involved undertaking detailed studies that help to identify, analyse and evaluate risks, vulnerabilities and opportunities. Studies prepared in Stage 2 provide information to support decision-making in later stages of the planning process, to better understand coastal management issues and to analyse and evaluate coastal risks and opportunities. The work undertaken in Stages 1 and 2 of the CMP development has been used to identify the issues and assess the threats affecting the CVC coastal zone.

The study area for the CMP includes the open beaches, foreshores and coastal waters of the Clarence Valley Local Government Area including Woody Head, Iluka, Yamba, Angourie, Brooms Head, Sandon, Minnie Water, Diggers Camp and Wooli. The study area also includes the estuaries and lagoons of Lake Cakora, Lake Arragan, Sandon River and Wooli Wooli River including three mapped coastal management areas defined in the *Coastal Management Act 2016* (Coastal Use Area, Coastal Environment Area and Coastal Wetlands and Littoral Rainforest Area).

An assessment of coastal hazard risks to Council infrastructure and Council-managed land was prepared for the CMP study area. The assessment considered the location and criticality of Council's assets, the likelihood and extent of beach erosion/ shoreline recession and tidal/ coastal inundation over time and the consequence of the hazards to identify the risk to these assets. This assessment found that Council managed reserves along the coast are vulnerable to inundation and erosion/ recession although the majority of impacted areas at present is limited to the beaches and foreshores which are periodically impacted by higher tides and coastal erosion events caused by storms, with resulting impacts on beach amenity, safety, access and coastal infrastructure. Water, sewer and stormwater infrastructure, pathways, roads, carparks and tracks along the foreshores are also expected to be impacted over time. Higher tides and storm surges are expected to enter urban stormwater systems and increase localised flood risk along the coast more frequently in future, particularly in Yamba and Wooli. The potential impacts range from flooding, salt water intrusion, undermining and collapse depending on the type of assets and extent of protection available.

The first- pass risk assessment undertaken during Stage 1 (covering all threats across the study area) was also updated with new information available from the Stage 2 studies (coastal hazard assessments and any new management approaches) and the outcomes of the asset/ infrastructure risk assessment. The next stage (Stage 3) will involve the identification and evaluation of management options. The level of risk for each threat determined in Stage 2 has determined the options assessment process that will be followed in Stage 3 and the focus of the CMP.

A coordinated and consistent approach to strategic planning and an appropriate level of protection of environmental, cultural, built and commercial assets in the coastal zone will ensure adequate planning for and protection from coastal hazards, future development pressures and emerging threats associated with a changing climate. Due to the large geographical area, environmental and social values of the study area,

there are several key management threats to be considered in the CMP. The threats with a moderate or high risk in the current timeframe will be the focus of the CMP. Stage 3 will include potential strategic approaches to reduce the identified risks and create opportunities to manage any unacceptable risks, identification of management options, development of adaptation pathways over time and evaluation of potential actions. Potential management options to address the highest risk threats are discussed in this report including actions from previous management plans that have not yet been implemented. Other options will also be developed and assessed in Stage 3.

In addition to on-ground management options, there is a need for inclusion of current coastal hazard information into Council's planning framework through the appropriate processes offered through the NSW coastal management framework, local planning provisions and through Council's planning instruments. Council's preferred approach will be developed during Stage 3.

CONTENTS

FIGURES

TABLES

1. INTRODUCTION

1.1 Background

Clarence Valley Council (CVC) is currently preparing a Coastal Management Program (CMP) for the Clarence Valley coastline and estuaries (CMP for the Clarence Coastline and Estuaries) to provide a long-term coordinated strategy for managing the coastal zone. The CMP is being prepared in consultation with government and community stakeholders to provide an integrated approach to coastal zone management.

The *NSW Coastal Management Manual* (OEH, 2018a, the Manual) provides guidance for developing a CMP and assists councils in addressing the requirements of the *Coastal Management Act, 2016*. The manual outlines the mandatory requirements and provides guidance on the preparation, development, adoption and content of a CMP. It includes a process for councils to follow when identifying and assessing the vulnerability of coastal environmental, social and economic values and evaluating management actions.

The manual outlines a five-stage process for developing and implementing a CMP (Figure 1). Stage 1 of the CMP development, the Scoping Study (Hydrosphere Consulting, 2021) was completed in March 2021. The Scoping Study provided a review of progress of actions in the existing management plans for the coastal areas and identified the scope of the new CMP. This report addresses Stage 2 of the CMP process for the Clarence Valley coastline.

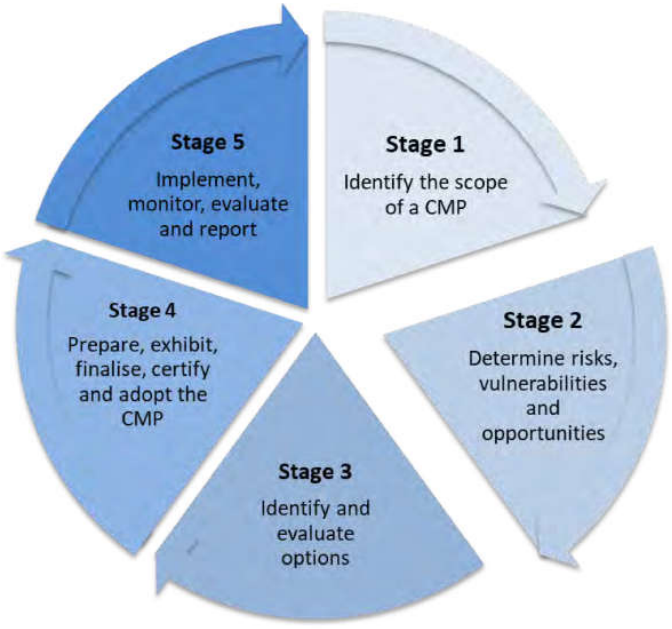


Figure 1: The five-stage process for developing a coastal management program

Source: Adapted from OEH (2018a)

1.2 Study Area

The study area for the CMP includes the open beaches, foreshores and coastal waters of the Clarence Valley Local Government Area (LGA) including the townships of Woody Head, Iluka, Yamba, Angourie, Brooms Head, Sandon, Minnie Water, Diggers Camp and Wooli. The study area also includes the estuaries and lagoons of Lake Cakora, Lake Arragan, Sandon River and Wooli Wooli River. The three currently mapped coastal management areas defined in the *Coastal Management Act 2016* (Coastal Use Area - CUA, Coastal Environment Area - CEA and Coastal Wetlands and Littoral Rainforest Area - CWLRA) within the study area are shown in Figure 2.

CVC is preparing a separate CMP for the Clarence River estuary (including Wooloweyah Lagoon) which will provide the long-term coordinated strategy for managing the remainder of the coastal zone within the LGA.

The Clarence Valley coastline lies spans over two primary coastal sediment compartments, Clarence River to Point Danger (Tweed Heads) and Yamba Heads to Bare Bluff (Sapphire Beach). The secondary sediment compartments within the study area are Bundjalung (shared with Richmond Valley Council), Yuraygir and Woolgoolga (shared with Coffs Harbour City Council) illustrated in Figure 3.

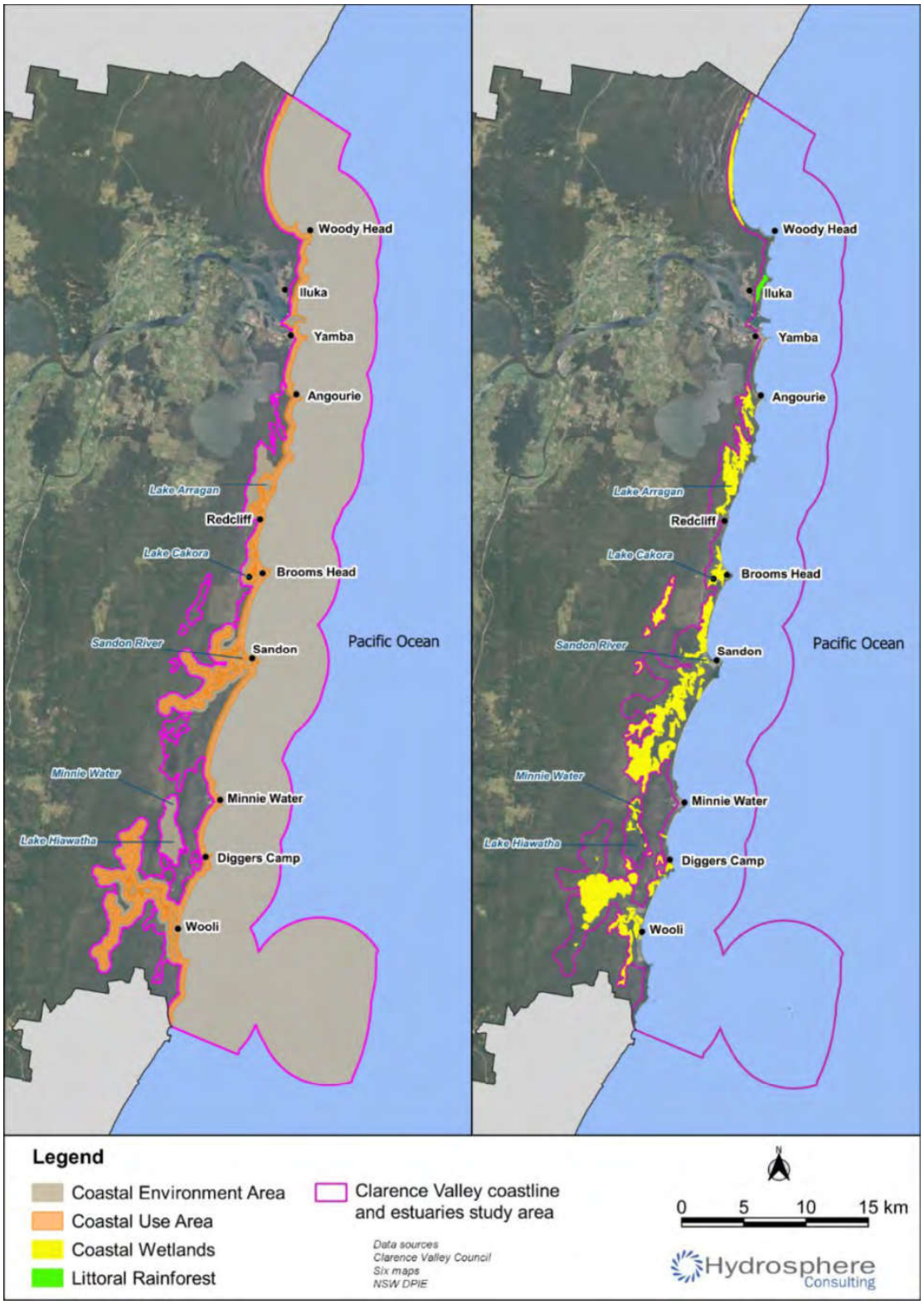


Figure 2: Coastal management areas to be addressed in the CMP for the Clarence Valley coastline and estuaries

Source: Hydrosphere Consulting (2021)

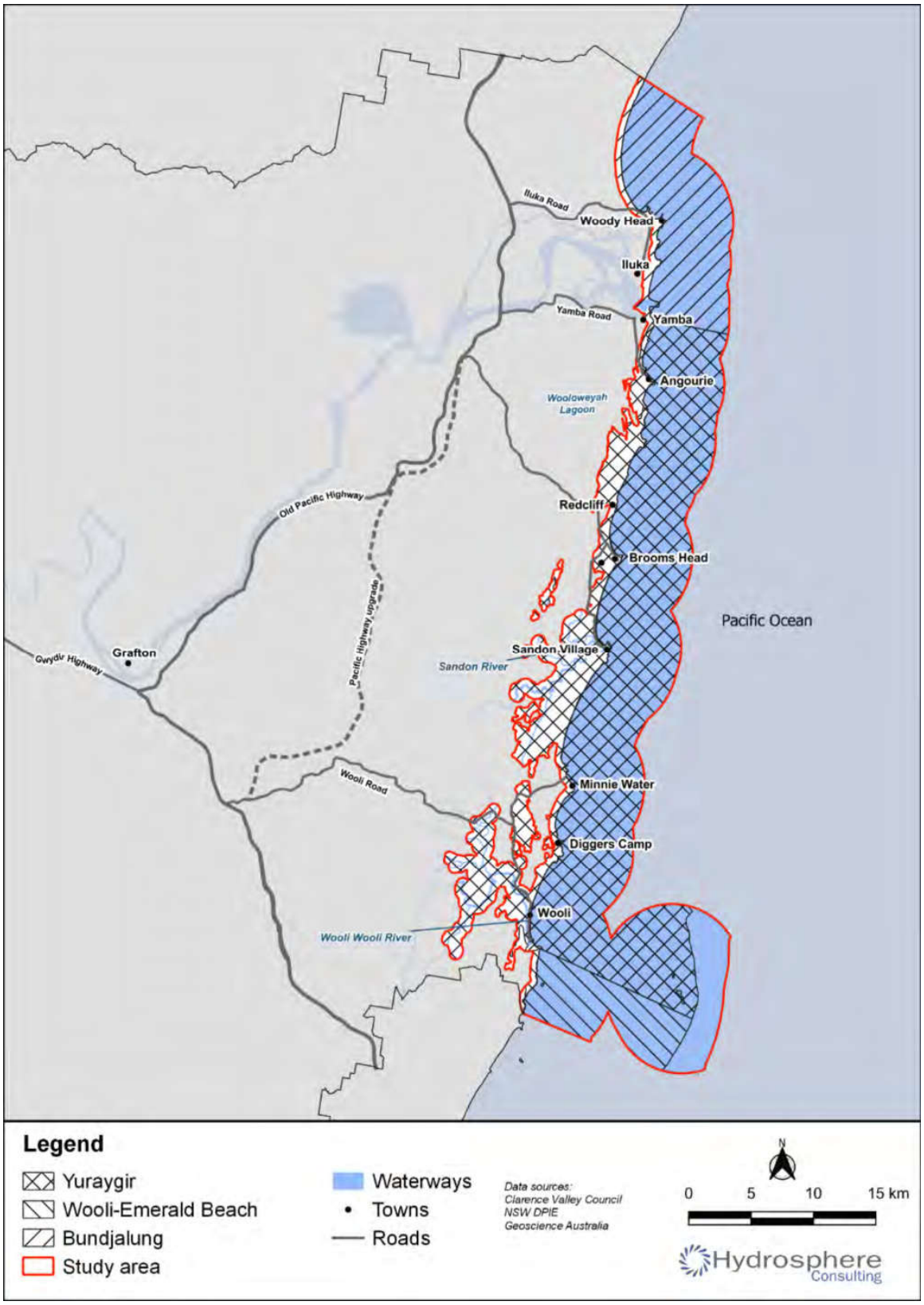


Figure 3: Secondary coastal sediment compartments within the CMP study area

1.3 Scope of Stage 2

Part A of the *Coastal Management Manual* (OEH, 2018a) outlines the mandatory requirements for a CMP. The mandatory requirements that are relevant to Stage 2 have been addressed in this report:

- MR2: A CMP is to consider a range of timeframes and planning horizons including immediate, 20 years, 50 years, 100 years and (if council considers it relevant based on expert advice) beyond.
- MR3: A CMP is to consider a broad range of coastal management issues and management actions with a focus on achieving the objects and objectives of the *Coastal Management Act 2016*.
- MR 4. A CMP must include the rationale for selecting the area to be covered by a CMP and identify whether it applies to:
    - all or part of the coastal zone of one local government area; or
    - all or part of the coastal zone of adjoining local government areas that share a coastal sediment compartment or estuary (where adjoining local government areas share a coastal sediment compartment or estuary, a CMP that addresses an area comprising that coastal sediment compartment or estuary must reflect this regional context).
- MR5. A CMP must identify:
    i. any proposed amendments to mapping of the relevant coastal management areas.
    ii. evidence to support any proposed amendments or additions to the area of the four coastal management areas in the relevant area.
    iii. information about these proposed amendments that can support the preparation of a planning proposal and, in particular, that could be forwarded along with a planning proposal to the Minister to inform a Gateway determination under section 3.34 of the *Environmental Planning and Assessment Act 1979*.
- MR 6. During preparation of a CMP, a council is to:
    i. identify the scope of the CMP.
    ii. determine and assess coastal risks, vulnerabilities and opportunities (including without limitation risks to environmental, social and economic values and benefits).
    iii. evaluate and select coastal management options.
- MR 7. A council may choose not to repeat steps (or parts of steps) in subparagraphs (ii) or (iii) of mandatory requirement 6 for the area the subject of the proposed CMP (or parts of that area) if those tasks have already been undertaken for the coastal management of that area, provided that council first considers:
    i. whether the existing assessment of coastal risks, vulnerabilities and opportunities, or the existing evaluation of coastal management options, that council proposes to NSW Coastal Management Manual Part A 22 rely on enables council to prepare the CMP in accordance with mandatory requirement 8 below and sections 14 and 15 of the *Coastal Management Act, 2016*.

ii. the effectiveness of the existing coastal management of that area.

iii. whether any circumstances concerning the coastal management of that area have changed.

Stage 2 of the CMP development involves undertaking detailed studies that help to identify, analyse and evaluate risks, vulnerabilities and opportunities. Studies prepared in Stage 2 provide information to support decision-making in later stages of the planning process. The additional information assists communities to better understand coastal management issues and to analyse and evaluate coastal risks and opportunities.

Stage 2 of the CMP for the Clarence Valley coastline and estuaries included:

- Refining understanding of key management issues (where there are knowledge gaps) as described in the Scoping Study (Hydrosphere Consulting, 2021).
- Analysing and evaluating current and future risks (detailed risk assessment) building on the first-pass risk assessment from the Scoping Study and outcomes of Stage 2 detailed studies.
- Identification of opportunities to reduce risks and enhance the environmental, social and economic values.
- Continuing engagement with the community and stakeholders.

The Scoping Study (Hydrosphere Consulting, 2021) identified the following detailed assessments required in Stage 2 which are discussed in this report:

- Coastal hazard assessment - Section 2.4:
    - Continuous hazard mapping along the entire coastline for each planning timeframe (current, 2050 and 2100) with reference to the state-wide exposure assessment, supplemented with local scale assessment where required.
    - Detailed probabilistic analysis of beach erosion, coastal recession and coastal inundation hazards for current and emerging high-risk locations and areas not yet assessed (Shark Bay, Woody Bay, Whiting Beach, Brooms Head, Sandon area and Wooli). The detailed probabilistic analysis of beach erosion/ coastal recession was expanded to include Minnie Water, Diggers Camp, Pippi Beach and Spooky Beach.
- Review of existing slope instability assessments and monitoring data - Section 2.7:
    - Analysis of previous hazard assessments and recent instability monitoring data to provide a contemporary understanding of the instability risk at Pilot Hill (Yamba Main Beach) and Cakora Point. This assessment was expanded to include Convent Beach.
    - Identification of potential management options including ongoing monitoring, additional assessment or remediation.
- Assessment of assets and infrastructure at risk - Section 6.1:
    - Development of asset register and mapping of assets on Council land and Council-managed Crown Land.
    - Assessment of risks to public assets due to coastal hazards.

- Assessment of cultural heritage sites at risk - Section 4:
    - Identify cultural heritage sites potentially affected by coastal hazards (through cultural heritage mapping where appropriate).
- Detailed risk assessment - Section 6.2:
    - Analysis and evaluation of current and future risks (updated first-pass risk assessment).
- Review of planning controls related to coastal hazards - Section 9.
- Stakeholder engagement - the Stakeholder Engagement Strategy (Appendix D in Hydrosphere Consulting, 2021)) identified stakeholders, the level of engagement proposed and engagement tools - Section 11.

Additional information was reviewed as part of Stage 2 including:

- Coastal hazards - review of entrance instability (Section 2.2) and erosion and inundation of foreshores (Section 2.3).
- Water quality - review of water quality data and existing monitoring programs - Section 3.
- Identification of opportunities - review of actions from previous management plans and other emerging opportunities - Section 7.
- Management of National Parks and Reserves including coastal hazard response plans for National Parks campgrounds - Section 9.
- Emergency response arrangements - Section 10.
- Presentation of information required to address the intended outcomes of Stage 2 as described in Section 1.4.

Recommendations have also been provided for Stage 3 of the CMP development (Section 12).

1.4 Outcomes of Stage 2

The *Coastal Management Manual* (OEH, 2019a) describes the intended outcomes from Stage 2. Table 1 outlines the intended outcomes and the outcomes achieved for the CMP for the Clarence Coastline and Estuaries.

Table 1: Outcomes of Stage 2

Potential Stage 2 outcomes[1]	Stage 2 outcomes: CMP for the Clarence Coastline and Estuaries
Refined mapping of coastal management areas	Potential Coastal Vulnerability Area (CVA) mapping developed during Stage 2 includes the coastal hazards of beach erosion, shoreline recession, coastal inundation and tidal inundation. Further work is recommended to develop refined mapping of coastal cliff/ slope instability areas. Further work is recommended to confirm the suitability of the Coastal Wetlands and Littoral Rainforest Area (CWLRA) mapping.

Potential Stage 2 outcomes[1]	Stage 2 outcomes: CMP for the Clarence Coastline and Estuaries
Detailed information necessary for a planning proposal to amend the mapping of coastal management areas for planning purposes in council's Local Environmental Plan (LEP)	Potential amendments to planning controls are identified in this report. Council will confirm the preferred planning controls as part of Stage 3.
Context and data provided to support the identification and evaluation of management options in Stage 3	This report provides detailed information on threats and risks and identifies potential management opportunities to be considered further in Stage 3.
Improve understanding of the complexity of issues and community perspectives	This report provides detailed information on threats and risks which will be presented to the community and other stakeholders to obtain feedback on the potential management opportunities to be considered further in Stage 3.
Nature and extent of exposure to coastal hazards and threats to public and private assets (both natural and built)	Detailed information is available on the risks to public assets from coastal hazards over various timeframes. The updated risk assessment provides information on the extent of private assets potentially impacted by coastal hazards over various timeframes.
Understanding of the factors that contribute to vulnerability and to current and future risks	The detailed coastal hazard studies undertaken as part of Stage 2 provide detailed information on the factors that contribute to vulnerability and to current and future risks along the coastline.
Socioeconomic characteristics such as demographics, coast-dependent economic activity, land use patterns and future development scenarios which influence vulnerability and capacity to respond now, and in the future	Information on socioeconomic characteristics was provided in the Stage 1 Scoping Study and updated in this report.
Understanding of the range of potential future scenarios for climate change, population growth, development and use of the coast	Information on potential future scenarios was provided in the Stage 1 Scoping Study and updated in this report.
Understanding of the local community's attitude to risk in terms of what may be acceptable, tolerable or unacceptable	Development of the Stage 1 Scoping Study included detailed stakeholder engagement activities. Feedback from the community has been considered in the detailed risk assessment presented in this report. The outcomes of Stage 2 will be presented to stakeholders and any feedback will be considered during Stages 3 and 4 of the CMP development.
Opportunities to reduce risks and enhance the environmental, social and economic values	Potential management opportunities to be considered in Stage 3 are presented in this report.

1. OEH (2019a)

2. COASTAL HAZARDS

The seven coastal hazards defined in the Manual (OEH, 2019a) are:

- Hazard 1: Beach erosion - discussed in Section 2.5.
- Hazard 2: Shoreline recession - discussed in Section 2.5.
- Hazard 3: Coastal lake or watercourse entrance instability - discussed in Section 2.2.
- Hazard 4: Coastal inundation - discussed in Section 2.4.
- Hazard 5: Cliff/slope instability - discussed in Section 2.7.
- Hazard 6: Tidal inundation - discussed in Section 2.4.
- Hazard 7: Erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters - discussed in Section 2.3.

2.1 Coastal Processes

The ocean conditions and wave climate along the Clarence Valley coastline is influenced by short-term weather and longer-term climatic conditions. Coastal processes and influences on coastal processes occurring along the Clarence Valley coastline include (Hydrosphere Consulting, 2021, further detail is provided in JBP, 2022 and JBP, 2023):

- Wave direction - the dominant swell direction along the Clarence Valley coastline is from the east to south-east. There is a seasonal trend in wave direction with swells predominantly east-south-east during summer, shifting further south in autumn with dominant south-east to south-south-east during winter. The spectrum expands in spring with some winds coming from the north-east sector but is still predominately south-east. During summer, east to south-east swells are dominant. Typically, the largest swells come from the south-south-east with a small portion of larger swells from the north-east east during summer.
- Wave height - wave heights peak between March and April. Periodic weather events can result in large wave conditions that impact on shorelines.
- Wind - morning winds are typically light and from the west with stronger winds from the south occasionally. Afternoon winds are typified by stronger north-east and south-east winds. Winds influence aeolian transport of sand and local wave conditions.
- Sediment movement - the Clarence Valley coastline is a longshore drift coastline. Overall sediment movement (in a northerly direction) is influenced by the predominant swell direction (south-easterly). Longshore drift occurs within and between sediment compartments. There are other localised sediment movement, including on and offshore movements under different conditions and other localised anomalies.
- Weather patterns - the El Niño Southern Oscillation (ENSO) is responsible for influencing weather patterns on the east coast and subsequently is major driver of wave climate and associated coastal processes and conditions. The ENSO drives the El Niño/ La Niña weather cycles. Typically, El Niño events are associated with reduced storminess, weaker easterly trade winds and a generally more

southerly wave climate. La Niña events are typified by the reverse characteristics, increased storminess, stronger trade winds and a more easterly wave.

The Clarence Valley coastline lies within the temperate province, south-east division and central eastern region and spans over two primary coastal sediment compartments, Clarence River to Point Danger (Tweed Heads) and Yamba Heads to Bare Bluff (Sapphire Beach). The secondary sediment compartments within the study area are Bundjalung, Yuraygir and Woolgoolga. Based on the sediment compartment framework the majority of the Clarence coastline is dominated by sediment compartments that are characterised by rocky headlands, zeta form bays and sandy beaches and the majority of the coast consists of shorelines that do not show evidence of long-term recession but are likely to begin receding with continuing sea-level rise. However, there are several sections where shoreline recession is currently occurring and is likely to continue.

The Clarence Valley coastline has a moderate tidal influence and moderate to high wave energy climate which has formed multiple crenulate shaped embayments such as at Woody Head and Sandon. Sand is supplied to the beaches by longshore drift, with sand pulses around headlands a key mechanism for the longshore transport, which generate large migratory updrift rips that erode the beach and transport sand to the north through sand waves. North of the Calrence River, the region is part of the Clarence-Moreton Basin, where softer sedimentary rocks have been eroded to form broader valleys, typically with longer beaches and fewer headlands than experienced along the south of the Clarence LGA. The southern section of the study area is part of the New England Fold Belt whose resilient sedimentary and metasedimentary rocks dominate the rocky sections of coast between Yamba to South West Rocks. This coastline is characterised by its moderately long sandy beaches, separated by rocky outcrops and headlands, most notably at Yamba, and Minnie Water. Throughout the coastline, the presence of exposed Pleistocene dunes suggests a slowly receding coast.

2.2 Coastal Lake or Watercourse Entrance Instability

The CMP study area includes five lakes/ water courses as discussed in the following sections.

2.2.1 Clarence River entrance

The Clarence River entrance is stabilised with a southern breakwater from Yamba headland and another breakwater on the northern side at Iluka. The lower estuary is further stabilised with a number of other training and protection walls including along the foreshore at Yamba and Iluka, Middle Wall, Moriarty's Wall, Iluka, Freeburn and Goodwood Island training walls. These breakwaters and entrance training walls are managed by Transport for NSW Marine Infrastructure Delivery Office (TfNSW - MIDO).

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 which was identified as an issue in the *Clarence River Estuary Management Plan* (Umwelt, 2003) and the Stage 1 Scoping Study. Historically, dredging has occurred in the Clarence River entrance to improve navigation, most recently in 2016, and for sand and gravel supply to the construction industry. 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 TfNSW - MIDO. Sedimentation and navigation impacts within the Clarence River entrance are an ongoing concern raised by stakeholders (Hydrosphere Consulting, 2021).

The *Clarence River Estuary Management Plan* (Umwelt, 2003) contained actions for the NSW government, led by DPE - Crown Lands, to coordinate studies of sedimentation in the estuary. To date those assessments have not been completed and hence there is limited understanding of sedimentation processes and related impacts affecting the estuary and entrance.

2.2.2 Lake Cakora

Lake Cakora, located at Brooms Head, is an intermittently closed and open lake or lagoon (ICOLL) with an untrained entrance. Breakout events are a function of rainfall and coastal conditions. During entrance breakouts, sediment from the entrance foreshore is transported into the nearshore area. Sediment is then reworked by coastal processes and transported back onshore by waves to reform the entrance berm. Informal opening of the entrance is undertaken periodically, typically when the water level is perceived to be too high within the lake or the water quality is perceived to be poor, usually after it has not been open to the ocean for a period of time and particularly when this coincides with the summer holiday period (Hydrosphere Consulting, 2021).

An entrance management regime was proposed in the certified CZMP for Brooms Head and Lake Cakora (CVC, 2017) involving artificial breakout of Lake Cakora entrance during swimming season for recreational purposes if the lake water level has reached 1.6 mAHD without breaking out naturally. Fixed gauges were to be installed adjacent to Ocean Road Bridge to monitor lake water levels. The entrance management strategy has not been formalised for Lake Cakora.

2.2.3 Lake Arragan and Mara Creek

Lake Arragan and Mara Creek are ICOLLs with untrained and unmanaged entrances within Yuraygir National Park. NPWS estimates that Lake Arragan naturally opens 3-4 times per year, depending on conditions. The state of the entrance varies naturally in response to prevailing catchment runoff and coastal conditions. Breakout events typically occur during summer-autumn coinciding with periods of high rainfall and often high tides and large seas. Stakeholders (e.g. NPWS) have not raised any issues related to the entrance opening regime of either ICOLL and there is no desire to artificially manage these entrances (Hydrosphere Consulting, 2021).

2.2.4 Sandon River

The Sandon River flows through Yuraygir National Park into the sea at Sandon. The entrance is flanked by two rocky headlands which act as natural training walls. The Sandon River estuary has a net upstream movement of marine sands by tidal currents resulting in the formation of shoals in the lower estuary. Sedimentation due to upstream sources is not greatly affecting the estuary and sand movement within the estuary is deemed to be predominantly natural (Hydrosphere Consulting, 2021).

2.2.5 Wooli Wooli River

The Wooli Wooli River flows through Yuraygir National Park and enters the sea near the Wooli. The entrance to Wooli Wooli River estuary has trained walls which ensure the estuary remains open to the sea. These breakwaters and entrance navigation channel are managed by TfNSW - MIDO.

Within the lower estuary, the shoal pattern has remained relatively stable over the past 50 years, with the exception of the shoals around Mangrove Island. In the vicinity of Mangrove Island, shoals appear to have moved downstream by episodic flood events and then slowly reworked back into upstream positions by inflowing (flood) tides. Sand build-up and entrance condition/ safety are an ongoing concern raised by stakeholders (Hydrosphere Consulting, 2021).

2.3 Erosion and Inundation of Foreshores

Hazard 7 (Erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters) has been considered as two separate issues for the CMP development:

1. Erosion of foreshores.
2. Inundation of foreshores under tides, waves, and catchment flood waters.

2.3.1 Erosion of foreshores

The available information on bank erosion can be summarised as (Hydrosphere Consulting, 2021):

- Clarence River entrance - the majority of the banks within lower estuary within the study area are protected with rock revetment/ training walls.
- Lake Cakora - bank erosion assessments have not been undertaken although no significant bank erosion sites have been noted in previous studies. The first-pass risk assessment in the Scoping Study found that the risk of bank erosion was moderate at the Lake Cakora bridge (also considered in the Stage 2 beach erosion assessment, Section 2.5).
- Sandon River - the most recent assessment of bank condition was undertaken in 2010. Bank erosion was found to be occurring throughout the estuary on outside bends along 30 - 100 m of river bank, ranging from minor to severe. The majority of the Sandon River catchment is located within Yuraygir National Park and the tidal reaches are part of the Solitary Islands Marine Park. Due to high vegetation cover on banks and the undeveloped nature of the catchment, all erosion is considered to be natural and due to the ongoing lateral adjustment of the waterway. Some minor ad hoc erosion control works have been undertaken on the southern bank of the entrance adjacent to the residential

properties at Sandon Village and along Sandon River Road near the entrance to the campground. No other works have been undertaken to address the other identified erosion sites in Sandon River estuary (Hydrosphere Consulting, 2021).

- Wooli Wooli River - the most recent assessment of bank condition was undertaken in 2006. The majority of the catchment is located within Yuraygir National Park and the tidal reaches are part of the Solitary Islands Marine Park. Erosion hot spots at the South Terrace boat ramp and the banks adjoining the Solitary Islands Marine Park Resort Caravan Park (noted in the first-pass risk assessment) have since been remediated. Other erosion hot spots were noted on the southern bank approaching “The Forks” and isolated areas along Bookram Creek. Bank erosion was attributed to a variety of causes but mostly related to removal of riparian vegetation combined with tidal and flood flows or boat wake and wind waves. The first-pass risk assessment found that the risk of bank erosion was moderate in parts of the Wooli Wooli River.

2.3.2 Inundation of foreshores under tides, waves and catchment flood waters

CVC is undertaking a flood study for Wooli Wooli River which will include assessment of tidal (sunny day) inundation expected to be completed in 2023. Outputs will include updated flood mapping to support land use planning. There are no flood studies undertaken for Sandon River or Lake Cakora. Foreshore inundation for the Clarence River entrance will be addressed in the CMP for the Clarence River Estuary (currently being developed by CVC).

There is limited guidance regarding the assessment of this hazard for CMPs but available flood risk mapping that includes catchment and marine/ tidal inundation would meet the objective of this hazard for the purposes of CVA mapping.

2.4 Tidal and Coastal Inundation

Tidal inundation is generally related to elevated tidal water levels under average meteorological conditions. Tidal inundation may include shorter-term incursion of seawater onto low-lying land during an elevated water level event such as a high tide or more permanent inundation due to land subsidence, changes in tidal range or sea level rise. Coastal inundation is generally related to storm events and occurs when a combination of marine and atmospheric processes raises ocean water levels above normal elevations and inundates low-lying areas or overtops dunes, structures and barriers (Figure 4). Wave overtopping and storm surge can also be associated with tsunami events. Any changes in mean sea level will directly affect the extent and severity of tidal/ coastal inundation hazards.

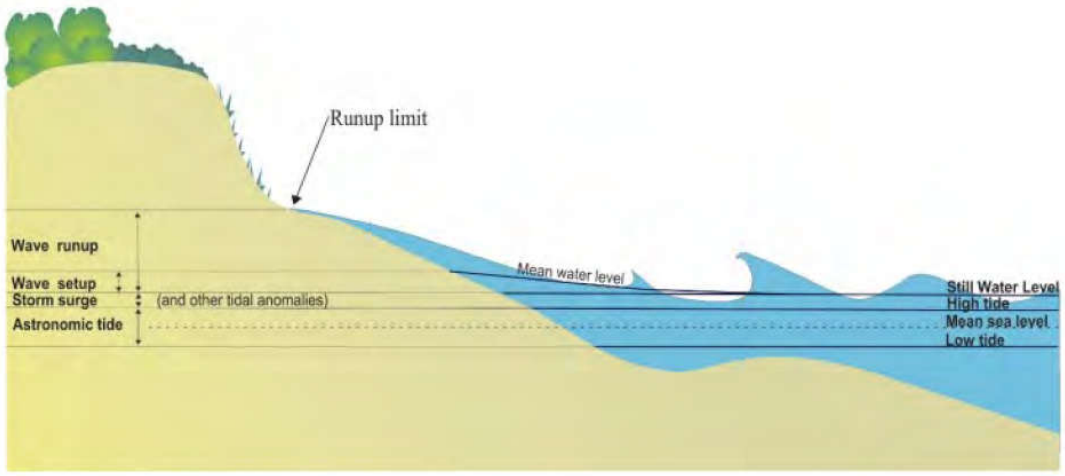


Figure 4: Elevated water levels on the open coast

Source: OEH (2019a)

The detailed assessment of tidal and coastal inundation undertaken for the Clarence coastline (JBP, 2022 attached in Appendix 2) provides information on the likelihood of occurrence and the resultant spatial extent of inundation over time. Tidal and coastal inundation hazard mapping has been produced for the Clarence River and coastline areas using hydrodynamic modelling and spatial projection methods. The assessment was undertaken for each planning horizon, event frequency and climate pathway (Table 3). Further detail and mapping are provided in JBP (2022).

2.5 Beach Erosion and Shoreline Recession

Beach erosion refers to the removal of beach materials by wave action, tidal currents, littoral currents or wind. It is usually associated with storms or with elevated water levels and can occur on the open coast and in estuaries. Beach erosion events are often interspersed with a beach recovery phase when sediment moves back onshore to rebuild the beach and dunes. The sediment budget is maintained in a closed sediment compartment (Figure 5). Changes in the distribution of sediment between the nearshore, alongshore, beach face, foredune and estuaries are considered in the assessment of potential beach erosion. Short-term fluctuations of the shoreline are often quite dramatic and may mask long-term accretion or recession that occurs at much slower rates (Figure 5). Shoreline recession refers to continuing landward movement of the shoreline or a net landward movement of the shoreline over a specified time. As shoreline recession occurs, the beach fluctuation zone is translated landward (Figure 6). Whether long term recession occurs depends primarily on the state of the sediment budget for a particular part of the coast. Coastal sediment compartments can gain and/or lose sediment from several sources. If the losses persistently exceed the gains, then the depositional shorelines within that compartment will recede.

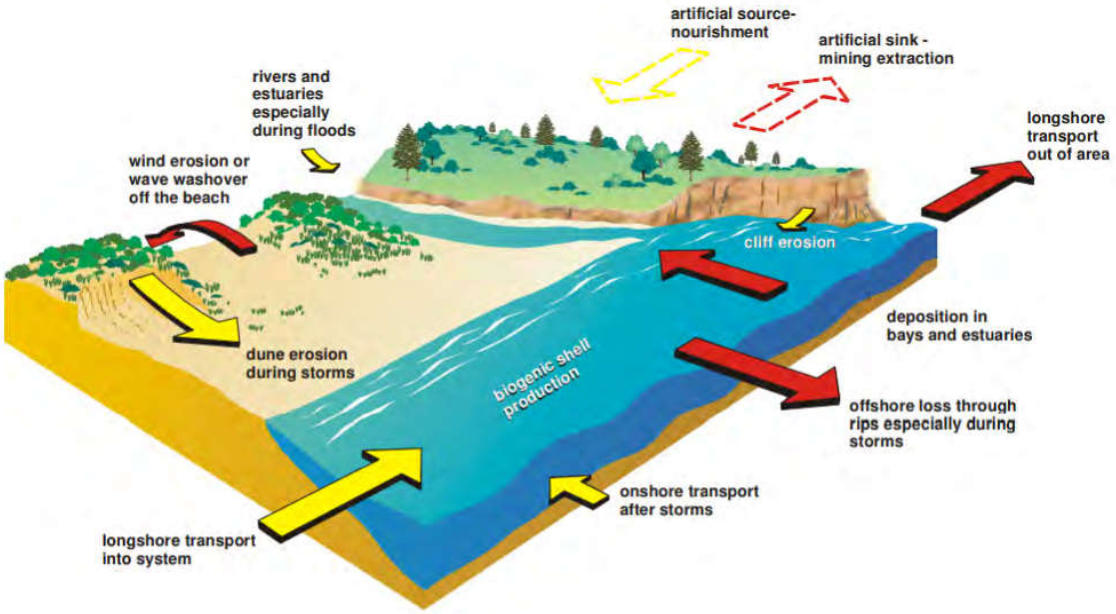


Figure 5: Components of the coastal sediment budget

Source: DLWC (2001)

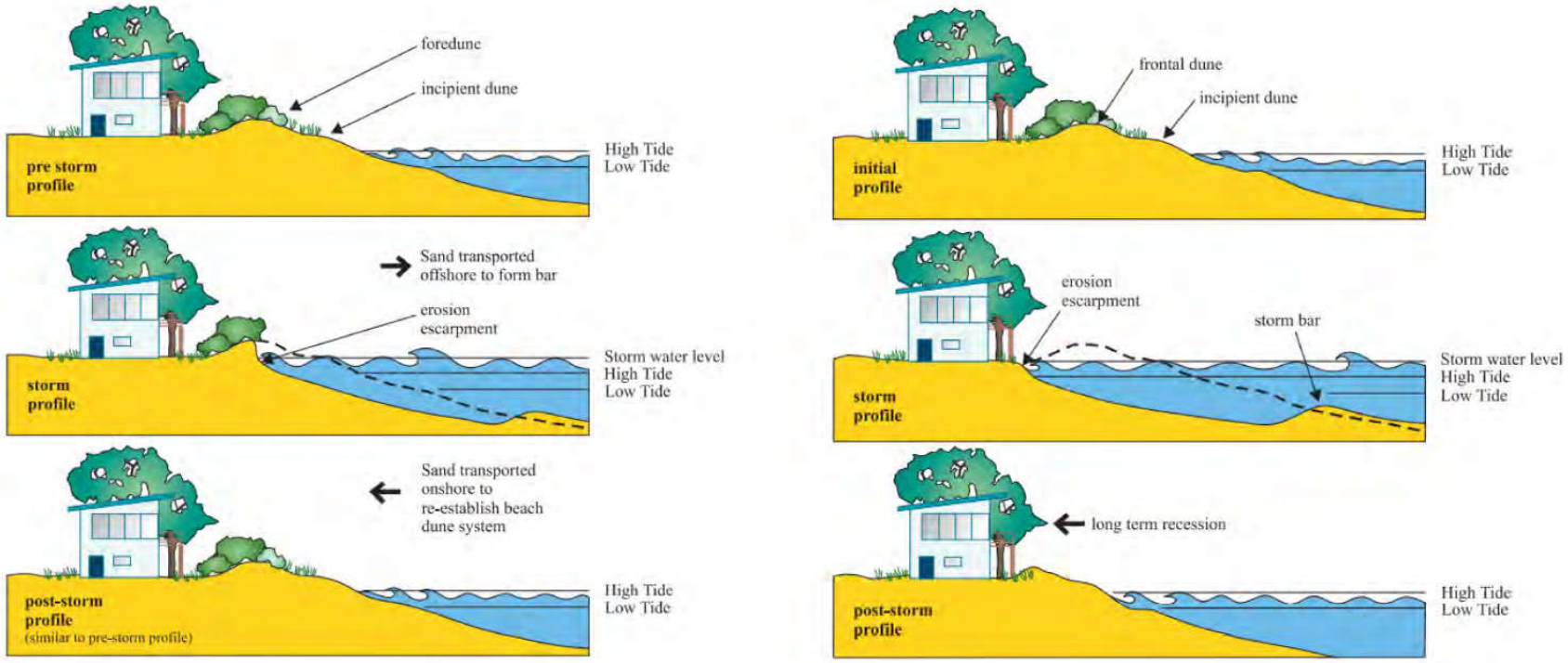


Figure 6: Beach erosion/accretion cycle with no permanent sand loss or shoreline retreat, left; Long-term beach recession - landward displacement due to permanent sand loss, right

Source: DLWC (2001)

2.6 Stage 2 Coastal Hazard Assessments

Due to the lack of contemporary and detailed information, coastal hazard assessments have been undertaken for the hazards of coastal erosion, recession and inundation as defined by OEH (2019a):

- Beach erosion - refers to the removal of beach materials by wave action, tidal currents, littoral currents or wind. It is usually associated with storms or with elevated water levels and can occur on the open coast and in estuaries.
- Shoreline recession - refers to continuing landward movement of the shoreline or a net landward movement of the shoreline over a specified time. As shoreline recession occurs, the beach is translated landward.
- Tidal inundation - inundation of land by tidal action under average meteorological conditions. Tidal inundation may include shorter-term incursion of seawater onto low-lying land during an elevated water level event such as a king tide or more permanent inundation due to land subsidence, changes in tidal range or sea level rise.
- Coastal inundation related to storm events - the temporary flooding of a portion of land within the coastal zone which is generally related to storm events. Coastal inundation occurs when a combination of marine and atmospheric processes raises ocean water levels above normal elevations and inundates low-lying areas or overtop dunes, structures and barriers. It is often associated with storms resulting in elevated water levels (storm surge), wave setup, wave run-up and over-wash flows.

The coastal hazard assessment and associated maps (JBP, 2022; JBP, 2023) were prepared to support the development of the CMP as part of Stage 2. Hazard mapping has been produced for present day (2023), +20 years (2043), +50 years (2073) and +100 years (2123) planning timeframes.

Coastal hazards have been defined in terms of an event frequency based on terminology used in flood management planning, specifically the terminology used in *Australian Rainfall and Runoff* (Commonwealth of Australia (Geoscience Australia, 2019) in order to apply consistent natural hazard risk assessment nomenclature.

Table 2: Australian Rainfall and Runoff Preferred Terminology

Frequency Descriptor	EY	AEP (%)	AEP (1 in x)	ARI
Very Frequent	12			
	6	99.75	1.002	0.17
	4	98.17	1.02	0.25
	3	95.02	1.05	0.33
	2	86.47	1.16	0.5
	1	63.21	1.58	1
Frequent	0.69	50	2	1.44
	0.5	39.35	2.54	2
	0.22	20	5	4.48
	0.2	18.13	5.52	5
	0.11	10	10	9.49
Rare	0.05	5	20	19.5
	0.02	2	50	49.5
	0.01	1	100	99.5
Very Rare	0.005	0.5	200	199.5
	0.002	0.2	500	499.5
	0.001	0.1	1000	999.5
	0.0005	0.05	2000	1999.5
Extreme	0.0002	0.02	5000	4999.5
			↓	
			PMP/ PMP Flood	

Source: Figure 1.2.1, Geoscience Australia (2019)

Annual Exceedance Probability (AEP) - the probability of an event being equalled or exceeded within a year. Average Recurrence Interval (ARI) - the average time period between occurrences equalling or exceeding a given value. Events more frequent than 50% AEP should be expressed as X Exceedances per Year (EY). For example, 2 EY is equivalent to a design event with a six month recurrence interval when there is no seasonality in flood occurrence. PMP = probable maximum precipitation.

For inundation, the event frequency is described using an annual exceedance probability (AEP, the probability that a particular inundation event will be exceeded in a given year). However, future erosion and recession hazard projections are a combination of short-term and long-term probabilistic components, therefore scenarios are described in terms of likely exceedance probability (EP). For a given planning horizon, erosion/ recession maps indicate the probability (e.g. 1%) that the hazard extent will be exceeded. The frequency (Table 3) has been presented as a qualitative description, useful to aid community and stakeholder understanding of risk.

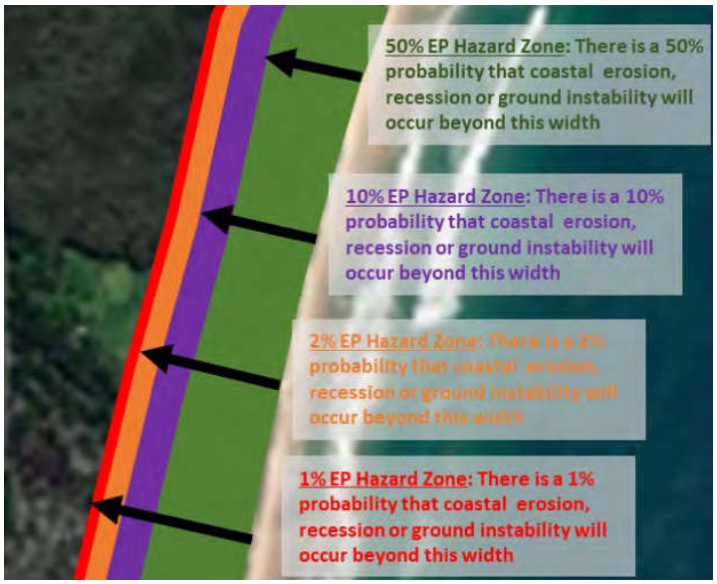


Figure 7: Width of hazard zone (coastal erosion, recession or ground instability) for each event frequency

Future time horizons include allowances for sea level rise. These were presented as two scenarios based on Shared Socio-economic Pathways (SSPs), where SSP2 represents the previous Representative Concentration Pathway (RCP) RCP4.5 and SSP5 represents the previous RCP8.5. The SSPs consider how socio-economic factors may change over the next century including potential changes to population, economic growth, education, urbanisation and the rate of technological development. SSP2 represents a pathway where the world follows a path in which social, economic, and technological trends do not shift markedly from historical patterns. It considers intermediate greenhouse gas emissions, with carbon dioxide (CO_2) emissions maintaining current levels until 2050, then falling, but not reaching net zero by 2100. SSP5 represents the highest level of fossil fuel use, food demand, energy use and greenhouse gas emissions. It includes very high greenhouse gas emissions, where CO_2 emissions tripled by 2075. However, it also includes a socio-economic pathway where competitive markets, innovation and participatory societies are able to produce rapid technological progress to achieve sustainable development over the long-term. Further information is available in the Intergovernmental Pael on Climate Change (IPCC) Sixth Assessment Report (IPCC, 2023).

In 2021 CVC commissioned consultants Risk Frontiers (2021) to undertake a climate risk assessment. The highest greenhouse gas scenario is RCP8.5 (SSP5) and represents a worst-case scenario where GHG emissions continue to increase, and global mean temperature increase exceeds 4°C. RCP4.5 (SSP2) is a middle-of-the road GHG emission scenario where some mitigation of GHG emissions occurs, and global mean temperature increase is between 2 - 3ºC. RCP8.5 translates into greater sea level rise compared to RCP4.5. RCP8.5 is currently considered to be less likely whereas RCP4.5 is considered to be a more realistic future scenario. RCP8.5 is a worst-case scenario and is considered to be less likely than RCP4.5. The Risk Frontiers (2021) report was adopted by Council in April 2022.

The coastal hazard scenarios considered in the assessment are shown in Table 3.

Table 3: Coastal hazard assessment scenarios

Hazard	Planning timeframes	Event frequency (AEP)	Event frequency (EP)	Frequency descriptor	Future climate
Tidal inundation (High High Water Solstice Spring, HHWSS)	Present day (2023) +20 years (2043) +50 years (2073) +100 years (2123)	> 1 per year	-	Very Frequent	SSP2 and SSP5
Coastal inundation (extreme sea level)	Present day (2023) +20 years (2043) +50 years (2073) +100 years (2123)	10% AEP	-	Frequent to Rare	SSP2 and SSP5
		2% AEP		Rare	
		1% AEP		Rare to Very Rare	
Beach erosion and shoreline recession	Present day (2023) +20 years (2043) +50 years (2073) +100 years (2123)	-	50% EP	Frequent	SSP2 and SSP5
			10% EP	Frequent to Rare	
			2% EP	Rare	
			1% EP	Rare to Very Rare	

2.6.1 Topographic Surveys

A LiDAR survey was undertaken in Pilot Hill and Convent Beach in February 2022 with slope sections provided at four locations to assist with the assessment of slope instability (Section 2.7). Further detail is provided in FSG (2022) and survey outputs are provided in Appendix 1.

Additional LiDAR survey was undertaken at Brooms Head and Wooli in June 2022 to assist with the assessment of beach erosion and shoreline recession (Section 2.5). Three slope sections are presented for Brooms Head beach with sections selected to capture the main areas of erosion and the rock seawall. Similarly at Wooli beach selected sections are presented where erosion/recession was more evident. Survey outputs are provided in Appendix 1.

2.6.2 Detailed Probabilistic Assessment

The detailed assessment provides information on the likelihood of beach erosion/ shoreline recession over time. The erosion and recession assessment (JBP, 2023 attached in Appendix 3) was undertaken for each planning horizon, event frequency and climate pathway (Table 3) and considered five factors:

- Historic recession rate.
- Future variability in wave climate.
- Potential sea level rise impacts.
- Storm (event-based) erosion.
- Other site-specific geomorphological features.

The future extent of erosion and shoreline recession will depend on the occurrence and severity of storms, future variability in wave climate and impacts due to sea level rise. Each parameter has been applied within a probabilistic framework, which considers the statistical distribution of each factor to account for expected variation within the analysis. The study applies a stochastic simulation to repeatedly and randomly combine these variable parameters to provide consolidated predictions of potential impacts which are mapped for various statistical frequencies (exceedance probabilities).

JBP (2023) provides maps over different time horizons for the potential 'undefended' shoreline erosion zone (i.e. assuming there are no effective protection works). These maps combine the long-term recession rate, variability in offshore waves, sea level rise impacts and an extreme storm (the average rate of recession observed at the site is not used, rather it is a value that is larger than 50%, 90%, 98% or 99% of the combined data). The mapping therefore shows the erosion/ recession that would have occurred without any protection works (including existing works) or underlying bedrock which may inhibit beach erosion. This enables consideration of the effectiveness of existing coastal protection works and bedrock in reducing risks. The potential effectiveness of the coastal protection works and bedrock in minimising the hazards are considered in the risk assessment (Section 6). Further detail and mapping are provided in JBP (2023).

2.6.3 Regional Scale Mapping

For the remainder of the coastline not considered in the detailed assessment of erosion and recession, regional scale mapping is available from spatial data developed by Hanslow *et al.* (2016) derived from a volumetric coastal response model applied with a statistical approach to forecast immediate and future coastal erosion and recession based on the approach by Kinsela *et al.* (2016). The First Pass (Proximity analysis) and Second Pass (Regional-scale modelling) assessments have been completed for the NSW coastline, with the latter moving towards a probabilistic framework. The First Pass assessment used a simple proximity analysis to consider potentially erodible sandy coast featuring properties that may be affected by coastal erosion at present or in the future. This used proximity buffers extending 55, 110 and 220 metres landward from open-coast sandy shorelines. The Second Pass assessment used a sediment-compartment templating approach to characterise the morphology and sediment budgets of NSW beaches. This was applied through a probabilistic framework to consider uncertainty in model inputs. It used a volumetric beach response model, where the long-term erosion was calculated based on a sediment budget imbalance between sources and sinks.

Mapping is available for the 2015, 2050 and 2100 timeframes and 50%, 10%, 1% and 0.1% exceedance levels. The approach is intended to provide a consistent analysis suitable for application to all NSW beaches. Regional scale mapping for the remainder of the Clarence coastline is provided in Appendix 4. The mapping is a broad-scale assessment and does not consider all potential local-scale influences and should not be used to assess erosion risk to individual properties and assets. Detailed assessment for urban areas, where the risk of erosion has been identified for planning purposes is provided in JBP (2023) and discussed above.

DPE is currently in the process of updating this regional scale mapping and any changes to planning layers/ CVA mapping will reflect the latest mapping data available.

2.6.4 Vulnerability to Inundation and Erosion/ Recession

Areas within close proximity to estuary entrances are most vulnerable to inundation with oceanic inundation of lesser concern along the Clarence Valley coastline. Areas vulnerable to inundation are:

- North of Clarence River - Inundation is predicted to impact on the Bundjalung National Park north of the Clarence River with inundation extents increasing over time towards Iluka Road at Shark Bay. More frequent inundation (from the Clarence River) of management trails including Saltwater Inlet management trail and the NPWS depot is expected over the next 20 years. By 2043, inundation from the Clarence River is predicted to impact parts of the Iluka foreshore. These inundation extents originate outside the study area (inland to the west), expanding to the study area over the long term.
- Yamba - Similarly, Hickey Island is vulnerable to inundation at present with inundation extents increasing over time.
- Brooms Head - The village of Brooms Head (south of Lake Cakora entrance) is vulnerable to coastal inundation with inundation extents increasing over time within the northern and eastern boundaries of the residential areas. North of the entrance, inundation may potentially impact Ocean Road and residential areas at present with inundation becoming more frequent over time. By 2073, inundation of large parts of the village north and south of the entrance is expected to be frequent with inundation extents increasing over time.
- Sandon - Periodic inundation is predicted to impact on the campground, access road and surrounding Yuraygir National Park in the current timeframe with extents increasing over time. More frequent inundation of Sandon River Road is expected over the next 20 years. Periodic storm surge from the ocean could extend into the campground areas including the boat ramp and southern campsite areas over the next 20 years. Campsites in the northern section are expected to be periodically inundated by 2073. In Sandon Village, inundation of the Back Trail at the entrance to the village may become more frequent over the next 20 years and properties on the western side of the village may be impacted by inundation by 2123.
- Wooli - Lower lying parts of North Street/ Riverside Drive and South Terrace and nearby residential areas may be periodically impacted by inundation at present with parts of Wooli Road and nearby residential areas also periodically inundated by 2073.

Along the Clarence coastline many beaches are vulnerable to coastal erosion/ recession. Assuming no foreshore protection, the predicted impacts include:

- Shark Bay is expected to recede further within Bundjalung National Park with erosion threatening Iluka Road (near Shark Bay picnic area) in 20 years with rare events (2% EP) and becoming more likely in the longer-term with more frequent events (50% EP in 2073).
- Woody Bay is expected to recede further within Bundjalung National Park with erosion threatening the Woody Head campground access road at present with frequent to rare events (at least 10% EP) with the risk of further recession increasing in future and impacting on additional campground infrastructure. Iluka Road in this area is predicted to be impacted in 20 years with rare events (2% EP) and becoming more likely in the longer-term with more frequent events (50% EP in 2073)
- Whiting Beach is vulnerable to erosion with the car park at risk within 50 years (50% EP) and the whole of the island at risk by 2073.

- Erosion along Pippi Beach is predicted to reach Pacific Parade within 50 years during rare events (2% EP) and more frequent events in the longer-term (2123).
- The shoreline of the Brooms Head foreshore north of the existing seawall is expected to recede further through the campground towards Ocean Road and the bridge with each storm event, threatening Ocean Road and the northern bridge abutment at present in frequent to rare events (at least 10% EP) and more frequent events in future (10% EP in 2043). The residential properties along Ocean Road foreshore are at risk at present with frequent (50% EP) events. Residential properties with Brooms Head along Ocean Road are at risk in 20 years in rare to very rare events (1% EP) and more frequent events by 2073 (2% EP).
- The northern arm of Lake Cakora is predicted to breakthrough to the ocean in a rare event (2% EP) at present and more frequent events (10% EP) in future, potentially receding to Brooms Head Road within 100 years with frequent events (50% EP).
- Sandon beach is vulnerable to erosion with Sandon River Road and the Sandon River campground at risk from rare (2% EP) events at present and more frequent events in future. Coastal erosion may reach the Sandon River within 100 years.
- The north and middle sections of Minnie Water beach are vulnerable to erosion with the surf club at risk at present in frequent to rare (10% EP) events and more frequent events in future. Sandon Road and Banksia Street and residential properties are at risk within 50 years in rare events (2% EP) and more frequent events by 2123.
- Diggers Camp is vulnerable to erosion with Nugget Street at risk at present from frequent to rare (10% EP) events and more frequent events in future.
- Wooli Beach is vulnerable to erosion with Wooli Village at risk from frequent to rare (10% EP) events at present with coastal erosion potentially reaching the Wooli Wooli River within 100 years. The northern section of Wooli is vulnerable to erosion in frequent to rare (10% EP) events within 100 years.

While the hazard mapping shows a threat of erosion along the majority of the coastline, the presence of coastal protection works, underlying or exposed bedrock is expected to mitigate some of the risk. However, there is limited information on the condition and suitability of the coastal protection works and the presence and condition of the coastal protection works cannot be guaranteed across all planning time horizons without appropriate engineering assessments. While fit-for-purpose structures may reduce the erosion/ recession hazard, they may not limit the risk for rare or very rare events as they would be expected to fail depending on their design, or over the longer term, where structures are not maintained/ upgraded to account for sea level rise. Ongoing assessment of these structures, maintenance and adaptation to sea level rise will be required to provide longer-term protection. Similarly, the exact nature of the bedrock requires detailed geotechnical investigation in areas relying on the bedrock to reduce the erosion risk. These areas include:

- Woody Head campground where a seawall has been constructed to the eastern end of Woody Bay. There is no protection provided along Woody Bay and seawall end effects are resulting in increased erosion at the western end of the seawall.
- Whiting Beach adjacent to the Clarence River entrance breakwall where a geotextile sand container wall has been constructed. Sand nourishment campaigns at Whiting Beach (2008 and 2016)

provided short-term restoration of the beach following erosion events and built up the incipient dune to provide protection against future storm events.

- The southern end of Diggers Beach which may be protected by bedrock extending from Diggers Headland.
- The southern end of Minnie Water which may be protected by bedrock extending from the southern headland.
- Brooms Head foreshore where a seawall has been constructed along the southern foreshore of the campground. There is no protection provided along the northern section of the foreshore and seawall end effects are resulting in increased erosion in this section near the Lake Cakora entrance.
- Ocean Road foreshore where coastal protection works have been constructed.
- Sandon Village foreshore where various seawalls have been constructed by private property owners. The eastern part of the village may be protected by bedrock extending from the headland.
- Spooky Beach which may be protected by bedrock extending from Spooky Point and Green Point.

The regional scale mapping indicates the non-urban areas of the coastline (mainly Bundjalung and Yuraygir National Parks including the smaller coastal campgrounds at Black Rocks and Illaroo) are also vulnerable to erosion.

Following an initial assessment, Yamba Main Beach and Convent Beach were not modelled using the probabilistic erosion assessment methodology described in JBP (2023) as the primary coastal hazard at these locations is the stability of high-crested cliffs (discussed in Section 2.7). While beach erosion may occur with sea level rise and/or extreme wave events at the base of the cliffs, there is limited geotechnical information to enable assessment of these hazards. Additional geotechnical assessment is recommended to assess the hazard in these locations.

The impacts and threats of inundation and erosion/ recession individually are exacerbated if combined. This could occur if severe erosion and inundation occurred simultaneously or incrementally over time as recession progresses and inundation heights and frequency increases. The Sandon and Wooli ‘peninsulas’ are threatened by coastal erosion/ recession from the east and from the west by inundation from the estuary. Similarly, Hickey Island is threatened by erosion/recession from the north and inundation from the estuary to the south. Mapping (JBP, 2022; JBP, 2023) indicates that there are locations where erosion risk and inundation risk overlap, where there is a further risk of potentially broader scale, more permanent implications, if the two hazards occur simultaneously. This could result in a ‘break through’ where longer-term or permanent estuary-ocean exchange would occur leading to the complete loss of land and assets within the area.

A less drastic outcome of erosion/ recession combining with inundation is an area or zone of increased intermittent inundation or wave overtopping during coastal storm events. Historic aerial photography of Sandon shows the area where the campground is located was detached from the peninsula from approximately 1942 - 1958 (Figure 8), separated by a low sandy area where water would have intermittently overtopped the dune. It is possible similar conditions could occur again in the future due to the combination of erosion and inundation.

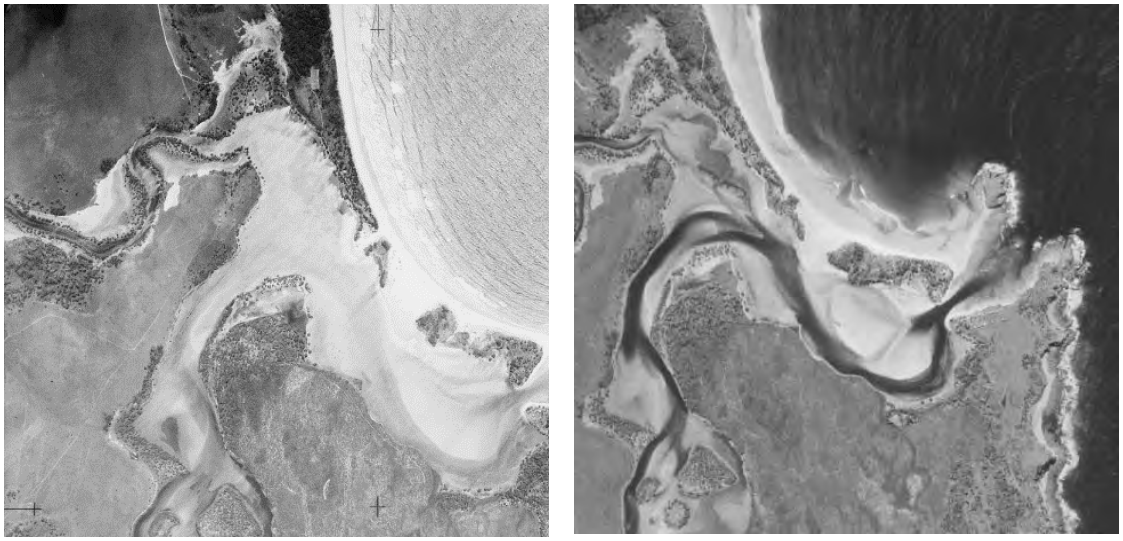


Figure 8: Aerial photography from 1942 (left) and 1958 (right) showing river break-out to the ocean and substantial sand accretion along Sandon Beach and within the river

Source: N. Johnston (left), *Historical Imagery Viewer* Historical Imagery (nsw.gov.au) (right)

2.7 Slope Instability

2.7.1 Background

Geotechnical or slope instability hazard occurs on the headlands and bluffs along the coastline within and separating coastal sediment compartments (sections of the coastline with similar characteristics and processes which share a common sediment resource with clearly defined physical boundaries). The differing degree of instability often relates to the interaction of weathering and erosion processes on different geological formations and rock types along with changes to the types of vegetation on the slope. Geotechnical hazards present risks both to property and to life, such as rock falling from headlands and cliff faces, collapse of unconsolidated materials (such as high dune escarpments), reduced foundation capacity and the collapse of cliffs under houses and development (OEH, 2019a).

The Scoping Study (Hydrosphere Consulting,2021) summarised the existing information relating to slope instability available at that time as:

- Slope instability is the critical issue for the Yamba coastline particularly the areas backing Main Beach and Convent Beach. The majority of the geotechnical landslide hazards in this area result from the effects of coastal actions on the beach and dunes. The exceptions are the risks associated with instability of the moderately steep headland slopes on the northern side of Yamba Point and the potential for rock falls from underneath the path on the southern side of Yamba Point. Slope instability in these areas has been studied both on a broader area basis and site/ development basis.
- Slope instability and associated risks in relation to CVC infrastructure and individuals at Cakora Point (Brooms Head) has been identified including rock falls and tumbling from jointed greywacke, crest fretting causing receding crests and rock falls from overhangs.

Pilot Hill, Pippi Beach and Cakora Point were the areas considered to be at highest risk of slope instability/ landslip in the first-pass risk assessment (Hydrosphere Consulting, 2021). During Stage 2, FSG Geotechnics and Foundations (2022) undertook a desktop study to collate the available information relating to land instability issues for sites located at Pilot Hill and Convent Beach in Yamba and Cakora Point in Brooms Head (attached in Appendix 5) including:

- Analysis of previous hazard assessments and recent available instability monitoring data to provide a contemporary understanding of the instability risk at Pilot Hill and Cakora Point, including:
    - Review of existing geotechnical reports and risk assessments.
    - Review of geological maps.
    - Review of aerial photography and geomorphology.
    - Development of geological and geomorphological models for cliff/slope instability.
    - Review of existing monitoring data including rainfall, groundwater and inclinometer data.
    - Identification of key geotechnical and geological hazards and processes and confirmation landslide risk zones and mechanisms identified in previous reports.
- Identification of potential management options including ongoing monitoring, additional assessment, or remediation:
    - High level review of previous slope risk assessments.
    - Review of existing slope stability management strategies and whether current mitigation measures are adequate and/or whether alternative options can be considered.
    - Recommendations for further studies or investigations.

The information and recommendations from FSG Geotechnics and Foundations (2022) are summarised in the following sections.

2.7.2 Pilot Hill

Infrastructure at Pilot Hill includes the Pacific Hotel, neighbouring buildings along Pilot Street, the Yamba Surf Life Saving Club (SLSC) and vehicle access, zig zag walkway, public and private walkways, Marine Parade and drainage infrastructure. The site is subject to ongoing geological processes and in the long term it is expected that the slope would continue to regress. Any rise in sea level is likely to accelerate this regression, particularly if waves are able to break directly onto the toe of the dune sand slope (FSG Geotechnics and Foundations, 2022).

Based on the site geology at Pilot Hill, slope instability failures would be expected to result from (Figure 9, FSG Geotechnics and Foundations, 2022):

- Minor failure at the toe of the slope which may be caused by localised scour, a tree falling over or other loss of vegetation and/or elevated streaming groundwater and/or retreat of the wave cut platform.
- Material above this minor slip would calve off in small sections in durations of hours to weeks. The failure may also spread laterally from the initiation point.

- The basal plane of failures would comprise the angle of repose for the sand material and is expected to be between 24° and 27°. The failed slope will settle with a batter within this range.

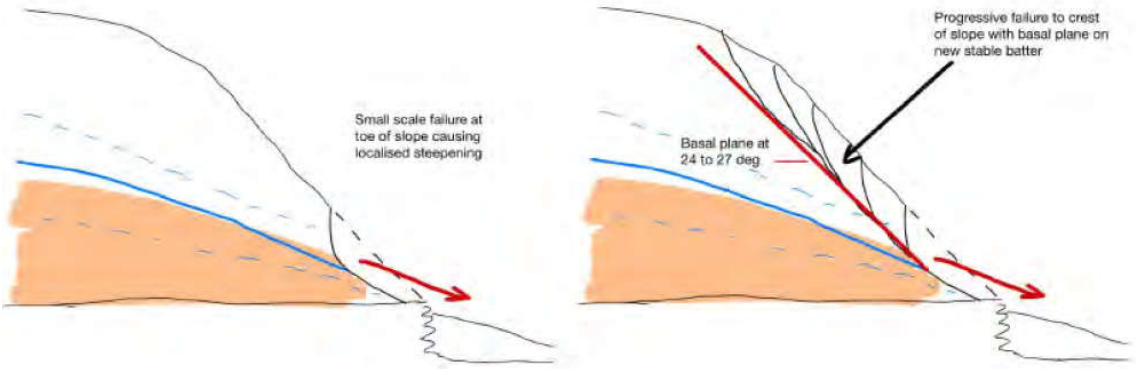


Figure 9: Schematic of expected slope failure for beach facing dunes

Source: FSG Geotechnics and Foundations (2022)

Historical landslide events have been recorded around the Pacific Hotel since May 1921. The Pacific Hotel suffered extensive damage due to a historical landslide in 1950, with additional damage occurring on the slope below the building over the ensuing years. These failures are indicative of the failure modes described in Figure 9.

Previous monitoring, data analysis and investigations at Pilot Hill is documented in FSG Geotechnics and Foundations (2022):

- Rainfall data collection and analysis.
- Instrument monitoring (11 piezometers and 6 inclinometers).
- LiDAR survey (February 2022, Appendix 1).
- Penetrative site investigations (boreholes).
- Numerical modelling - rainfall return period, groundwater modelling, stormwater modelling and slope stability modelling.
- Slope risk assessment.

Analysis of the rainfall data and groundwater levels indicates that groundwater levels were at about peak historical levels when previous landslides had occurred.

In accordance with recommendations from the above assessments, Council currently implements an Emergency Management Plan to respond to the risks associated with rainfall events, which is aimed at identifying possible rainfall conditions that may trigger a landslide event. Rainfall is monitored to identify conditions that may give rise to an emergency as follows:

1. A period of prolonged high rainfall, up to periods of 90 days.
2. A period of high daily rainfall after previous wet periods.
3. High intensity rainfall over short periods of say 1 day or less.

Emergency rainfall warning levels were set up based on analysis of historic rainfall data. Two warning levels are assigned - an Orange Alert Level which was based on a 1 in 3-year rainfall event, and a Red Alert Level which is based on a 1 in 10-year rainfall. The levels are revised based on actual rainfall. At its meeting of 26 April 2022 Council adopted (Resolution 07.22.084) revised "orange" and "red" alert antecedent rainfall levels as recommended in the JK Geotechnics (2021) review of the Interim Emergency Management Plan. The current warning levels are shown in Table 4. The warning levels apply to land within Landslide Risk Zones (LRZ) 1a, 1b, 2 and 3 shown in Figure 10 extending from 2 Pilot Street south to the Pacific Hotel.

Table 4: Rainfall warning levels

Antecedent Rainfall Period (days)	Orange Alert Level (mm)	Red Alert Level (mm)
1	180	200
2	200	280
5	215	325
8	250	370
15	310	425
30	425	560
45	500	675
60	600	800
90	740	955

Source: JK Geotechnics (2021)

Council monitors the rainfall and alerts landowners and occupants if rainfall levels meeting the orange or red levels are experienced or expected. It is the landowners' responsibility to monitor their premises for any evidence of movement once an alert advice has been notified and based on those observations and their own assessment of their building's structural design, make their own assessments as to whether further action is necessary. Council also advises emergency service representatives who are responsible for evacuation advice. If the orange or red levels are reached, Council will inspect drainage infrastructure to ensure that it is functioning properly. If the red alert level is reached, Marine Parade will be closed to vehicular traffic, the zig zag path will be closed to pedestrians and the Yamba SLSC will also be closed.

In March 2022 a landslip affected the zig zag walking path located on the slope above the SLSC and extending into the area below the Pacific Hotel affected by historical land sliding. In response to this event, access to the SLSC and Marine Parade, the boardwalk construction and the walking path below the Pacific Hotel was closed for several weeks. The closure was to reduce the risk to the public and allow time for the groundwater levels to dissipate.

Some Pilot Hill landowners have raised concerns at the appropriateness of restrictions imposed by the current landslip hazard management, which date back to the adoption of the *Yamba Coastline Management Study* in 1999, given that Yamba recorded its most significant period of rainfall in 145 years of record in March 2022, with only minor slips occurring. The last formal review of geotechnical risk at Pilot Hill was undertaken in 2018.

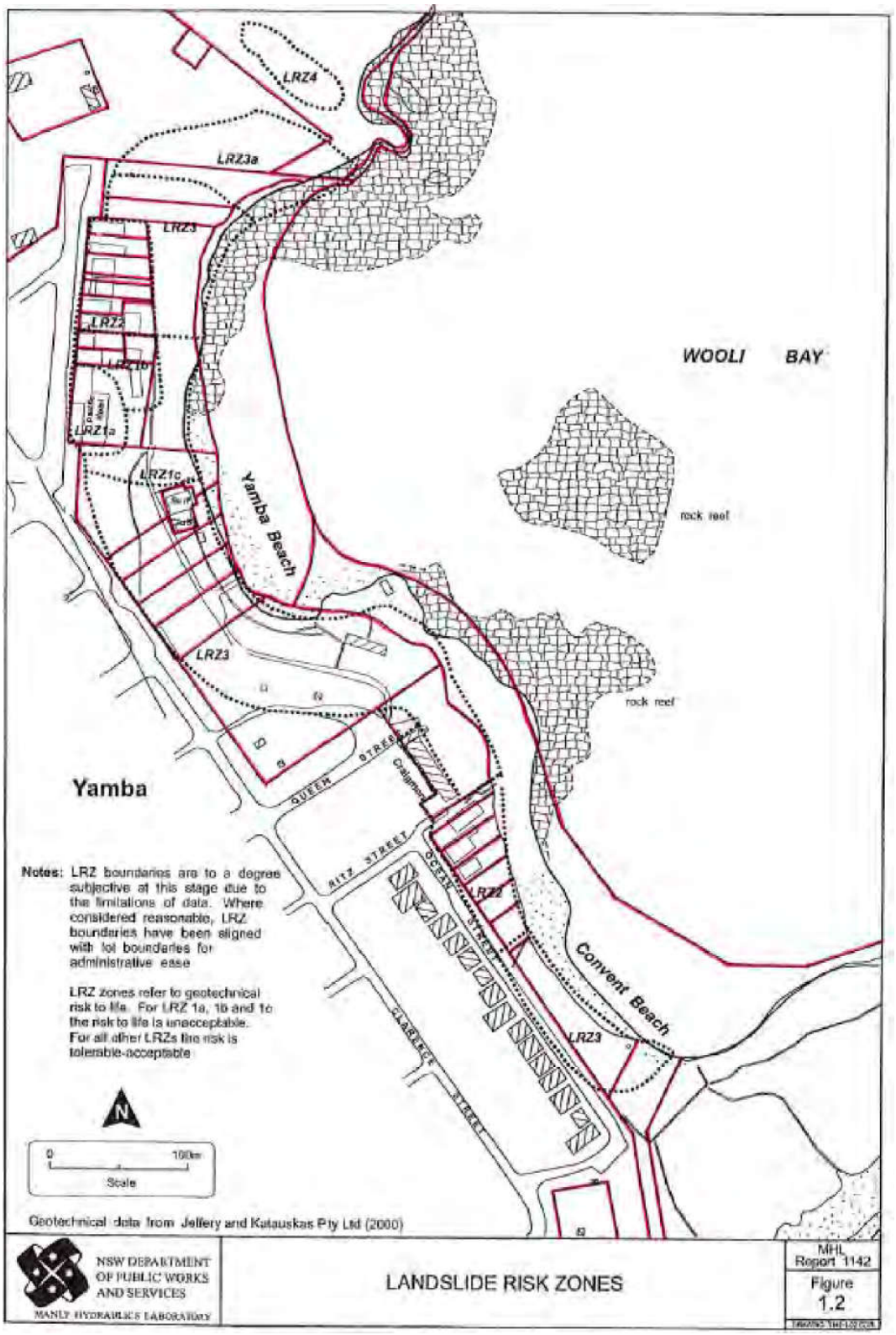


Figure 10: Landslide risk zones subject to emergency levels

Source: CVC (2015)

The ongoing failures or movement that is being observed at Pilot Hill is a combination of superficial scouring and oversteepening due to concentrated stormwater flows, saturation, and failure of the upper sand materials due to perched water tables and slow creep movement of the entire sand dune mass, most likely on the interface with either the silty sand or sandy clay layer. The more recent failures appear to be due to the first two mechanisms. The failure mechanisms are expected to be ongoing, and while the current slope stability management strategy (rainfall monitoring) provides prior warning of slope failures (albeit not in real time), it does not provide resolution for CVC or stakeholders on how the slope can ultimately be stabilised or managed. FSG Geotechnics and Foundations (2022) recommends that the following short term (< 1 year) and long-term (> 1 year) management strategies are weighted equally towards minimising the slope risk and while determining the long-term stabilisation requirements:

- Short-term recommendations (< 1 year) - the focus of the short-term recommendations should be ensuring that the geotechnical information and monitoring data is sufficient and suitable to allow further review of the slope stability analysis and AGS 2007 Risk Assessment. The following is recommended:
    - Emergency management strategy: Continue the existing emergency management strategy involving rainfall monitoring and alerts until other short-term recommendations are completed. Based on the results of the monitoring program review, additional geotechnical investigations, updated slope stability analysis and risk assessment and the status of remediation measures described below, the emergency management strategy (alert levels and application area) should be reviewed and updated to reflect the revised risk information.
    - Review and repair existing instrumentation.
    - Review monitoring program
    - Plan and undertake additional geotechnical investigations.
    - Update slope stability analysis and risk assessment.
    - Undertake short term slope remediation measures to manage stormwater flows.
    - Review landscaping on dunes to improve surface stability.
- Long-term recommendations (> 1 year): Following completion of the short-term recommendations (within 1 year) the following long-term strategies should be considered:
    - Undertake periodic drone photography and LiDAR survey.
    - Review and update planning and development controls.

The recommended short-term options were considered by the CVC Coast and Estuary Management Committee (CEMC) at its meeting of 9 September 2022 and adopted by Council at its subsequent meeting. As over 20 years have elapsed since the Emergency Management Plan was adopted, and as noted above, the most significant rainfall event on record occurred earlier this year, it is considered appropriate that as part of Stage 3 of the CMP development an independent review of geotechnical hazards be undertaken (particularly the short-term recommendations). The short-term recommendations not undertaken in Stage 3 and longer-term recommendations should also be considered as CMP actions.

2.7.3 Convent Beach

Infrastructure at Convent Beach includes houses/ apartments, pathways and Ocean Street. Slope stability failures are expected to result from similar mechanisms as Pilot Hill as described in Section 2.7.2 and Figure 9. JK Geotechnics (2021) noted a large historical landslide occurred in the slope in front of the Craigmore Apartments in 1999 and the entire section of the slope would be subject to ongoing hillside erosion processes that may lead to localised or more significant instability.

No instrumentation, monitoring data or investigation data is available for Convent Beach. The rainfall trigger levels and emergency response at Pilot Hill does not apply to homes along Convent Beach.

FSG Geotechnics and Foundations (2022) recommends the following long-term (> 1 year) management strategies for Convent Beach:

- Drone photography and survey.
- Slope risk assessment.
- Review and update planning and development controls.

These longer-term recommendations should be considered as CMP actions.

2.7.4 Cakora Point

Cakora Point headland is exposed to ongoing geological processes from direct wave attack. This has resulted in the development of an extensive wave cut platform with cliffs and coves through the erosion of the headland. This method of erosion is the result of wave action on the rock that is concentrated on the tidal range resulting in undercutting of the slope which subsequently results in toppling failures and rock falls that develop along natural fractures (FSG Geotechnics and Foundations, 2022). Infrastructure at Cakora Point includes public pathways and a carpark with the nearest private property located 140 m from the headland.

A previous study (SMEC, 2012) reported that previous rockfall events have occurred at the site as evidenced by scree material accumulated at the toe of the slope, but no specific landslide events have been identified. Mechanisms of failure were documented as (SMEC, 2012):

- Mechanism 1 - receding cove: consisted of a cove in the northern part of the headland. Failures comprised rock falls and toppling of blocks from intersecting joint sets in siltstone and sandstone. It was noted that a 3 m high build-up of debris was present at the toe of the slope.
- Mechanism 2 - undermining: consisted of an overhanging slope in the northern part of the site with bedding and orthogonal joint sets resulting in toppling and rock fall events in siltstone and sandstone with failed material present on the beach below. Groundwater seepage appears within the slope and it is postulated that this is caused by rainfall and site drainage.
- Mechanism 3 - crest fretting and block toppling: Weathered siltstone material is fretting away from the crest of the slope aided by informal public access tracks. This slope is mainly siltstone and sandstone with a sandstone wave cut platform at the toe of the slope. Rock falls from blocks and toppling rocks occur from orthogonal joints and the bedding planes, fallen blocks are strewn across the wave cut platform. This mechanism was reported at three locations (refer SMEC, 2012).

No instrumentation, monitoring data or investigation data is available for Cakora Point. A slope risk assessment was undertaken by SMEC (2012). Some recommendations from SMEC (2012) have been implemented including warning signs and walkway barriers. The rainfall trigger levels and emergency response at Pilot Hill does not apply to Cakora Point.

FSG Geotechnics and Foundations (2022) recommends the following long-term (> 1 year) management strategies for Cakora Point:

- Undertake a desktop study using geo-located historical aerial photographs to assess and estimate the rate of slope regression, rock falls, and erosion of scree material at the toe of the slope when exposed to wave action. This will provide a better estimation of the probability of these events.
- Undertake detailed mapping of the site and the creation of a catalogue of specific hazards on the site. Once specific hazards are identified any progression towards failure can be tracked through periodic inspections so that a proactive approach can be made towards management of hazards.
- Undertake regular periodic inspections of the site to assess the progression of any previously identified slope hazards and to identify any new hazards. Inspections should be undertaken on an interval of between 2 and 5 years based on the results of the slope regression analysis. If the slope is regressing quickly with scree rapidly eroded from the toe of the slope then a shorter inspection period would be warranted.
- Undertake drone survey initially 3 monthly and following a peak rainfall event to catalogue changes in the slope geometry and also potentially identify areas that may not be immediately noticeable by manual/visual means. The use of drones with set flight paths and photo locations (with the same orientation) for each flight would allow detailed assessment of the coastal processes and historical rock fall that has occurred between flights. A drone-based survey methodology may need to be developed that captures the undercut areas of the cliff in a repeatable and quantifiable way.
- Revise the slope risk assessment with actual failure rates identified through the regression analysis and site inspections. This may either increase or decrease the consequences of any slope failures.

These longer-term recommendations should be considered as CMP actions.

3. WATER QUALITY

The CMP Scoping Study (Hydrosphere Consulting, 2021) reported the water quality data available at that time. Since the preparation of the CMP Scoping Study, new water quality data has been made available from the NSW DPE estuary health monitoring program including raw water quality datasets (2009 - 2019) and online Estuary Report Cards (2021/22 program). The program monitors and reports on the health of NSW estuaries to assess the condition of estuarine ecosystems and inform management decisions. The available data are discussed for each waterway in the following sections. A review of actions to address issues related to water quality from previous management plans is provided in Section 7.1.

A targeted water quality program to assess identified risks (urban stormwater and wastewater management systems) and progress of management actions should also be considered for implementation. This could include a short -term microbial source tracking program to identify the extent and sources of faecal pollution (e.g. human, dog, cattle, wildlife etc.) and assist in directing management action.

3.1 Wooli Wooli River

The CMP Scoping Study (Hydrosphere Consulting, 2021) reported that the collection of water quality data in the study area has been sporadic, site/ project specific and there has been little or no integration between sampling efforts, or of data storage and analysis. From the limited data available for the Wooli Wooli River, there were some indications of poor water quality in the lower estuary including elevated nutrient levels (total nitrogen, TN and total phosphorous, TP), elevated Chlorophyll *a* and turbidity. Low pH values were identified in the mid and upper estuary sites (WBM, 2006; Ryder *et al.*, 2014). The Scoping Study identified the following potential causes of poor water quality at Wooli:

- Overflow from on-site wastewater management systems.
- Urban stormwater runoff.

The DPE estuary health monitoring program included sampling within the Wooli Wooli River from 2009 - 2019 at a range of sites throughout the estuary, most (90%) of which are upstream of Wooli urban areas (Figure 11).

The most recent sampling in the Wooli Wooli River was completed over the 2021/22 summer when two sites were sampled on a monthly basis. The Wooli Wooli River Estuary Report Card (DPE, 2023a, Figure 12a) showed the condition of the estuary was ‘good’ during the 2021/2022 summer for algae abundance and water clarity with an overall estuary health grade of B (good). Historical water quality results from 2009 - 2019 (Figure 12b) show overall grades of water quality as ‘excellent (A)’ from 2012 to 2016 and ‘good (B)’ in 2009/2010 and 2018/2019. A review of other parameters available as part of the DPE estuary health water quality dataset indicates that pH and nutrient levels (TN and TP) were within guidelines for healthy aquatic ecosystem function for the periods assessed. Dissolved oxygen levels (median value of 84% saturation) were slightly below the recommended guideline level (85% saturation).

The grades indicate that water quality recorded from sites throughout the estuary and predominantly in the mid and upper estuary, upstream of Wooli urban areas has been consistently good throughout the monitoring periods from 2009 - 2021. This is expected of a largely undisturbed catchment area within a National Park. The DPE estuary health water quality program is not considered to have sufficient replication

of sites in proximity to the urban areas of Wooli to adequately assess potential water quality pollution from urban sources (only 6 samples in the lower estuary from 2009 - 2019).

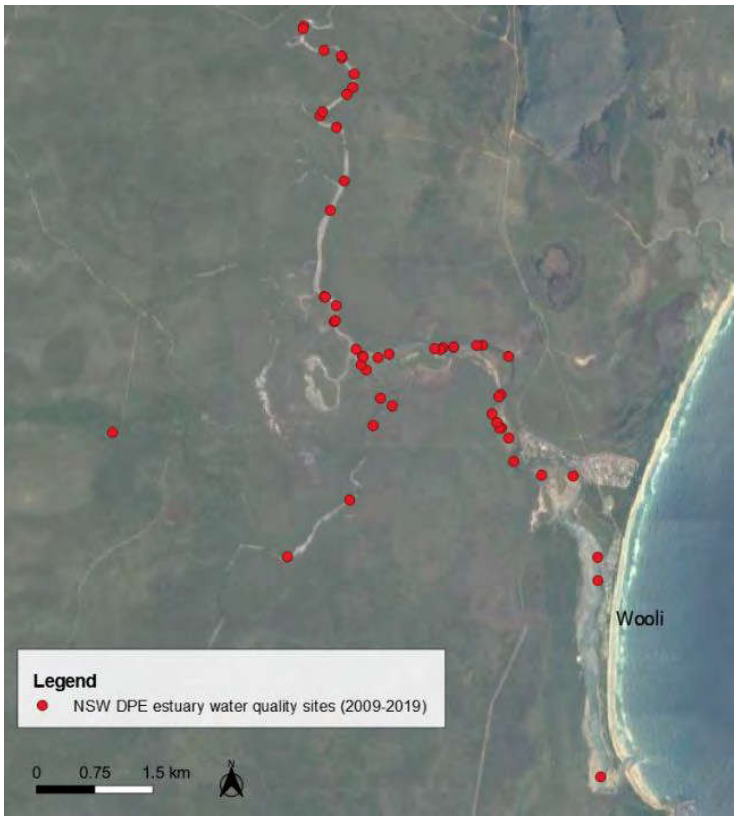
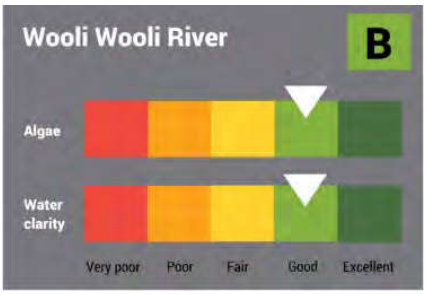


Figure 11: NSW DPE estuary water quality monitoring sites (2009 - 2019) - Wooli Wooli River

Source: Data from SEED (2023a)



Year	Algae	Water clarity	Overall grade
2009–10	B	B	B
2012–13	A	B	A
2015–16	B	A	A
2018–19	B	B	B

Figure 12: Wooli Wooli River estuary: Report card 2021/22 summer (left); Historical grades 2009 - 2019 (right)

Source: DPE (2023a)

3.2 Sandon River

The CMP Scoping Study (Hydrosphere Consulting, 2021) reported water quality conditions for Sandon River from a limited number of studies available from 1997, 1999/2000 and 2010. There were some indications of poor water quality at times including elevated nutrient levels (TN and TP), faecal coliforms and low dissolved oxygen levels. Septic systems were identified as a possible source of poor water quality. Water quality was

not expected to deteriorate further into the future given the relatively natural condition of the majority of the catchment. The Scoping Study identified the following potential causes of poor water quality at Sandon River:

- On-site wastewater management systems (within the village and/or the campground and cottages).
- Urban stormwater runoff.

The DPE estuary health monitoring program included sampling within Sandon River from 2007 - 2022 at a range of sites throughout the estuary, most of which are upstream of potential pollution sources in the lower estuary (e.g. Sandon River campground and Sandon Village, Figure 13).

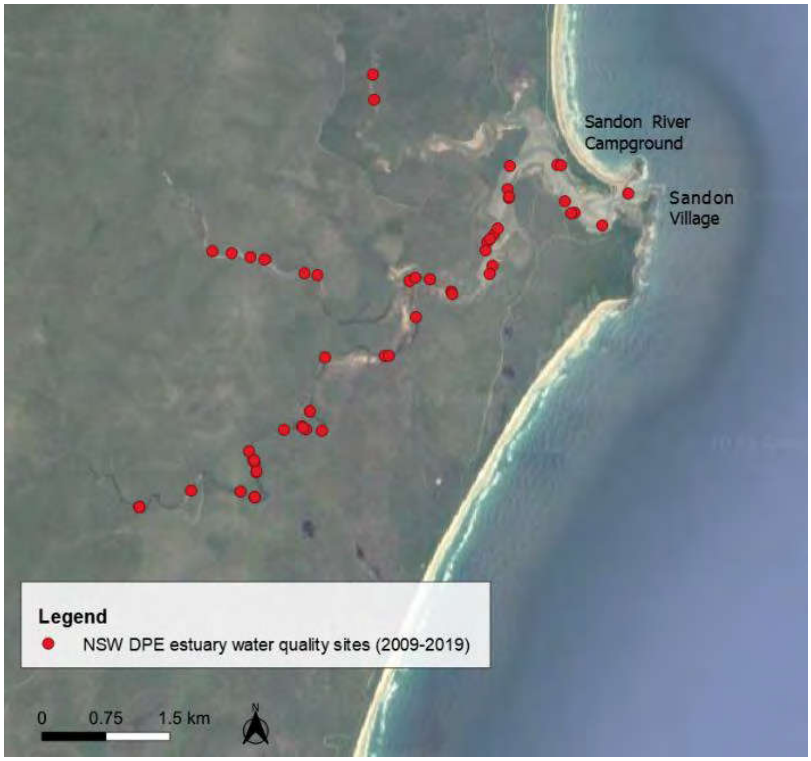


Figure 13: NSW DPE estuary water quality monitoring sites (2009 - 2019)

Source: Data from SEED (2023a)

The most recent sampling in the Sandon River was completed over the 2021/22 summer when two sites were sampled on a monthly basis (Figure 14a). The Sandon River Estuary Report Card (DPE, 2023b) showed the overall condition of the estuary was 'good' during the 2021/2022 summer for algae abundance and water clarity with an overall estuary health grade of B (good).

Historical water quality results from 2007 - 2019 (Figure 14b) show overall grades of water quality as 'excellent (A)' in 2015/2016 and 'good (B)' for all other years assessed. A review of other parameters available as part of the DPE estuary health water quality dataset indicates that pH and nutrient levels (TN and TP) were within guidelines for health aquatic ecosystem function for the periods assessed. Dissolved oxygen levels (median value of 84% saturation) were slightly below the recommended guideline level (85% saturation).

The grades indicate that water quality recorded from sites throughout the estuary has been consistently good or excellent throughout the monitoring periods from 2009 - 2021, except for water clarity in 2012/2013 receiving a 'Fair (C)' grade during this period which coincided with high rainfall. This is expected of a largely undisturbed catchment area within a National Park. The DPE estuary health water quality program is not considered to have sufficient replication of sites in proximity to the potential pollution sources in the lower estuary to adequately assess water quality risk from these areas.

Year	Algae	Water clarity	Overall grade
2007–08	A	B	B
2009–10	B	B	B
2012–13	B	C	B
2015–16	A	B	A
2018–19	B	B	B

Figure 14: Sandon River estuary: Report Card 2021/22 summer (left); Historical grades 2007 - 2019 (right)

Source: DPE (2023b)

3.3 Lake Cakora

The CMP Scoping Study (Hydrosphere Consulting, 2021) reported that the community considers poor water quality to be a significant issue within the lake (CVC, 2009). From the limited data available for Lake Cakora, there were indications of poor water quality in the lagoon including elevated nutrient levels (TN, bioavailable nitrogen and bioavailable phosphorus) (Ryder *et al.,* 2014). Water quality is influenced by catchment runoff, water depth, entrance conditions and the degree of tidal mixing (CVC, 2017). The Scoping Study identified the following potential causes of poor water quality at Lake Cakora:

- Overflow from on-site wastewater management systems exacerbated by intermittent flooding of disposal fields adjacent to the lagoon.
- Urban stormwater runoff.
- Amplification of the effects of poor flushing. When the entrance to Lake Cakora is closed, higher water levels and reduced flushing times leads to poor water quality in the estuary. Entrance management is discussed in Section 2.2.2.

The DPE estuary health monitoring program included sampling within the northern arm of Lake Cakora in 2009/2010 (Figure 15) and again in 2021/2022, although the location of these more recent samples was not documented.

The most recent sampling was completed over the 2021/2022 summer when two sites were sampled on a monthly basis. The Cakora Lagoon Estuary Report Card (DPE, 2023c) showed the condition of the estuary was 'good (B)' during the 2021/2022 summer with algae abundance graded excellent (A), water clarity graded fair (C) and an overall estuary health grade of B (good).

Historical water quality results from 2009/2010 (Figure 16b) show the overall grade for water quality was 'poor (D)' with water clarity graded 'very poor (E)' and algae abundance graded 'fair (C)'. A review of other

parameters available for 2009/2010 as part of the DPE estuary health water quality dataset indicates that TN, Chlorophyll *a* and Turbidity levels all exceeded the recommended guidelines for healthy aquatic ecosystem function.

Figure 15: NSW DPE estuary water quality monitoring sites (2009 - 2010)

Source: Data from SEED (2023)

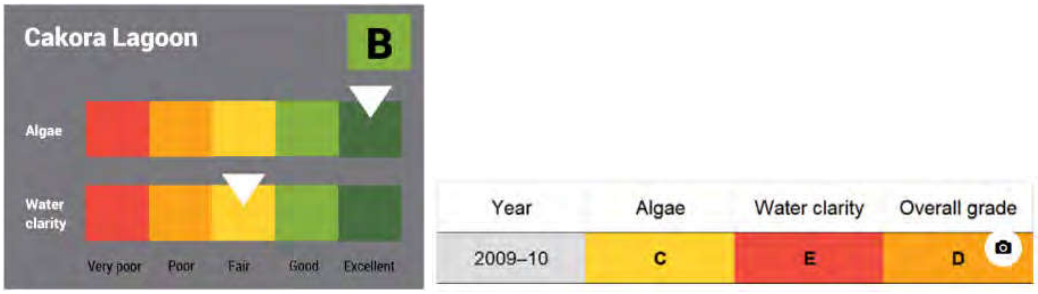


Figure 16: Lake Cakora: Report Card 2021-22 summer (left); Historical grades 2009/2010 (right)

Source: DPE (2023c)

3.4 Lake Arragan and Mara Creek

Lake Arragan and Mara Creek are ICOLLs with untrained and unmanaged entrances. The entire Lake Arragan catchment lies within Yuraygir National Park. The catchment is generally in a natural, vegetated condition with minimal sources of disturbance from fire trails/ access roads and the Lake Arragan National Parks Camping Ground in the lower extent of the estuary near the entrance (Figure 17). The majority of the Mara Creek catchment is also within Yuraygir National Park with some roads and urban residential areas (Angourie) in the north east portion of the catchment. The DPE estuary health monitoring program included sampling within Lake Arragan in 2009/2010, 2012/2013 (Figure 17) and 2021/2022. Sampling was typically

completed over the spring and summer months when two sites were sampled on a monthly basis. Mara Creek has not been sampled by DPE to date.

Figure 17: NSW DPE estuary water quality monitoring sites (2009/2010 and 2012/2013)

Source: Data from SEED (2023a)

The Lake Arragan Estuary Report Card (DPE, 2023d) showed the overall condition of the estuary was 'good (B)' during the 2021/2022 summer with algae abundance graded excellent (A), and water clarity graded fair (C).

Historical water quality results from 2009/2010 and 2012/2013 (Figure 18b) show the overall grade for water quality ranges from 'fair (C)' in 2009/2010 to 'excellent (A)' in 2012/2013. A review of other parameters available for these years as part of the DPE estuary health water quality dataset indicates that TN levels assessed during each sampling event exceeded the recommended guidelines for healthy aquatic ecosystem function, and in some instances was over four times the recommended level. Poor water quality is associated with extended entrance closure.

Year	Algae	Water clarity	Overall grade
2009–10	B	D	C
2012–13	A	A	A

Figure 18: Lake Arragan: Report Card 2021-22 summer (left); Historical grades 2009/2010 and 2012/2013 (right)

Source: DPE (2023d)

Potential causes of poor water quality at Lake Arragan are:

- On-site wastewater management systems (within the campground).
- Amplification of the effects of poor flushing. When the entrance to Lake Arragan is closed, higher water levels and reduced flushing times leads to poor water quality in the lower estuary. Entrance management is discussed in Section 2.2.2.

There is no water quality information available for Mara Creek to assess water quality condition however the following potential sources of pollutants exist in the catchment area:

- Urban stormwater runoff.
- Sewer infrastructure failures (e.g. sewer overflows / discharge to the environment).
- Amplification of the effects of poor flushing. When the entrance to Mara Creek is closed, higher water levels and reduced flushing times may lead to poor water quality in the lower estuary. Entrance management is discussed in Section 2.2.2.

4. CULTURAL HERITAGE

The Clarence Valley coastline is the traditional land of the Yaegl People. Yaegl Country centres around the lower Clarence River extending south along the coastline to Red Rock and north to Black Rocks (Jerusalem Creek).

Prior to European arrival, the Yaegl People occupied the coastline and surrounding areas for thousands of years. Yaegl People have a deep and abiding connection to the lands and waters of their traditional country and attribute particular cultural significance to the waterways, coastline and seas. The coastal areas continue to play a significant role in the daily lives of the Yaegl People, providing an abundance of natural resources for survival, ceremonial rituals and a deep social, cultural and spiritual connection. Numerous significant sites, areas and landscapes are located along the coastline. The estuaries and their forested catchments include ceremonial sites (carved trees, stone arrangements, natural mythological ceremonial sites, initiation grounds and waterholes), extractive sites (stone and ochre quarries, axe grinding grooves and scarred trees), open campsites, middens, fish traps, contact sites, rock shelters and art sites (Hydrosphere Consulting, 2021).

The Yaegl Traditional Owners Aboriginal Corporation (Yaegl TOAC) are the traditional owners and custodians of Yaegl Country which is bordered by Gumbaynggirr Country to the south and south-west and Bundjalung country to the north and north-west. The Yaegl people's ongoing use and relationship to country is recognised with the successful Native Title determinations over lands and coastal waters along the coastline:

- NCD2015/002 - Yaegl People #1 - covers the tidal waters within the lower Clarence River estuary, Whiting Beach and Clarence River entrance within the study area.
- NCD2015/003 - Yaegl People #2 - covers areas of Crown land within the lower Clarence Valley from Shark Bay in the north to Wooli in the south including areas of National Park.
- NCD2017/003 - Yaegl People #2 (Part B) - covers the majority of the Clarence Valley coastline. It covers all the land and waters, including the tidal waters, from the mean high-water mark 200 m offshore extending from Wooli Wooli River north to the Shark Bay tombolo.

In 2019, representatives of Yaegl TOAC, the Office of Environment and Heritage (OEH) and CVC signed a memorandum of understanding for a cultural mapping project of the Clarence Valley. The project aims to identify and map known and "high potential" areas of Aboriginal heritage to ensure culturally appropriate information is used to inform conservation and local plans.

The project included cultural heritage management initiatives including assessment of the Aboriginal Heritage Information Management System data and extensive field surveys with nominated cultural representatives to validate and record data. The project aimed to produce 1:25,000 scale topographic maps for the Yaegl Native Title areas, annotated with "known" and "high potential" areas of Aboriginal cultural heritage, within and immediately adjacent to the Clarence Valley LGA. Once complete, a training program was planned for Yaegl site officers, CVC staff and other appropriate agencies.

The Yaegl cultural heritage mapping was originally coordinated by NPWS on behalf of OEH with a working group including representatives of the local Yaegl Aboriginal community, NPWS, CVC and consultants. A change of management of Aboriginal cultural heritage in NSW government agencies resulted in the overall

carriage of responsibility transferred from NPWS to Heritage NSW. Draft cultural mapping has been completed although the project has not progressed since then.

Yaegl representatives provided information on the Yaegl cultural mapping project during consultation for Stage 2 of the CMP. The aim is to develop procedures for database management and use in development/ activity approvals once funding is available to progress this component.

All Crown land is considered to be subject to native title rights unless native title is considered to be extinguished (i.e. through granting of freehold estate, construction of public infrastructure prior to 1996, mining leases etc.). Any activity that impacts on native title is considered to be a 'future act' (specific proposals to deal with land in a way that affects native title and interests) under the *Native Title Act 1993*. Future act activities require a notice to be forwarded to the native title holders' representative body for consultation and feedback. Where actions are proposed on Crown land, consideration of Aboriginal Land Claims lodged under the *Aboriginal Land Rights Act 1983* (NSW) will need to be undertaken. Any works will need to be compliant with the *Native Title Act 1993*.

Indigenous Land Use Agreements (ILUAs) are voluntary agreements between native title holders and other people or bodies about the use and management of areas of land and/or waters and act as a contract between the parties. The Yaegl Interim Licences ILUA (between Yaegl TOAC and the Crown Lands Minister) is registered for all land and waters covered by the above Native Title determination areas (until November 2023). The appropriate mechanisms for protection of Native Title rights in CMP development and implementation will need to be identified and developed.

The outcomes of Stage 2 of the CMP development will be presented to Yaegl TOAC. Any CMP management actions in response to coastal hazards will be determined in consultation with Yaegl TOAC, along with other stakeholders including NPWS.

5. LAND USE AND SOCIO-ECONOMIC CHARACTERISTICS OF THE STUDY AREA

Approximately 80% of land in the study area (12,486 ha out of 15,460 ha) is managed as National Park/ Reserve within Yuraygir National Park, Bundjalung National Park and Iluka Nature Reserve. Virtually the entire Lake Arragan, Lake Cakora, Sandon River and Wooli Wooli River catchments is National Park/ Reserve. Along the coastline, 96% of the coastline north of the Clarence River estuary, 94% of the Yamba-Sandon and 84% of the Sandon-Wooli coastline areas are managed as National Park/ Reserve. The Solitary Islands Marine Park in conjunction with the adjacent Yuraygir National Park, is one of the few areas in Australia, where a full combination of estuaries, beaches, headlands, islands and offshore waters as well as a significant proportion of the catchments of those estuaries are protected. Only 1.7% (262 ha) of the study area is urban or rural residential and grazing is undertaken in 2.4% of the study area.

North of the Clarence River, CVC manages land adjoining Iluka Main Beach including the northern carpark and hind dune area. The northern break wall and adjacent carpark is managed by the Department of Planning and Environment - Crown Lands (DPE - Crown Lands). Iluka Road and associated assets and services are located immediately behind the beach at Shark Bay and the road reserve is managed by CVC. South of the Clarence River, the coastline around Yamba including Whiting Beach is managed by CVC. Green Point, Spooky Beach and the Blue and Green Pools area are also managed by CVC. The majority of Angourie Point is National Park however parking and access to the point is through Council and Crown managed reserves. South of Angourie the majority of the coastline is managed by NPWS except for relatively small areas around each of the villages which are managed by CVC and DPE - Crown Lands (Hydrosphere Consulting, 2021). Land use within the study area is summarised in Figure 19.

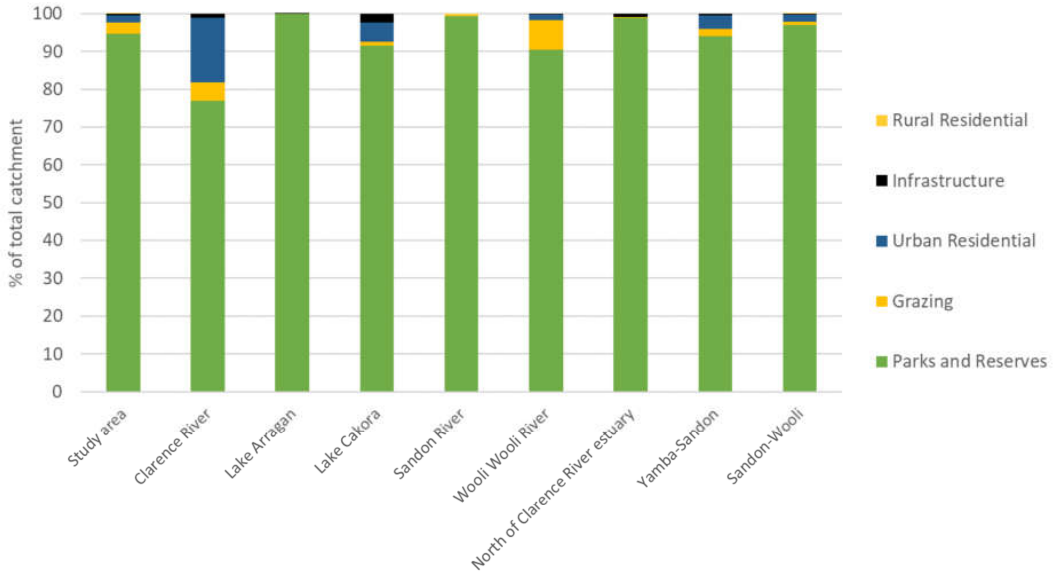


Figure 19: Land use percentages within the study area

Source: DPIE (2020), adapted from Hydrosphere Consulting (2021)

For many community members, interaction with the coast and estuaries is a highly valued part of life. The beaches and waterways provide a place for social interaction, recreation, relaxation, nature appreciation, connection, exercise and commercial activities. The coastal community of Yamba fulfils the local service needs of residents on the coast and visitors. The Clarence Valley has several favourable characteristics

related to economic opportunities in the coastal zone including coastal, riverine and hinterland amenity, arable soils, favourable climate and access to Sydney and Brisbane via the Pacific Highway.

Estuary general fishery activities occur in Sandon River and Wooli Wooli River estuaries. Ocean hauling occurs along the length of the Clarence Valley coastline with the exception of Woody Bay, Turners Beach to Pippi Beach and Angourie Point south to Lake Arragan entrance. The main species targeted in the area is Sea mullet (*M. cephalus)* which are typically targeted between April and September each year. Priority Oyster Aquaculture Areas (POAA) are located in Sandon River (4.5 ha) and Wooli Wooli River (18.3 ha) estuaries (Hydrosphere Consulting, 2021). A regional seaport at Yamba is situated at the mouth of the Clarence River which is one of five internationally recognised ports in NSW. The loading wharf of the Port of Yamba is located on Goodwood Island (outside the study area) however the jurisdictional extent of the Port extends throughout the lower Clarence River estuary including the river entrance and channels in the lower estuary.

The Clarence Valley coastline is a popular tourist destination for activities such as fishing, water sports, whale watching, coastal walks, wildlife appreciation with many camping and accommodation options. Accommodation for visitors includes motels, holiday cottages and caravan parks in the adjoining coastal villages. Within the parks and reserves, Woody Head camping area (Bundjalung National Park) and various small camping areas cater for low-key, short-term camping (Black Rocks camping area in Bundjalung National Park and Station Creek, Pebbly Beach, Sandon River, Illaroo, Boorkoom, Red Cliff and Lake Arragan camping areas in Yuraygir National Park). A range of National Park picnic areas and day walks is also provided in these coastal parks.

Future economic growth areas include tourism, aquaculture, forestry and marine manufacturing. No major housing development has been identified in the study area. Some residential growth is expected to occur in the existing urban growth centres (focused on existing major towns).

The Clarence Valley coastline will experience broadscale climate change impacts as well as interrelated localised impacts into the future due to sea level rise, an increase in extreme rainfall events and storms, increase in estuary water temperature and acidity, increase in fire weather and associated impacts on biodiversity and other values of the coastline and estuaries (Hydrosphere Consulting, 2021). The impacts of climate change have been considered in the coastal hazard assessments and detailed risk assessment.

6. DETAILED RISK ASSESSMENT

6.1 Asset Risk and Exposure

An assessment of risks to Council infrastructure and Council-managed land was prepared for the CMP study area. The assessment considered the location and criticality of assets, the likelihood and extent of beach erosion/ shoreline recession and tidal/ coastal inundation over time and the consequence of the hazards to identify the risk to these assets. The risk assessment methodology and results are provided in Appendix 6.

The predicted impacts to Council assets with the urban areas that are vulnerable to inundation, recession/ erosion and potentially the combined hazards (Section 2.6.4) range from flooding, salt water intrusion, undermining and collapse depending on the type of assets and extent of protection available. The assets at highest risk are:

- Council managed reserves along the coast are vulnerable to erosion, recession and inundation although the majority of impacted areas at present is limited to the beaches and foreshores which are periodically impacted by higher tides and storm surge (e.g. Iluka, Whiting Beach and Brooms Head foreshores).
- Brooms Head sports ground, Brooms Head Reserve west of the village, Sandon Public Reserve along the foreshore of Sandon River, Wooli Coastal Reserve and Wooli Public Recreation Reserve are expected to be periodically impacted by inundation from Lake Cakora, Sandon River and Wooli Wooli River respectively (during at least present day 10% EP scenarios) with inundation extents increasing over time and with higher intensity storm surge.
- In future, the reserves most at risk of inundation are in Whiting Beach, Wooli and Brooms Head. Pathways, roads, carparks and tracks along the foreshores within these areas are expected to be similarly impacted.
- Higher tides and storm surges are expected to enter urban stormwater systems along the coast more frequently in future, particularly in Yamba and Wooli.
- Some Council managed reserves along the coast (e.g. at Hickey Island, Brooms Head, Sandon village) are also vulnerable to erosion/ recession at present with the extents of potentially impacted areas increasing over time and with more severe (rarer) events.
- The Clarence Coastal Zone Parks reserve at Hickey Island is predicted to be completely lost to erosion by 2073 with frequent to rare events and by 2123 with frequent events.
- Large sections of Brooms Head Caravan Park reserve fronting the ocean are predicted to be impacted with frequent to rare events and by 2123 with frequent events.
- Water, sewer and stormwater infrastructure, pathways, roads, carparks and tracks along the ocean foreshores are also expected to be impacted.

6.2 Detailed Threat and Risk Assessment

Following the identification of the current threats and issues within the study area, a first - pass (or preliminary) risk assessment and gap analysis were completed as part of Stage 1 to prioritise risks and identify those that should be further investigated in subsequent stages of the CMP. The first-pass risk assessment included the following components with further detail provided in the Scoping Study (Hydrosphere Consulting, 2021):

- Assessment of community uses and values.
- Identification of threats and stressors.
- Analysis of the level of risk presented by those threats. The analysis was separated into geographic areas (e.g. beaches, towns) based on the land tenure, level of risk and knowledge.

The first- pass risk assessment has been updated with new information available from Stage 2. The methodology adopted for the detailed threat and risk assessment is detailed in Appendix 7. The process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur and applies a risk rating. For each of the identified threats, the following factors have been considered for each part of the study area:

- How is the threat currently being managed? Have previous management actions addressed this threat?
- How effective are the current management measures and what is the residual risk?
- In the future, how is the risk level likely to change (over 20, 50 and 100 years)? Specifically, how will climate change, increasing development pressures and population growth increase these risks?

The risk assessment outcomes identify the key threats to be addressed in the CMP (Section 12.1).

6.3 Risks to Coastal Wetlands and Littoral Rainforest Areas

Areas mapped as CWLRA (Resilience and Hazards SEPP) within the study area have been assessed against the coastal hazard mapping (inundation and erosion/ recession) from JBP (2022), JBP (2023) and the regional scale mapping (Appendix 4). The littoral rainforest at Iluka Nature Reserve is not located within mapped coastal hazard areas. The following coastal wetland areas are vulnerable to coastal hazards within the next 100 years:

- Coastal wetlands within Bundjalung National Park along Ten Mile Beach
- Coastal wetlands on Hickey Island
- Coastal wetlands within and bordering Yuraygir National Park:
    - Brooms Head north and Lake Cakora entrance
    - Lake Cakora
    - Sandon and Sandon Beach
    - Sandon River
    - Minnie Water Beach
    - Wooli Wooli River

Any erosion extending to the coastal wetland areas is expected to cause die-off of existing freshwater vegetation species and also alter the surrounding local hydrology with increased intrusion of saline water and associated vegetation modifications. Within the estuary areas, future inundation of fringing coastal wetland areas is expected to be more frequent with increasing depth over time, potentially altering the vegetation composition. There is a risk that natural upslope migration of these wetlands will be curtailed by anthropogenic constraints such as roads, rock walls, retaining walls, altered drainage, urban development, grazing and lawn mowing on the landward side. While the risk to coastal wetlands with coastal hazards is evident, additional investigation into the extent, condition and vulnerability of wetland areas is required as discussed in Section 8.5.2.

7. POTENTIAL MANAGEMENT OPTIONS

A coordinated and consistent approach to strategic planning and an appropriate level of protection of environmental, cultural, built and commercial assets in the coastal zone will ensure adequate protection from coastal hazards, future development pressures and emerging threats associated with a changing climate. Potential management options to address the highest risk threats are discussed in the following sections. In addition, other options will also be developed and assessed in Stage 3 to address the highest risk threats.

7.1 Review of Actions from Previous Management Plans

The coastline management plans prepared by CVC for the study area include:

- *Brooms Head and Lake Cakora Coastal Zone Management Plan* (CVC, 2017).
- Draft *Coastal Zone Management Plan for the Sandon River Estuary* (GHD, 2012).
- Draft *Wooli Beach Coastal Zone Management Plan* (Royal HaskoningDHV, 2018).
- *Wooli Wooli River Estuary Management Plan* (BMT WBM, 2009).
- *Yamba Coastline Management Plan* (MHL, 2003) and *Implementation Strategy* (Maclean Shire Council, 2004).

Related studies include:

- *Options to Manage Recession of Whiting Beach, Yamba* (Royal HaskoningDHV, 2015).
- *Technical Report 3 Risk Assessment and Stabilisation for Pilot Hill Yamba, NSW* (JK Geotechnics, 2017).

Appendix E of the Scoping Study outlined the status of management actions from these management plans in 2021. Since the preparation of the Scoping Study, progress on some actions has been undertaken.

Previous actions that should be considered for inclusion in Stage 3 of the CMP development are listed in Table 5. Some actions from these plans have been progressed as described in the following sections.

Table 5: Actions from previous management plans/ studies that should be considered in Stage 3

Location	Action	Management plan source	Current status	Recommendations for CMP
All beaches	Dune management including fencing, formalise and maintain walking tracks/ pathways, cultural heritage and educational signage	Strategy D - MHL (2003) and Maclean Shire Council (2004), Action 4.1, 4.2, 4.3 - CVC (2017), Strategy MS9 - Royal HaskoningDHV (2018)	Some dune management works have been undertaken with ongoing maintenance. Council is preparing updated plans of management for community land, Crown reserves and other public places addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure (Section 8.2).	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
All beaches	Investigate beach nourishment options and sand sources (e.g. dredging projects)	Strategy E, F - MHL (2003) and Maclean Shire Council (2004), Action 13.2 - CVC (2017), Strategy MS9 - Royal HaskoningDHV (2018), Royal HaskoningDHV (2015)	Dredging opportunities include the Lower Clarence River, including the entrance channels to Iluka and Yamba boat harbours, which is identified as a 'key investment location' in the *NSW Coastal Dredging Strategy* (DPIE, 2019), implemented by Transport for NSW Maritime Infrastructure Delivery Office (MIDO).	Priorities for sand nourishment including potential sources of sand should be identified as a potential coastal protection option for the highest risk beaches identified in the Stage 2 coastal hazard assessment.

Location	Action	Management plan source	Current status	Recommendations for CMP
All areas	Review of planning advice provided on S149 certificates (now called Planning certificates) and planning controls, update LEP with coastal risk mapping and DCP with additional planning controls	Action 5.1, 5.2, 5.3,5.4, 5.5, 8.3, 12.3 - CVC (2017), Strategy MS7 - Royal HaskoningDHV (2018), Strategy C - MHL (2003) and Maclean Shire Council (2004), Action R4 - GHD (2012)	Existing planning controls are discussed in Section 8.1. Recommendations for revised planning controls to address slope instability were provided by FSG Geotechnics and Foundations (2022).	Inclusion of CVA in SEPP mapping or local controls should be considered (Section 8).
All areas	Regular monitoring of beach profile including pre- and post-storms	Action 10.2 - CVC (2017), Strategy MS4 - Royal HaskoningDHV (2018), Royal HaskoningDHV (2015), Action S5 - GHD (2012)	Beach profile data is collected periodically. Topographical surveys were undertaken for some beaches (Section 2.6.1).	Monitoring should continue on a regular basis for areas at risk from coastal storms.
All areas	Emergency response including community education	Strategy B - MHL (2003) and Maclean Shire Council (2004), Action 3.2, 8.1 - CVC (2017), Strategy MS5 - Royal HaskoningDHV (2018)	Council has prepared Emergency Action Subplans for Wooli and Brooms Head/ Lake Cakora (Section 10).	Coastal Zone Emergency Action Subplans (CZEAS) will be developed as part of Stage 3 (Section 10).

Location	Action	Management plan source	Current status	Recommendations for CMP
All areas	Cultural heritage management	Action H1 - GHD (2012), Strategy MS11 - Royal HaskoningDHV (2018)	Three successful native title determinations exist over large parts of the study area (Yaegl People). The Yaegl cultural heritage mapping project has provided draft maps of known and "high potential" areas of Aboriginal heritage to ensure culturally appropriate information is used to inform conservation and local plans (Section 4). CVC is establishing mechanisms for liaison with Native Title holders to ensure council actions are compatible with cultural heritage requirements. Consultation with Native Title representatives is ongoing (Section 11).	Cultural heritage management actions should be developed in consultation with YTOAC within the Native Title areas and Local Aboriginal Land Councils and other Aboriginal Groups in other parts of the study area. This may include finalisation of the cultural heritage mapping project with consideration of coastal hazards, incorporation of cultural heritage management requirements into the design of coastal protection options, development of procedures for development/ activity approvals. The appropriate mechanisms for protection of Native Title rights in CMP development and implementation will need to be identified and developed.
Yamba - Pilot Hill	Additional investigation of slope instability and potential stabilisation actions	Strategy A - MHL (2003) and Maclean Shire Council (2004), JK Geotechnics (2017)	Recommendations for additional investigations were provided by FSG Geotechnics and Foundations (2022).	Short-term recommendations from FSG Geotechnics and Foundations (2022) for Pilot Hill will be undertaken during Stage 3 or as CMP actions. Other recommendations should be considered as CMP actions.
Yamba - Pilot Hill, Wooli	Advise energy and communications utilities of coastal hazards to enable ongoing utilities management	MHL (2003) and Maclean Shire Council (2004), Strategy MS8 - Royal HaskoningDHV (2018)	No progress.	Ongoing consultation is recommended.

Location	Action	Management plan source	Current status	Recommendations for CMP
Yamba - Main Beach	Investigate options for relocation of Yamba SLSC	Strategy B - MHL (2003) and Maclean Shire Council (2004)	Yamba SLSC has prepared plans for a surf club at Turners Beach.	Additional slope stability investigations being undertaken will provide more information on slope instability risks in the Main Beach precinct. Replacement of the seawall and/ or relocation of the SLSC should be considered. Ongoing consultation with the SLSC is recommended.
Yamba - Main Beach	Maintenance of sea wall	Strategy B - MHL (2003) and Maclean Shire Council (2004)	A concept design has been prepared for replacement of the seawall (Section 7.4). Significant expenditure may not be warranted if the Yamba SLSC is relocated.	Additional slope stability investigations being undertaken will provide more information on slope instability risks in this precinct. Replacement of the seawall and/ or relocation of the SLSC should be considered.
Yamba - Main Beach	Master Plan project planned for Yamba Main Beach, plan to consider improved access and seek funding to complete improvements	Strategy D - MHL (2003) and Maclean Shire Council (2004)	Council is preparing updated plans of management for community land, Crown reserves and other public places addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
Clarence River entrance	Improved access arrangements including disabled access along breakwaters and safety fencing	MHL (2003) and Maclean Shire Council (2004)	Some access management works have been undertaken.	Potential CMP actions should consider the recommendations for multi-use and eco features identified in the DPI - Fisheries breakwater audit (Section 7.7.3 and Appendix 8).

Location	Action	Management plan source	Current status	Recommendations for CMP
Brooms Head	Extension of foreshore revetment, provision of access to northern foreshore reserve	Action 2.1, 9.5 - CVC (2017)	A concept design for extension of the revetment has been prepared (Section 7.3).	Physical modelling of the proposed revetment extension is being undertaken during Stage 3/4. The outcomes of this work should be considered in the assessment of potential coastal protection works.
Brooms Head	Retention of existing Ocean Road revetment	Action 2.3 - CVC (2017)	No change. The coastal hazard assessments indicate that the Ocean Road foreshore is vulnerable to inundation and erosion.	Planning controls and coastal management actions should consider the outcomes of the coastal hazard assessments.
Brooms Head	Monitoring of revetment wall condition pre- and post-storms and maintenance of existing foreshore reserve revetment	Action 2.2, 10.1 - CVC (2017)	No progress. The coastal hazard assessments indicate that the rock revetment is providing protection to the foreshore reserve from coastal erosion, although end effect erosion has occurred at the northern end.	Ongoing assessment of coastal protection structures, maintenance and adaptation to sea level rise will be required to provide longer-term protection.
Brooms Head	Review/ maintain beach access ways	Action 9.2 - CVC (2017)	Some access management works have been undertaken. The concept design for the extension of the rock revetment includes pedestrian access to the beach (Section 7.3). Council is preparing an updated plan of management for the foreshore reserve addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.

Location	Action	Management plan source	Current status	Recommendations for CMP
Brooms Head	Maintain track markers along Yuraygir coastal walk	Action 9.6 - CVC (2017)	Recreational actions are consistent with the NPWS Plans of Management (Section 9).	Improvements to existing recreational features should be considered.
Brooms Head	Improve compliance/ enforce penalties for unauthorised vehicle access around Lake Cakora	Action 11.1 - CVC (2017)	Council has adopted a policy regarding beach access and vehicles on beaches.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
Brooms Head	Public facilities management, relocation or reconstruction in accordance with coastal risk	Action 12.1 - CVC (2017)	Some campsites were removed following 2022 coastal storms. Council is preparing an updated plan of management for the foreshore reserve addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
Brooms Head	Periodically remove debris (kelp & other) from beach and lagoon area to reduce odour, impact on beach amenity and maintain public safety.	Action 13.1 - CVC (2017)	The accumulation of beach-cast seaweed on beaches is a natural process and plays an important role in a beach ecosystem. Beach-cast seaweed provides food and habitat for a wide range of fauna species and plays an important role in the cycling of nutrients on beaches. The deposition of large amounts of seaweed can also play a role in stabilising beaches by promoting the accretion of sand.	The majority of the material either disappears naturally, decomposes, dries out, or is moved by wave/currents or covered by sand therefore removal is not usually cost-effective. Community preference for active management of beach debris should be considered in the CMP.

Location	Action	Management plan source	Current status	Recommendations for CMP
Brooms Head, Wooli	Beach scraping to restore beach access following storms	Action 9.2 - CVC (2017), Strategy MS10 - Royal HaskoningDHV (2018)	Recontouring of beach is undertaken. Trial beach scraping has been undertaken at Wooli. CVC is planning to undertake another round of beach scraping when conditions are appropriate.	Access restoration should be considered as part of emergency planning (CZEAS).
Lake Cakora	Upgrade beach access/ pedestrian access bridge east of prawn farm site	Action 9.3 - CVC (2017)	No progress	Potential CMP actions should consider the coastal hazards in prioritisation of future works including the potential for inundation and erosion over the longer term.
Lake Cakora entrance	Maintain, replace and improve foreshore facilities	Action 12.2 - CVC (2017)	Foreshore facilities include the boat ramp, fish cleaning tables, picnic and recreation facilities. Council is preparing an updated plan of management for the foreshore reserve addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
Lake Cakora entrance	Implement artificial breakout for recreational purposes	Action 7.1 - CVC (2017)	There is no formal entrance management policy for the entrance however anecdotally, members of the public informally open the entrance periodically when the water level is perceived to be too high within the lake or the water quality is perceived to be poor (Hydrosphere Consulting, 2021).	It is recommended that an entrance management strategy is developed based on best-practice management of ICOLLs that protects the environmental values of Lake Cakora.

Location	Action	Management plan source	Current status	Recommendations for CMP
Lake Cakora entrance	Maintain current access to Ocean Road reserve adjacent to northern bridge abutment.	Action 9.4 - CVC (2017)	The reserve is accessible from the bridge.	Potential CMP actions should consider the coastal hazards in prioritisation of future works including the potential for inundation and erosion over the longer term.
Cakora Point	Slope instability investigations and access management	Action 9.1 - CVC (2017)	Recommendations for additional investigations were provided by FSG Geotechnics and Foundations (2022)	The FSG Geotechnics and Foundations (2022) recommendations should be considered as CMP actions.
Sandon River estuary	Address entrance erosion	Action S2 - GHD (2012)	Informal coastal protection works have been undertaken at the Sandon campground and Sandon Village. A section of Sandon River Road along the estuary has been armoured with rock revetment to prevent further bank erosion. NPWS has prepared a coastal hazard response plan for the campground (Section 9.1)	Recommended actions from the coastal hazard response plan should be considered. Planning controls and coastal management actions should consider the outcomes of the coastal hazard assessments.
Sandon River estuary	Management of domestic and feral animals	Action E4 - GHD (2012)	Management of domestic and feral animals is consistent with NPWS Plans of Management (Section 9) and Marine Park regulations.	Existing regulations and enforcement to address illegal activities. are considered to be appropriate.
Sandon River estuary	Litter/ rubbish control	Action E5 - GHD (2012)	Litter/ rubbish control is consistent with NPWS Plans of Management (Section 9) and Marine Park regulations.	Existing regulations and enforcement to address illegal activities. are considered to be appropriate.
Sandon River estuary	Investigation and management of landfill contamination (Sandon Village)	Action E9 - GHD (2012)	There is no data available on the location, composition or impacts of these landfills.	Estuary water quality monitoring targeting contaminants of concern should be considered (Section 3).

Location	Action	Management plan source	Current status	Recommendations for CMP
Sandon River estuary	Management of development in campground	Action R4 - GHD (2012)	NPWS has prepared a coastal hazard response plan for the campground (Section 9.1).	Recommended actions from the coastal hazard response plan should be considered.
Sandon River estuary, Wooli Wooli River Estuary	Water quality monitoring	Action E6, R1 - GHD (2012), Action WQ-5 - BMT WBM (2009)	Some water quality data are available (Section 3). No ongoing water quality undertaken by CVC or DPI – Marine Parks. Some sites within the estuary were included in the Ecohealth program (Section 3).	A targeted water quality assessment to assess identified risks (urban stormwater and wastewater management systems) and progress of management actions should also be considered for implementation. This could include a short -term microbial source tracking program to identify the extent and sources of faecal pollution (e.g. human, dog, cattle, wildlife etc.) and assist in directing management action.
Sandon River estuary, Wooli Wooli River Estuary	Stormwater management	Action E8 - GHD (2012), Action WQ-1 - BMT WBM (2009)	Stormwater discharges from all urban areas within the study area with minimal treatment. Some water quality data are available (Section 3).	
Sandon River estuary, Wooli Wooli River Estuary	Education/ promotion/ signage/ materials	Action E3, S3 - GHD (2012), Action C-1, E-1, E-2, W-4 - BMT WBM (2009)	Community education is consistent with NPWS Plans of Management (Section 9) and Marine Park regulations.	Ongoing community education actions should be considered.
Wooli Wooli River Estuary	Review of Solitary Islands Marine Park (SIMP) zoning	Action W1 - BMT WBM (2009)	Ongoing review by DPI - Marine Parks.	Ongoing review of SIMP zoning with consideration of water quality data, community feedback and coastal hazard assessments is recommended.

Location	Action	Management plan source	Current status	Recommendations for CMP
Wooli Wooli River Estuary	Monitoring of bank recession, riparian vegetation management, planning controls and river access management, Protection of public infrastructure from bank erosion	Action F-1, F-2, F-3, F-4 - BMT WBM (2009)	Erosion "hot spots" were identified in 2006. Bank erosion has been attributed to removal of riparian vegetation combined with tidal and flood flows or boat wake and wind waves (Hydrosphere Consulting, 2021).	A bank condition assessment should be considered. Recommendations for erosion controls should be considered for inclusion in the CMP.
Wooli Wooli River Estuary	Aquatic and terrestrial habitat identification and protection	Action C-2 - BMT WBM (2009)	Contemporary terrestrial and aquatic vegetation mapping is now available.	A review of CWLRA mapping (Section 8.5.2), actions to support estuarine vegetation migration with climate change (Section 7.7.1) and other vegetation protection actions should be considered.
Wooli Wooli River Estuary	Prepare emergency action plan for spills	Action WQ-4 - BMT WBM (2009)	Addressed through Council and NSW Government hazardous material management plans.	Not required in CMP.
Wooli Wooli River Estuary	Dredging of navigation channels	Action W-6 - BMT WBM (2009)	Sand build-up and entrance condition/safety was also raised as an issue for the Wooli Wooli River in BMT WBM (2009) and in the community survey for the scoping study (Hydrosphere Consulting, 2021). The Wooli Wooli estuary is not identified as key investment location' in the *NSW Coastal Dredging Strategy* (DPIE, 2019, Section 7.6).	Dredging for navigation improvements should be considered.
Wooli Beach	Beach nourishment scheme	Strategy MS1, MS2 - Royal HaskoningDHV (2018)	The Wooli Beach Management Strategy has been developed (Section 7.2).	Ongoing implementation of the Beach Management Strategy should be considered.

Location	Action	Management plan source	Current status	Recommendations for CMP
Wooli Beach	Management of vehicular and pedestrian access to beach	Strategy MS10 - Royal HaskoningDHV (2018)	Council is preparing updated plans of management for community land, Crown reserves and other public places addressing issues such as public access and use, protection of biodiversity, maintenance of facilities and infrastructure.	Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.
Wooli Beach	If Beach nourishment scheme is unsuccessful, investigate alternative coastal protection works	Strategy MS13 - Royal HaskoningDHV (2018)	No progress.	Alternative coastal protection works should be considered and compared to the Wooli Beach Management Strategy.
Whiting Beach	Raise elevation of the north-western end of the track at Hickey Island to reduce the risk of oceanic inundation	Royal HaskoningDHV (2015)	The coastal hazard assessments indicate that large parts of Hickey Island are vulnerable to inundation.	Options to manage or adapt to inundation should be considered.

7.2 Wooli Beach Management Strategy

To address coastal instability at the village of Wooli and the significant risk from storm erosion and longer-term recession, the draft *Wooli Beach Coastal Zone Management Plan* (CZMP, Royal HaskoningDHV, 2018) proposed the placement of 60,000 m^3 of sand on the beach adjacent to Wooli Village to offset forecast recession (estimated to be 4 m^3/m/year above mean sea level (MSL)) over the subsequent five years. The beach nourishment scheme in the CZMP was proposed to include sand back-passing (the process of transporting sand from a downdrift location to an updrift location) from the northern end of Wooli Beach and supplementary beach scraping (cross-shore movement of small to medium quantities of sand, generally from the intertidal zone to the upper beach and dune by mechanical means) as the primary mechanisms to mitigate current risks to built assets.

A trial beach scraping (two campaigns) was undertaken at Wooli Beach in March - May 2019 involving redistribution of approximately 13,500 m^3 (15-17 m^3/m) of sand from the intertidal zone. The first campaign was undertaken over a length of approximately 800 m in front of the southern portion of Wooli Village and the sand was placed over the incipient dune modifying the existing dune feature. The second campaign was undertaken over the southern 500 m of Wooli Village (i.e. the southern 500 m was scraped twice). Following completion of the scraping, an incipient dune profile was formed. Dune catch fencing and dune revegetation was also undertaken. The purpose of these campaigns was to build sand reserves in front of Wooli Village to reduce current erosion and recession risk and inform future sand scraping campaigns and development of a beach management strategy (BMS) to offset future erosion and recession hazards (Royal HaskoningDHV, 2021a).

A BMS has been developed for Wooli Beach comprising sand back-passing and beach scraping, vegetation management and ongoing monitoring (Royal HaskoningDHV, 2021a). The sand management plan includes a number of scenarios, depending on the beach state when the management activities are undertaken. Implementation of the BMS would be subject to Council endorsement, relevant permits and available funding.

The sand management strategy at Wooli aims to:

- Ensure sufficient sand remains available to reduce risks to public and private assets from storm erosion (from potentially up to 50-year ARI storm event based on erosion assessments undertaken by Royal HaskoningDHV (2021a).
- To ‘hold the line’ and offset long term recession.

The annual volume of sediment required for nourishment (based on the updated long-term average rate of recession of approximately 2 m^3/m/year above MSL) is 2,040 m^3 above MSL for the southern portion of Wooli Village which was deemed to be most exposed to storm erosion (Royal HaskoningDHV, 2018, Figure 20, 800m between chainage 1,350 m and chainage 2,150 m where chainage is measured from the breakwater at the southern end of Wooli Beach). Including the northern portion of Wooli Village to chainage 3,950 m (additional 1,600 m) would require an additional 2,040 m^3 of sediment (Royal HaskoningDHV, 2021a). The total volume of material required to ‘hold the line’ is the annual volume of sediment for nourishment multiplied by the time between nourishment campaigns in years. However Royal HaskoningDHV (2021a) recommends that significantly larger volumes of sand should be targeted to assist in providing a buffer to offset storm erosion.

Figure 20: Wooli Village property protection area
Source: Royal HaskoningDHV (2021a)

The preferred sand source at Wooli Beach is sand from the northern end of the beach, near Wilsons Headland as net northerly longshore sediment transport results in the accumulation of sand at the northern end of Wooli Beach. Royal HaskoningDHV (2021a) recommends that sand back-passing is only undertaken for emergency sand nourishment of Wooli Village for the following reasons:

1. Moving sand from one end of the beach to the other typically creates a planform that is in disequilibrium. The benefit of the sand movement and beach nourishment may be short lived. Longevity can be increased by placing the sand further landward, where it would not be mobilised by longshore drift processes.
2. Interannual beach rotation is observed at Wooli Beach. It is therefore preferred to let nature move sand from one end of the beach to the other, and then undertake beach scraping activities to move the sand further landward. This option would be significantly cheaper than sand back-passing.

Emergency sand nourishment was only recommended when there is an urgent need to bolster dune volumes adjacent to Wooli Village and there are limited sand reserves available at the southern (i.e. village) end of the beach. Some of the sand from the borrow zone at the northern end of the beach would otherwise be lost (northwards) out of the compartment (Royal HaskoningDHV, 2021a).

The BMS includes:

1. Frequent beach scraping directly in front of the village, preferably in late Autumn (April and May) with a focus on establishing/ building an incipient dune. If an incipient dune is present, of a suitable volume and vegetated, the sand should be placed seaward of the incipient dune to create a wide subaerial beach and encourage natural dune building processes (Figure 21).
2. Sand back-passing as required following a large storm event. As much sand as practical should be harvested from the northern end of Wooli Beach and placed near Wooli Village (Figure 21).

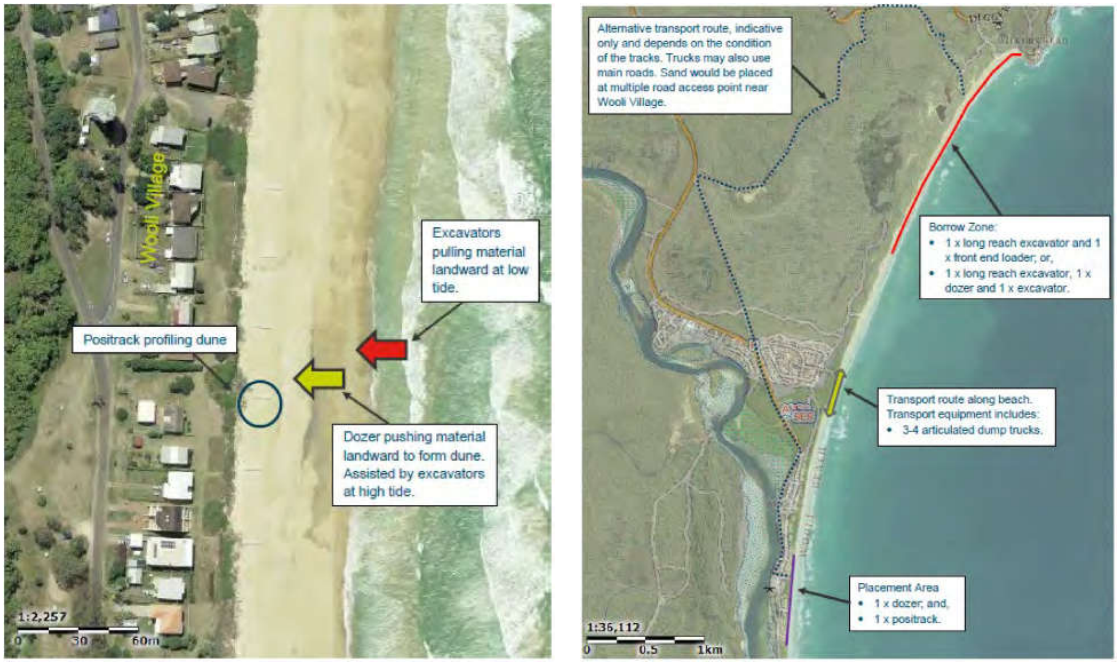


Figure 21: Beach scraping and sand back-passing at Wooli Beach

Source: Royal HaskoningDHV (2021a)

Due to uncertainties around the beach profile at the proposed time of sand management, three theoretical beach profiles (at the commencement of beach nourishment activities) were presented by Royal HaskoningDHV (2021a) as shown in Table 6 and Figure 22 to Figure 24. Dune management would be undertaken to create a natural and stable incipient profile, vegetated with native communities but would not be required for beach nourishment activities, depending on the profile at the time of the nourishment.

Table 6: Wooli Beach sand placement scenarios

Scenario	Volume of sand seaward of properties (m^3/m above MSL)[1]	Sand placement objectives	Placement profile	Sand source	Placed volume (m^3/m)	Revegetation requirements	Volume of sand seaward of properties after sand placement (m^3/m above MSL)[1]
1 - Following significant storm erosion event (a depleted beach, similar to the profile in 2006)	~110	Reinstate sand reserves with largest practical quantity of sand. Placement slope 1V:15H	Dune	Back-passing and beach scraping if suitable sand reserves are available for scraping activities	17	Nil - insufficient quantity of sand to establish incipient dune	~127
2 - Incipient dune crest <3.5m AHD and berm at 2.5m AHD (associated with initial beach recovery following an extreme storm event)	~190	Establish/rebuild incipient dune with a crest at or higher than 3.5m AHD and width of 2m. Placement slope 1V:12H.	Dune	Beach scraping	~13	Vegetate incipient dune	~200
3 - Incipient dune >3.5 mAHD and berm at 2.5 mAHD (could be associated with a number of events, including beach recovery, minor storm erosion or the post-nourishment dune profile after Scenario 2)	~200	Place sand seaward of incipient dune and above mean runup at MHW (1.65m AHD). Placement slope 1V:12H.	Dune and berm	Beach scraping	~13	Nil - placed sand to naturally nourish dune and berm	~210

1. Volume calculations assume properties are offset 12m from the crest of the foredune.

2. The beach scraping borrow zone extends above and below MSL. The volume of material scraped and placed does not directly translate to an increase in the volume of sand above MSL. However, the scraped zone would recover over time and the increase in sand reserves above MSL would be greater than the quantity of sand scraped below MSL.

Source: Royal HaskoningDHV (2021a).

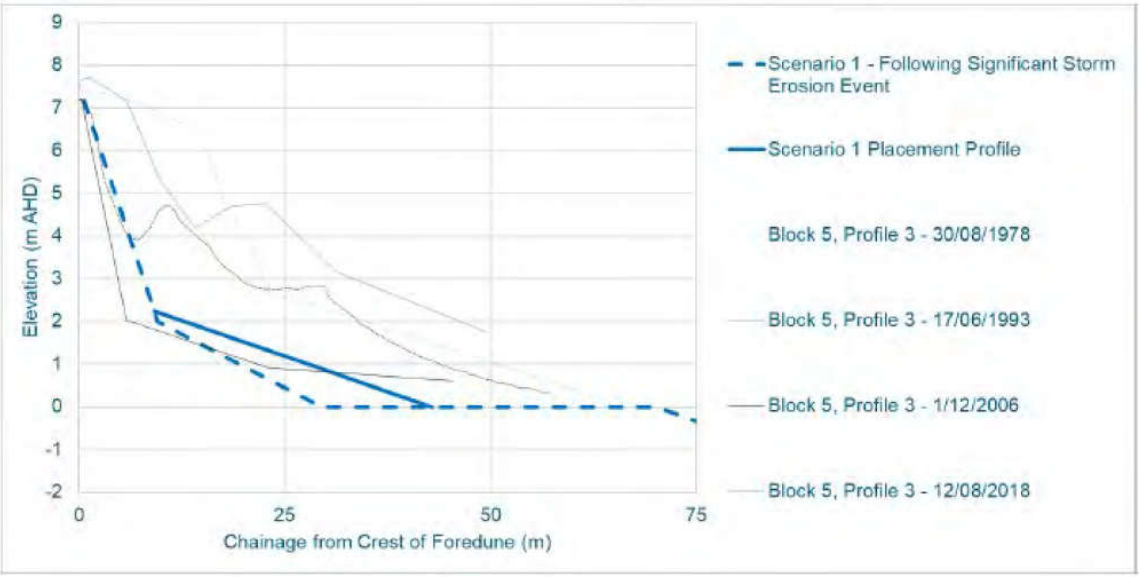


Figure 22: Typical historical photogrammetry profiles and Scenario 1 sand placement profile

Block 5, Profile 3 is located at the southern end of Wooli Village where the properties are located close to the crest of the foredune

Source: Royal HaskoningDHV (2021a).

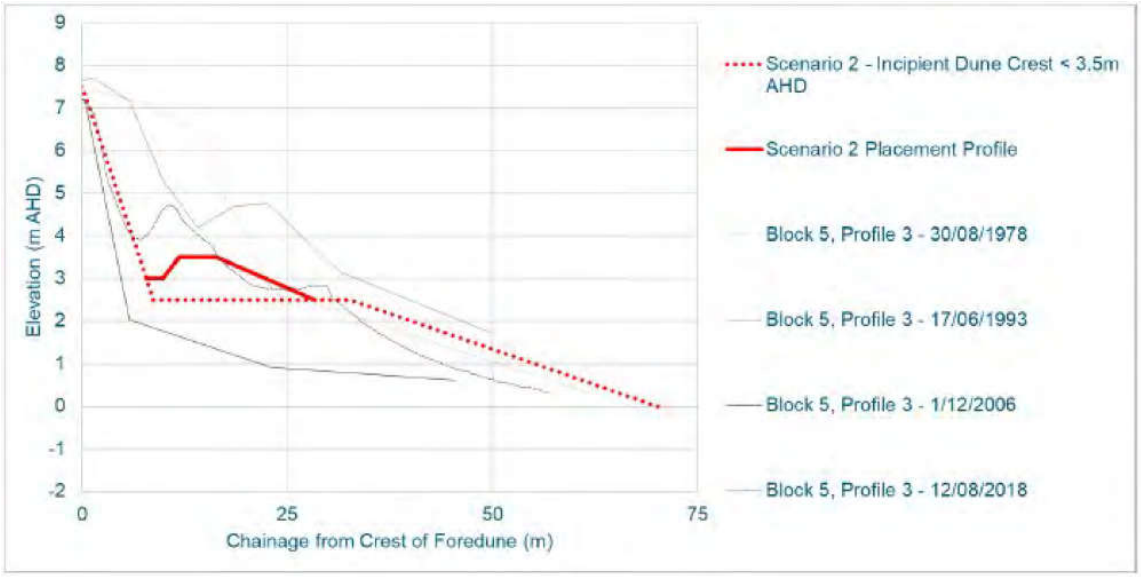


Figure 23: Typical historical photogrammetry profiles and Scenario 2 sand placement profile

Block 5, Profile 3 is located at the southern end of Wooli Village where the properties are located close to the crest of the foredune

Source: Royal HaskoningDHV (2021a)

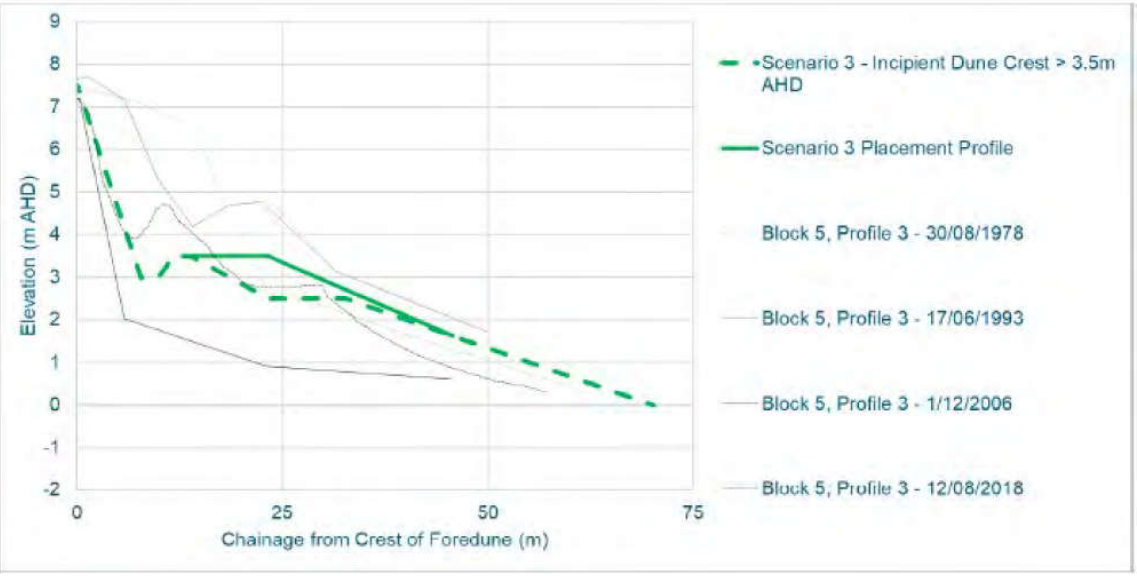


Figure 24: Typical historical photogrammetry profiles and Scenario 3 sand placement profile

Block 5, Profile 3 is located at the southern end of Wooli Village where the properties are located close to the crest of the foredune

Source: Royal HaskoningDHV (2021a)

Design drawings for the BMS are included in Royal HaskoningDHV (2021a). Cost estimates provided in Royal HaskoningDHV (2021a) are (excluding GST, including 15% contingency):

- Scenario 1: $287,500 - $402,500
- Scenario 2: $132,250
- Scenario 3: $97,750

7.3 Brooms Head Seawall Extension

The Brooms Head Reserve accommodates Brooms Head Caravan Park. The southern portion of Brooms Head Reserve is flanked by a rock revetment which has been extended in the past in response to 'end effects' where erosion is exacerbated at the end of a hard control structure. Due to the risk to public assets from storm erosion and long-term recession, the *Brooms Head and Lake Cakora Coastal Zone Management Plan* (CVC, 2017) included a priority action to extend the existing foreshore revetment at the northern end of Brooms Head Reserve to the southern bridge abutment (in the entrance compartment of Lake Cakora). Detailed design including allowance for public foreshore access and stormwater management and environmental impact assessment have been completed (Royal HaskoningDHV, 2021b).

Construction of the works is intended to be undertaken in two stages (Figure 25). Stage 1 involves extension of the rock revetment along Brooms Head Reserve along the same alignment and using similar material (rock armour). The revetment would extend to approximately 20 m beyond the northern end of the caravan park. The northern 10 m of the revetment is designed to be exposed on the landward side to ensure 'end effects' do not lead to undermining and failure of the structure. The works would include reconstruction of eroded foredunes to an elevation of approximately 4 mAHD, to match the existing profile to the south. Sand fill would therefore be required to re-create an artificial dune. The dune would require restoration after reconstruction, including vegetation planting and dune fencing activities. The foredune would be protected by

the rock revetment with a crest elevation at approximately 3.5 mAHD. Stage 1 would include construction of timber and fibre reinforced plastic beach access stairs to improve public amenity.

Stage 2 involves foreshore protection near Ocean Road bridge, construction of an end control structure and construction of a new beach accessway. The foreshore at this location is known to move in response to estuarine flows from Lake Cakora and is exposed to wave erosion when the entrance is open to the ocean. The Stage 2 revetment would mitigate the risk of the bridge abutment being undermined or outflanked by erosion within the entrance compartment.

An end control structure is also proposed near Lake Cakora entrance as part of Stage 2:

- To form a 'pocket beach' between the end control structure and the revetment to the south. This would maintain the existing beach alignment, rather than producing a new alignment as an unwanted impact of a curved revetment, or the uncontrolled end effects of a revetment terminating in the adjacent dune system. It would also ensure existing dune and foreshore vegetation is retained.
- To maintain beach amenity to the south, including the vegetated dune system in the entrance compartment, and ensuring the pedestrian and vehicle beach accessway locations are secured.
- To minimise the effects of wave reflection from the constructed works towards the properties within the Lake Cakora entrance compartment (north of the bridge).

The length and orientation of the end control structure is complex and, as such, the end control structure is intended to be a trial structure. The end control structure would be approximately 30 m long at an orientation of 45°N, constructed from KYOWA Rock Bags. This would ensure that the structure can be readily removed (and reused) or repositioned without leaving traces of rock on the beach, if unexpected detrimental impacts are observed. The crest of the end control structure would be at 1.9 mAHD. The length and height aim to ensure sand bypasses the structure and reduces or eliminates potential detrimental impacts downdrift (north) of the site. The crest level of the structures could also be raised in the future to accommodate future sea level rise if required.

Design drawings are provided in Royal HaskoningDHV (2021b). The estimated cost for Stage 1 and Stage 2 is $2.5 million (excluding GST and including a 20% contingency, Royal HaskoningDHV, 2021b).

CVC plans to undertake physical modelling of the proposed design to verify that there will be no adverse impact on downdrift areas and optimise the design. The outcomes of the physical modelling should be considered in the Stage 3 assessment of options.

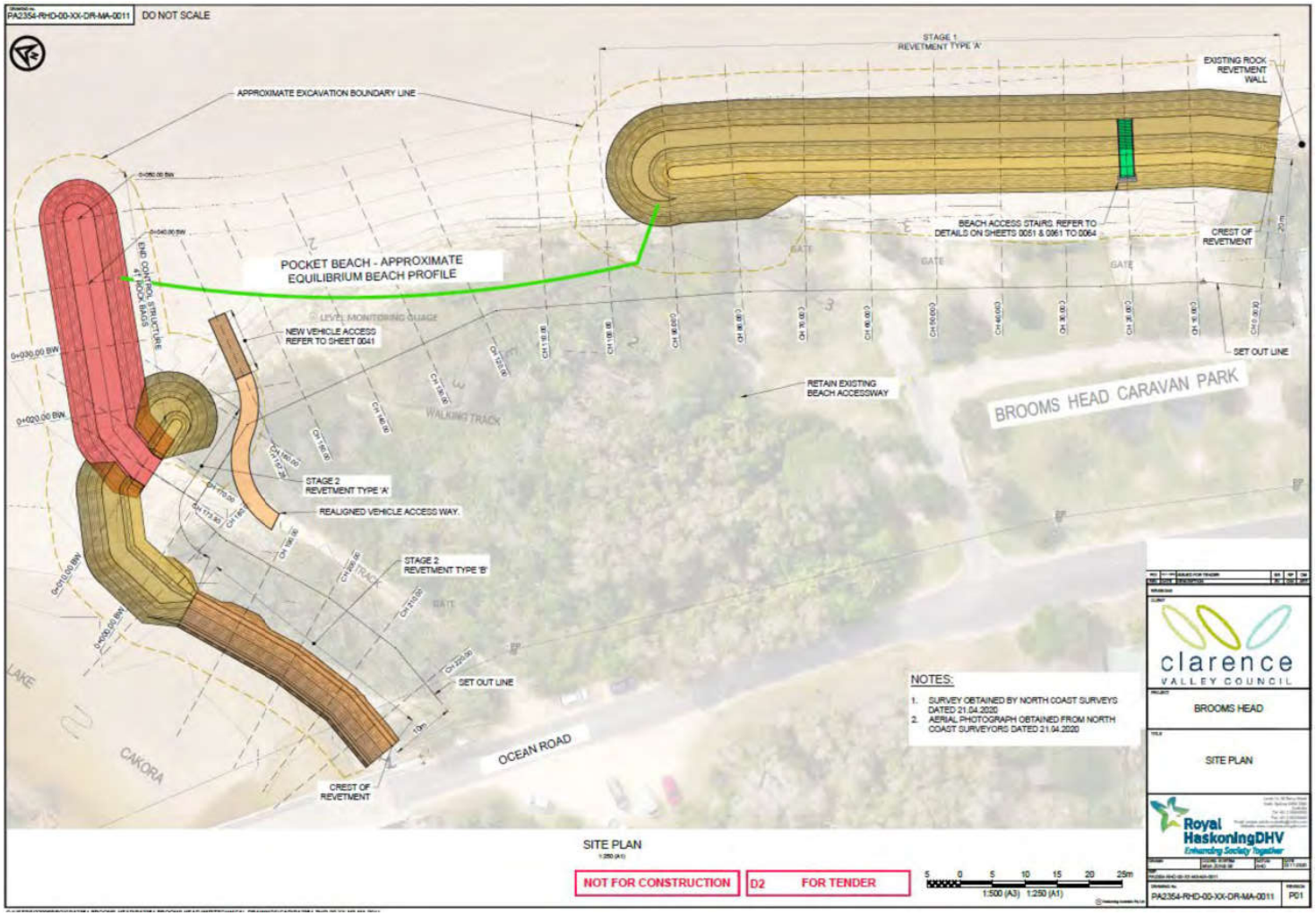


Figure 25: Brooms Head revetment extension - stage 1 and 2 site plan

Source: Royal HaskoningDHV (2021c)

7.4 Whiting Beach Nourishment

Due to significant recession of Whiting Beach since the construction of the Clarence River entrance breakwaters, potential management options were investigated by CVC (RoyalHaskoningDHV, 2015a) including:

- Do nothing.
- Structural works in the surrounding Clarence River, comprising an offshore breakwater, T-Piece extension or reinstatement of the middle training wall.
- Structural works at Whiting Beach, comprising a revetment/seawall or groyne
- Beach nourishment at Whiting Beach.

RoyalHaskoningDHV (2015a) recommended beach nourishment along Whiting Beach in order to maintain a sufficient volume of sand such that infrastructure landward of Whiting Beach was not threatened. In the short term, around 40,000 m^3 of sand would be required every 10 years to maintain Whiting Beach (in the vicinity of the car park) at its 2015 position. Sand sources investigated included previously dredged areas (e.g. Clarence River bar), a potential future dredge area west of Dart Island, other relatively shallow areas and commercial sand sources.

Approximately 10,000 m^3 of material was placed on the beach in 2016 from dredging of the navigation channel at the tip of Dart Island by DPE - Crown Lands. The material was pumped directly to Whiting Beach, dewatered on site before being reprofiled by an excavator.

Future dredging and placement of sand on Whiting Beach by DPE - Crown Lands may be limited therefore RoyalHaskoningDHV (2015a) recommended future dredging is undertaken between Hickey Island and Dart Island with placement of sand on Whiting Beach (Figure 26). A preliminary Review of Environmental Factors for these works found that this is considered to be a viable option for managing the ongoing recession of Whiting Beach and should be able to occur without any significant environmental impact, subject to some supplementary investigations being favourable (RoyalHaskoningDHV, 2015b).

RoyalHaskoningDHV (2015a) also recommended that the elevation of the north-western end of the track at Hickey Island is raised to reduce the risk of oceanic inundation propagating along the track.

Stage 3 of the CMP should consider the options proposed in RoyalHaskoningDHV (2015a), potential risks (e.g. sand depletion, seagrass impacts, recreational fishing impacts) and other potential sand sources such as the Yamba approach channel near middle wall.

Figure 26: Proposed dredging area between Dart Island and Hickey Island and White Beach nourishment area

Source: RoyalHaskoningDHV (2015b)

7.5 Yamba Main Beach seawall

Following concerns raised by the Yamba SLSC about the condition and suitability of the existing rock/ concrete revetment wall at Yamba Main Beach and damage caused to the wall during a storm event in 2009, CVC commissioned a report to investigate options for the replacement of the wall. The report (Royal HaskoningDHV, 2012) recommended a replacement rock armoured revetment with discrete banks of suspended concrete bleaches (large steps) incorporated in the face to provide for seating. A concept design is provided in Royal HaskoningDHV (2012) and the general arrangement plan is provided on Figure 27. The works are estimated to cost between $2.2 million and $2.6 million (Royal HaskoningDHV, 2012, indexed to 2023$) depending on the extent of recycling of construction materials.

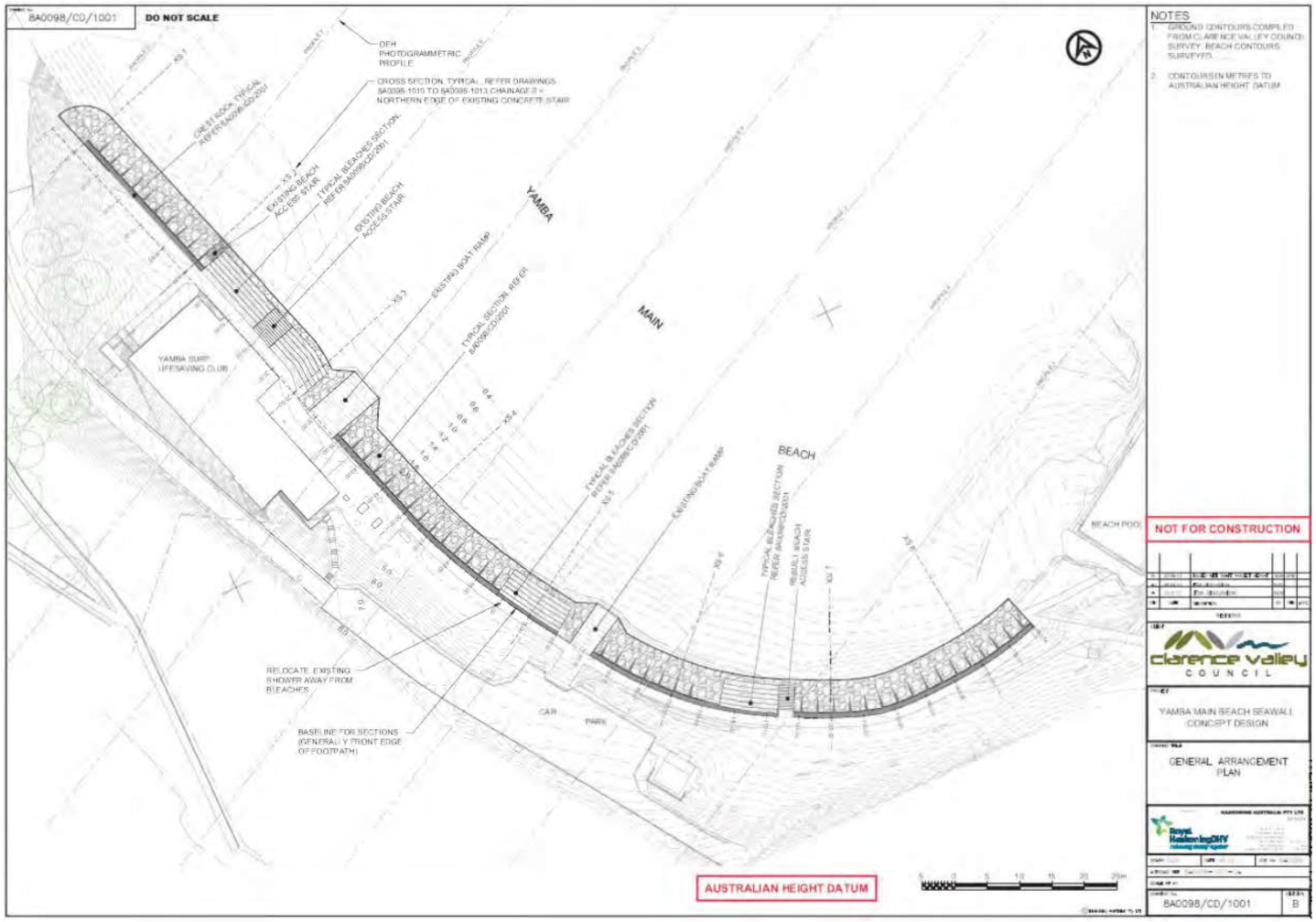


Figure 27: Yamba Main Beach seawall replacement - general arrangement plan

Source: Royal HaskoningDHV (2012)

7.6 Dredging

Dredging is a potential option to maintain navigation channels and provide access to maritime infrastructure that are otherwise restricted by natural sand shoaling. The *NSW Coastal Dredging Strategy 2019 - 2024* (DPIE, 2019) outlines statewide priority dredging locations (state government responsibilities co-ordinated by the Maritime Delivery Office (MIDO) and council maintenance of navigation channels). The Strategy identifies the lower Clarence River as a key investment location (for dredging of the entrance channels to Iluka and Yamba boat harbours) with nourishment potentially on Whiting Beach (refer Section 7.4) and Wooli Creek (Wooli Wooli River) as a priority regional location (dredging of the river entrance channel to the town wharf) with nourishment potentially on Wooli Beach. The NSW Government is currently reviewing priorities for dredging with an updated strategy and priorities expected to be released in 2023/24.

7.7 Marine Estate Management Strategy

The *Marine Estate Management Strategy 2018 - 2028* (MEMS, MEMA, 2018) provides an overarching strategic approach to the coordinated management of the NSW marine estate (the coastal waters, estuaries, lakes, lagoons and coastal wetlands). The MEMS sets out nine initiatives and the actions needed to deliver improved management of the marine estate over ten years from 2018 - 2028. The initiatives were developed based on the threat and risk assessment (TARA) prepared for the MEMS (BMT WBM, 2017), stakeholder and community feedback and marine estate values:

1. Improving water quality and reducing litter.
2. Delivering healthy coastal habitats with sustainable use and development.
3. Planning for climate change.
4. Protecting the Aboriginal cultural values of the marine estate.
5. Reducing impacts on threatened and protected species.
6. Ensuring sustainable fishing and aquaculture.
7. Enabling safe and sustainable boating.
8. Enhancing social, cultural and economic benefits.
9. Delivering effective governance.

CMPs are required to support the objectives of the *Marine Estate Management Act 2014* and are strongly aligned with improving outcomes for the marine estate. The development and implementation of the MEMS and CMPs are bound by legislation and rely on a risk-based approach. The CMP development:

- Considers the state-wide TARA: Priority threats to estuaries and coastal and marine areas were considered during the preparation of the CMP Scoping Study.
- Aligns CMP actions with the initiatives and actions in the MEMS.
- Draws on the outcomes and key learnings from projects piloted through the Strategy since 2018 to help inform the design and implementation of local management actions.

The implementation of the MEMS since 2018 aims to address many of the key issues impacting the health of the Clarence coastline and estuaries and there appears to be many opportunities for integrating the MEMS with the CMP to draw on the work done to date and collaborate with future projects. Stage 1 of the MEMS (ending June 2020) focused on addressing the most severe threats to the health of the marine estate, particularly water pollution, which was identified as the greatest threat to the marine estate by the NSW community and through the evidence-based TARA (BMT WBM, 2017). Some MEMS actions have included projects in Stages 1 and 2 (to June 2022) in the Clarence Valley LGA and other management actions have state-wide benefits. The MEMS will continue to be delivered over the next two years to June 2024.

MEMA prepares regular summary updates on the status of MEMS projects and further details are expected to become available during the development of the CMP. The aims and outcomes of relevant MEMS projects are discussed in the following sections.

7.7.1 Migration of Estuarine Vegetation with Sea Level Rise

Sea level rise is expected to increase the average water depth and extend tidal propagation in estuaries with associated changes in salinity regime. It is anticipated that sea level rise will result in the landward recession of fringing estuarine wetland systems. The location of estuarine habitats such as mangrove stands and saltmarsh are controlled principally by tidal range and salinity influence and will gradually respond to changes resulting from sea level rise. There is a risk that natural upslope migration of these wetlands will be curtailed by anthropogenic constraints such as roads, rock walls, retaining walls, altered drainage and urban development on the landward side. Under these conditions the landward side of these important habitats will be fixed but the lower margin will gradually be pared away, leading to a loss of habitat area. In contrast, rising water levels and increased upstream salinity propagation will facilitate opportunities for the expansion of estuarine vegetation in unrestricted low-lying areas.

The DPI - Fisheries Marine Vegetation Strategy is a state-wide program as part of the MEMS to develop estuary specific plans to manage estuarine vegetation. The strategies aim to provide scientific evidence to support and guide the protection of existing and potential future coastal wetlands. The strategy will address the priority threats and risks, maximise wetland values and services, facilitate rehabilitation opportunities and improve resilience for sea-level rise. The strategies aim to take the long-standing NSW policy of ‘no net loss of key fish habitats’ toward more active management of intertidal systems that maximise and sustain the ecosystem values and services. There is growing recognition that rehabilitation of coastal wetlands is needed to enhance the delivery of important ecosystem services and values such as providing a habitat for terrestrial and aquatic species, improving water quality through filtration, blue carbon sequestration (Section 7.7.2), Aboriginal and cultural heritage values, economic prosperity, fishing and tourism. In particular, there is increasing interest in the rehabilitation of mangroves to allow for improved coastal protection and reduced exposure to coastal hazards. Policy tools and active rehabilitation is required to manage existing wetlands and increase the capacity for mangroves and saltmarsh to migrate inland with sea-level rise.

The Marine Vegetation Strategies use a systematic spatial tool and method for estuary wide prioritisation to map and quantify the potential for mangrove and saltmarsh communities to thrive and deliver social, economic and environmental services under current conditions and into the future under scenarios of sea level rise. The approach integrates datasets which indicate the physical nature of the landscape, anthropogenic exposure and vulnerability to sea level rise to identify high priority areas within estuaries. The high priority areas delimit locations that are ideal priority offset locations and rehabilitation sites and areas

where initiatives should be directed to manage existing wetlands and for future trajectories of change to direct rehabilitation projects to the most meaningful locations given the biophysical conditions, anthropogenic exposure and the future wetland trajectory with sea level rise.

As part of the strategy a new method and dataset has been developed by Hughes *et al* (undated). The method is used to predict the future spatial distribution of mangroves and saltmarsh in NSW estuaries for three sea level rise scenarios. The method uses machine learning to develop a statistical model of the present-day landscape using a combination of response and predictor variables. The response variables were defined by using the mapping of intertidal mangroves and saltmarsh wetlands, high resolution imagery and object-based image analysis and field validation to model the present-day distribution of these variables and provide a guide to where saltmarsh and mangroves might occur in future landscapes. Three sets of predictions were prepared for each of the three sea level rise scenarios based on potential land use constraints. The study offers several caveats regarding the various errors in the datasets and recommends a moderate level of caution when using the dataset to inform decision making for future sea-level rise impacts. It is intended as a regional scale guide where more detailed higher resolution datasets would improve the predictions.

The study used a measure of the error in the predictions to determine accuracy similar to the Pearson correlation co-efficient called the Matthews Correlation Co-efficient (MCC). For the Cakora Lagoon catchment mangrove prediction had an MCC of 0.37 whilst saltmarsh had an MCC of 0.57, representing weak correlation and moderate correlation respectively. For the Sandon River catchment mangrove prediction had an MCC of 0.56 whilst saltmarsh had an MCC of 0.51, representing moderate correlation for both. For the Wooli River catchment mangrove prediction had an MCC of 0.6 whilst saltmarsh had an MCC of 0.45, representing moderate and strong correlation respectively. Lake Arragan was not assessed as part of this study. The study offers several caveats regarding the various errors in the datasets and recommends a moderate level of caution when using the dataset to inform decision making for future sea-level rise impacts. It is intended as a regional scale guide where more detailed higher resolution datasets would improve the predictions.

The potential changes in salinity regime and implications for estuarine ecosystems and adjoining land uses has not been fully explored. There may be increasing pressure to reduce saline intrusion into low-lying lands and long-term policies will need to consider the implications of sea level rise and potential salinity increases

To examine the likely migration of estuarine vegetation in the coastal estuaries (Lake Cakora, Sandon River, Wooli Wooli River) with sea level rise and the impact of barriers to migration, an assessment could be undertaken based on the existing extent of estuarine vegetation (based on available mapping) and documented tidal/ elevation ranges of the different vegetation types and mapped sea level rise/ tidal inundation scenarios. The potential areas could then be compared to the existing barriers to migration such as the river training walls, retaining walls along the foreshore, footpaths, roads, property boundaries and residential areas. This would allow for an estimate of the impact of sea level rise on future estuarine habitats in these estuaries. This is identified in the Scoping Study as a Stage 5 task. However, given that tidal inundation mapping has been completed in Stage 2 there is a good opportunity to directly apply this information and undertake the estuarine vegetation migration mapping and management priority classification. Outcomes from this exercise could then be used to identify potential options.

7.7.2 Blue Carbon

Blue carbon is the term used to describe the carbon which is captured by oceans and coastal ecosystems, such as intertidal wetlands and supratidal forests (saltmarsh, seagrass meadows and mangrove forests, (Rayner *et al.,* 2021). Sequestration of blue carbon in mangrove forests, salt marshes and seagrass meadows is an important benefit of coastal wetlands. These ecosystems sequester carbon from the atmosphere at extremely high rates, in certain instances nearly four times that of terrestrial ecosystems (WRL, 2021). Restoring the coastal wetlands of the region poses a potentially substantial role in CVC achieving net zero emissions in accordance with the *CVC Community Energy and Emissions Reduction Strategy* (100% Renewables, 2021), the NSW Government's plan to reach net zero emissions by 2050 and the NPWS plan to be carbon positive by 2028.

Since European colonisation there has been a reduction in available blue carbon ecosystems around Australia, mostly attributed to the conversion of coastal wetlands into arable land via floodplain drainage networks. Australia, and in particular NSW, is considered highly favourable for large-scale blue carbon ecosystem restoration due to legislative and geographic conditions. Introducing or re-establishing tidal flushing and inundation in suitable low-lying coastal areas would reduce impacts of sea level rise (Sadat-Noori *et al.* 2021). Blue carbon initiatives create socio-economic benefits, enhance biological and ecological productivity of the marine estate and create economic incentives for landholders to change land management practices or land use to cater for climate change and sea level rise.

Australia's Emission Reduction Fund developed a *Blue Carbon Method* which supports projects which introduce or re-establish tidal flows back onto modified floodplains. The *Blue Carbon Method* also supports the removal or modification of infrastructure which restricts tidal flow, subsequently supporting re-establishment of coastal wetland ecosystems (Clean Energy Regulator, 2022). The aim of these projects is to increase the blue carbon being stored. When a landholder implements a Blue Carbon Method project, they will be eligible to receive Australian Carbon Credit Units which can then be sold or traded to the Australian Government or private companies for a profit (WRL, 2021). The blue carbon accounting model (BlueCAM) has been developed to calculate the net carbon abatement from each of the soil and vegetation sequestration and emissions avoidance components of a project.

The NSW Government has assessed and mapped the blue carbon storage potential of areas across coastal NSW and identified and the areas that are most suitable for re-establishing coastal wetlands. The output from the project includes eight spatial datasets as follows:

- NSW Blue Carbon stored within coastal quaternary sediments - defines the volume of blue carbon present based on geology, in particular, the type of sediment present and how this affects blue carbon.
- NSW Blue Carbon preservation for long-term sequestration - estimates the capacity for blue carbon longer term storage capability based on the sediments present, saline conditions, oxidation and other factors.
- NSW Blue Carbon generation from existing mangroves and saltmarsh - "generation" is defined as the capacity for existing mangrove forests and saltmarshes to contribute to carbon additionality from living biomass, dead organic material, and soil organic carbon.

- NSW Blue Carbon permanency in belowground sediments - defines the capacity for carbon to be preserved and not reworked under conditions of higher hydrodynamic energy associated with storms and changes to tidal regimes.
- NSW Blue Carbon indicator - a blue carbon indicator layer was created by combining the above four layers.
- NSW Blue Carbon compatibility under land use - attempts to quantify human induced impacts/ pressures on blue carbon potential using the 2017 land use dataset.
- NSW Blue Carbon in watersheds of instream barriers - shows wetland drainage and flood mitigation works which have had a profound influence on hydrology, especially hydroperiod and tidal exchange across coastal NSW. Barriers or instream artificial tidal impediments that may limit blue carbon opportunities were selected from the NSW Government fish passage dataset.

NSW Blue Carbon potential priority areas (a combination of all the above layers) for the CMP study area are illustrated in Figure 28 and Table 7 (high or moderately high blue carbon potential areas). The majority of blue carbon potential areas identified are within national parks and reserves (74% of high blue carbon potential areas and 70% of moderately high blue carbon potential areas). Specific project locations for re-establishment of coastal wetlands have not yet been identified in the CMP study area. While no tributaries within the CMP study area are included in the top 20 areas for blue carbon ecosystem restoration in the state, wetland restoration projects within the study area with the highest potential (Table 7) would contribute to achievement of the overarching priorities of the *NSW Blue Carbon Strategy*. The Clarence River estuary CMP may also identify public and freehold land for transition to blue carbon farming, particularly for those areas at risk from tidal inundation.

The NSW Government is taking a lead role in working with all levels of government, industries, landowners, and communities to conserve existing blue carbon ecosystems. The NSW Government will work with the Biodiversity Conservation Trust to accelerate new opportunities to protect blue carbon ecosystem. The NSW Government will also support councils to integrate blue carbon projects in CMPs and transition land uses on low lying floodplains vulnerable to extreme events and climate change (DPE, 2022a).

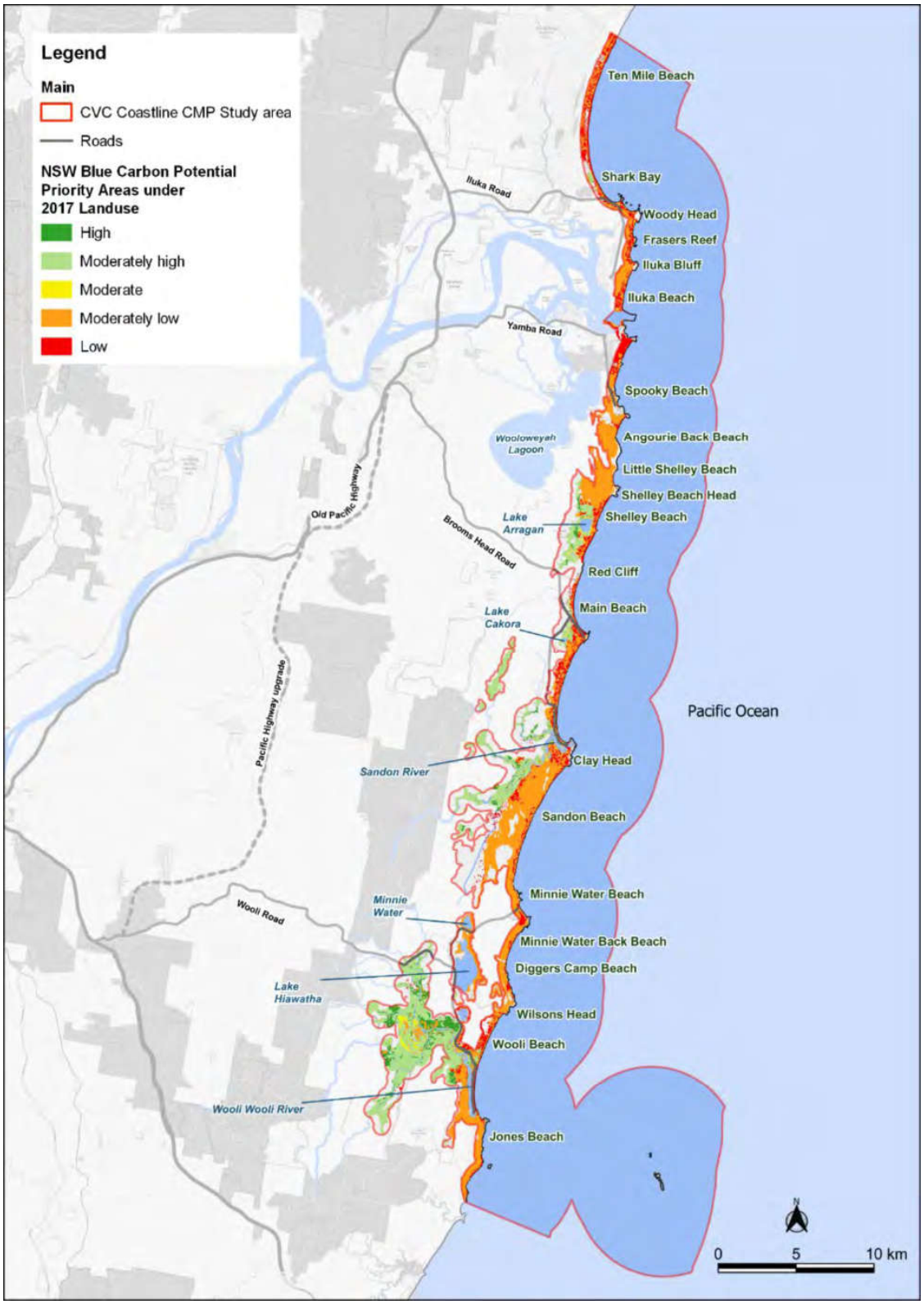


Figure 28: Blue Carbon Potential priority areas

Source: Data from SEED (2023)

Table 7: High or moderately high blue carbon potential areas within the CMP area

Location	High blue carbon potential					Moderately high blue carbon potential				
	Area (ha) within study area	CVC managed land (ha)	National parks/ reserves (ha)	Private land (ha)	Crown land (ha)	Area (ha) within study area	CVC managed land (ha)	National parks/ reserves (ha)	Private land (ha)	Crown land (ha)
Clarence River	*1.2*	1.2	-	-	-	*5.3*	1.0	4.3	-	-
Lake Arragan	*37.8*	-	37.8	-	-	*249.5*	-	249.5	-	-
Cakora Lagoon	*5.8*	0.5	3.7	-	1.6	*56.1*	5	44.4	-	6.7
Sandon River and surrounds	*109.0*	-	91.1	8.1	9.8	*813.8*	-	696	63	54.8
Sandon to Wooli coastal	*0.9*	0.4	0.4	0.1	-	*11.6*	3.8	5.7	2.1	-
Wooli Wooli River and surrounds	*390.1*	5.0	270.0	112.0	3.1	*1,593.2*	20.5	896	667	9.7
Entrance North coastal	*2.0*	-	2.0	-	-	*26.2*	-	26.2	-	-

Source: Data from SEED (2023)

7.7.3 Breakwater management

The NSW Department of Planning and Environment - Crown Lands (DPE - Crown Lands) is leading several projects for the NSW Marine Estate Management Strategy 2018-2028 (MEMS) in collaboration with other State agencies and local councils. Initiative 2 of the MEMS focuses on delivering healthy coastal habitats with sustainable use and development. Action 2.1 (Breakwall governance and management) involves the identification of responsibility for breakwater assets, working toward sound management strategies, or their removal where social, environmental, cultural and economic values will also be enhanced.

In 2021, NSW Department of Primary Industries - Fisheries (DPI - Fisheries) completed an audit (the breakwater audit) of the 134 breakwater structures that train river entrances, armour harbours and manage sand along the NSW coastline (Dwyer P. G. and Dengate C., 2021a; 2021b). The audit was a first-pass assessment of these structures, their multi-use and eco-features and their impacts on the environment. DPE - Crown Lands also investigated the governance of structures on coastal and submerged Crown land, to clarify responsibilities and facilitate improved management and assigned management responsibility for these structures to TfNSW - MIDO (Hydrosphere Consulting, 2023a). The breakwater audit included the Clarence River entrance breakwaters and Wooli Wooli River breakwaters. Audit outputs for these breakwalls are included in Appendix 8. The audit recommended multi-use and eco-features for possible inclusion in future maintenance or upgrade works.

7.7.4 Other MEMS projects

A summary of the status of the MEMS projects that are either state-wide or being undertaken in other NSW catchments, and are relevant to the CMP study area is provided below (MEMA, 2021b; MEMA, 2021c; MEMA, 2022):

- Initiative 1: Improving water quality and reducing litter:
    - Risk-based framework for regional waterway health - a governance framework is being developed and trialled for the Richmond River catchment to coordinate management, reduce diffuse source runoff and improve waterway health. An improved governance framework may also be appropriate for the Clarence River catchment.
    - Improved management of diffuse source water pollution - a review of the NSW Diffuse Source Water Pollution Strategy (DECC, 2009b) will provide recommendations to effectively manage diffuse source water pollution.
    - Review of the NSW Water Quality Objectives - updated community values and uses have been obtained through consultation with the general public and local government. A state-wide database will be developed for water quality data collation to generate either regional or site specific (trigger) guideline values for coastal waterways. These are intended to replace the old generic trigger values in the ANZECC guidelines.
    - Marine litter campaign - development of an integrated strategy and new animated works to support the “Don't be a Tosser” marine litter campaign as well as a stormwater litter prevention program.

- Fish friendly workshops for councils - building capacity to integrate fish friendly concepts into development and on-ground works.
- Construction sediment management - reduce run-off from construction sites into waterways. Coastal councils can use these conditions in development approvals (Section 8.4).
- Oyster reef restoration and research - facilitate increased protection and restoration of oyster reef habitat in NSW through provision of planning information, contributions to on-ground works, education, engagement and ongoing research and monitoring.
- Riverbank vegetation improvements - plant new riverbank vegetation, maintain previous revegetation work, undertake weeding, erect fencing and implement other improvements to enhance the health of waterways and their foreshores.
- Riverbank stabilisation - maintain existing stabilising structures constructed since 2018 and undertake new work, such as the construction of log, rock and vegetation bank protection works that stabilise erosion hotspots, helping to reduce sediment entering waterways.
- Coastal wetland rehabilitation - undertake assessments, plan for future rehabilitation activities (including priority wetland purchases to add to NPWS and Council reserve estates) and contribute to wetland restoration on-ground works in priority locations.
- Improving roads and tracks - seal gravel roads and undertake other works to reduce sediment entering waterways.
- Marine debris research and management program - the Marine Debris Working Group (agency representatives and academic experts) will oversee a marine debris risk assessment and coordinate research, monitoring and analysis activities associated with marine debris actions.
- Estuarine water quality monitoring - monitoring and reporting on water quality and ecosystem health in estuaries and relevant catchments to track broadscale condition over time.

- Initiative 2: Delivering healthy coastal habitats with sustainable use and development:
  - Develop and implement a state-wide policy for the management of coastal Crown lands (including submerged lands) in collaboration with CMPs in priority areas. A draft policy and guidelines have been developed in consultation with marine estate agencies. This policy aligns the management of Crown land with the NSW coastal management framework.
  - Development of Domestic Waterfront Structures Strategies to guide and streamline future applications for domestic developments along foreshores (such as pontoons and boat ramps).
  - Estuary bank management strategies - develop estuary-wide bank protection management strategies that guide bank protection works proposals, including beach nourishment and grooming options, and facilitate rehabilitation opportunities.

- Intermittently closed and open lakes and lagoons (ICOLL) management - develop a framework for consistent approvals and management of ICOLLs that can be included in CMPs.
- Coastal Design Guidelines Review - refer Section 8.2.
- Aquatic biodiversity offsets - develop and implement policy to protect high-value fish habitats through the use of biodiversity offsets.
- Threats to estuarine fish assemblages - research to quantify the influence of boating infrastructure, stormwater drains and natural habitats on fish assemblages and better understand potential human impacts.

- Initiative 3: Planning for climate change:
  - Estuarine habitat monitoring and threat assessment - monitoring threats to, and extent of seagrasses, mangroves and saltmarshes to fill knowledge gaps, assess the effectiveness of management actions and inform blue carbon storage estimates and predictive models.
  - Informing the Climate Change Adaptation Strategy - developing and consolidating marine estate information to contribute to the NSW Climate Change Adaptation Strategy, promoting alignment of actions between the NSW Climate Change Adaptation Strategy with the MEMS, ensuring innovative on-ground climate adaptation actions are delivered.
- Initiative 4: Protecting the Aboriginal cultural values of the marine estate:
  - Sea Country management - enhance opportunities for Aboriginal employment in NSW Government to manage Sea Country.
  - Cultural interpretations - collaborating with Aboriginal communities on additional signage and artwork depicting their cultural connection to Sea Country. Discussions with Yaegl on cultural interpretation projects commenced but was delayed due to COVID-19.
  - Reviving culture - working with Aboriginal communities to revive cultural knowledge and practices of Sea Country.
  - Cultural economic development - increasing the number of people engaged in Aboriginal businesses in the marine estate.
  - Cultural immersion - Aboriginal Elders spend time working with and mentoring marine estate staff and imparting their knowledge so that staff gain a greater respect and appreciation of Sea Country and Aboriginal cultural values which is transferred into the day-to-day management of Sea Country.
  - Sea Country rangers - work with Aboriginal communities to design and deliver a Caring for Sea Country ranger model and activities across the marine estate.
  - Cultural fishing funds - delivering targeted funds to increase economic opportunities for Aboriginal people in the fishing and seafood industry.

- Cultural research and monitoring - develop research, monitoring and evaluation approach that is integrated with the Aboriginal Engagement Framework and aligns with the Marine Integrated Monitoring Program.
- Cultural site protection - undertake local cultural research activities with local Elders and communities targeting important cultural sites and informing management strategies to conserve cultural sites and artefacts.
- Pipi harvest - consolidate research and implement Stage 2 of the Safe and Sustainable Sea Country Harvest of Shellfish project enabling Aboriginal people to harvest pipis and consume them safely for cultural purposes.
- Climate change on culture - investigate the impacts of climate change on Aboriginal communities and culture in the marine estate and develop strategies to reduce or adapt to this risk.

- Initiative 5: Reducing impacts on threatened and protected species:
  - Planning to protect marine wildlife - improve strategic planning and coordination for threatened and protected species programs across NSW, including implementation of the Marine Wildlife Manual to address priority threats.
  - Partnerships to protect marine wildlife - strengthen partnerships for marine threatened and protected species conservation response (e.g. whale entanglement, shorebird monitoring, pinniped assessment and capture) to ensure effective wildlife management, incident response and rehabilitation.
  - Education to protect and conserve marine wildlife - improve awareness of threats to threatened and protected species and community compliance with regulations, to reduce impacts through education campaigns, social research and effective compliance.
  - Improve reporting of interactions with marine wildlife - improve reporting and data sharing on marine threatened and protected species to support evidence-based decision making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly and integrating research and data into the monitoring program.
  - Species habitat research - understand and reduce impacts of habitat modification on threatened and protected species.
  - Estuary general fishery observer survey - observer-based survey of the Estuary General mesh net fishery to address threats to fish assemblages (harvest and bycatch).
- Initiative 6: Ensuring sustainable fishing and aquaculture:
  - Recreational fishing environment assessment - develop an environmental assessment of recreational fishing (saltwater), prepare a Recreational Fishing Management Strategy and commence implementation of key recommendations.

  - Oyster aquaculture business and environment - bridging the gap between academic research and policy needs with regard to water quality in the marine estate, and the role of oyster aquaculture.
  - Cultural fishing monitoring - explore potential pathways to enable assessment of cultural fishing in NSW in terms of participation, catch and effort and relate these to access arrangements within current resource management decision making processes, including harvest strategies.
  - Aquaculture socio-economic research - undertake a socio-economic valuation of the aquaculture industry in the marine estate, filling key social and economic knowledge gaps.

- Initiative 7: Enabling safe and sustainable boating:
  - Environmentally friendly moorings - establish a performance-based standard for Environmentally Friendly Moorings (EFM) and review policy and regulatory options for improving adoption and maintenance of EFM.
  - Mooring strategy - review and modernise the strategy for mooring management and administration to improve access to moorings.
  - End-of-Life vessel management - develop options to manage vessels that are reaching or have reached the end of their useful life to mitigate potential environmental risks and enhance access to moorings.
  - Vessel environmental standards - continue to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels.
  - Vessel monitoring - identify available data and undertake gap analysis.
  - Maritime infrastructure - collaborate with key stakeholders in the implementation of the *Maritime Infrastructure Plan 2019-2024* that sets out an overarching strategy to support maritime infrastructure in priority areas in NSW.
- Initiative 8: Enhancing social, cultural and economic benefits:
  - Marine estate education strategy - implement the NSW Marine Estate Education Strategy and curriculum-based school package.
  - Values and activity mapping - pilot a comprehensive, spatial mapping project of socio-cultural values and human use activities, to support marine planning prioritisation and management.
  - Blue economy - working across multiple sectors to develop a Blue Growth Strategy for NSW which explores opportunities for coordinated, innovative, long-term, sustainable development of the marine estate with a focus on those current and emerging activities which provide the greatest opportunity for sustainable growth for NSW.
- Initiative 9: Delivering effective governance:
  - Improved marine protected area planning and management - improve planning and management for marine parks and aquatic reserves.

8. PLANNING CONTROLS

There is a need for inclusion of current coastal hazard information into Council's planning framework through the appropriate, transparent processes offered through the NSW coastal management framework or local planning provisions as discussed in the following sections. The CMP also provides an opportunity to update local planning provisions on a range of matters to better protect coastal values in future (cultural heritage, social values, environmental values). Council's preferred approach will be developed during Stage 3.

8.1 Existing Planning Controls

8.1.1 Local Environmental Plan and Development Control Plans

The *Clarence Valley Local Environmental Plan 2011* (LEP) makes local environmental planning provisions for land in Clarence Valley in accordance with the relevant standard environmental planning instrument under section 3.20 of the *Environmental Planning and Assessment Act 1979*.

Land use zoning for the coastal areas within the CMP area are zoned:

- C1 National Parks and Nature Reserves.
- C2 Environmental Conservation.
- C3 Environmental Management.
- W1 Natural Waterways.
- W3 Working Waterways.

The LEP includes local provisions for coastal risk planning (Part 7, Clause 7.5 of the LEP). The Coastal Risk Planning Map includes parts of the coastline at Wooli (Figure 29). The LEP also includes local provisions for development on land subject to riverbank erosion (Part 7, Clause 7.6 of the LEP). However, the Riverbank Erosion Planning Map does not include any areas of erosion risk within the study area.

Development Control Plans (DCPs) provide detailed planning and design guidelines to support the planning controls in the LEP. The *Residential Zones DCP 2011* requires consideration of the NSW Coastal Policy and *NSW Coastal Design Guidelines* (Coastal Council, 2003) which are being updated by DPE (draft guidelines were published for consultation in 2022, refer Section 8.3). Development in the coastal zone must comply with the principles of the NSW Coastal Policy. Development within the coastal zone in Clarence Valley LEP 2011 requires consideration of a number of matters related to access, impacts on coastal processes and the scenic and visual impacts of proposed development in the coastal zone before granting consent to development. The *NSW Coastal Design Guidelines* must also be considered in the design of new buildings and additions in areas within the coastal zone.

Part H of the Residential Zones DCP (Sustainable Water Controls) specifies objectives, controls and water sensitive urban design principles and stormwater quality targets. Part I of the Residential Zones DCP (Erosion and Sediment Control) specifies the principles and requirements for erosion and sediment control plans.

Wooli Village Controls (Part V of the Residential DCP 2011 and Part Q of the Business Zones DCP 2020) document the development restrictions that apply within the "Wooli Beach Coastline Management Plan". The

Wooli Coastline Management Plan (Patterson Britton & Partners, 1997) was adopted by Council in 1998. The *Wooli Village Coastline Management Strategy Update and Options Review* (WorleyParsons, 2010a) includes a review of management options for Wooli, based on revised hazard lines determined in the *Wooli Beach/ Village Review of Coastal Hazards* (WorleyParsons, 2010b). These plans are superseded by the Wooli CZMP (Royal HaskoningDHV, 2018) which will also be updated and incorporated into the new CMP.

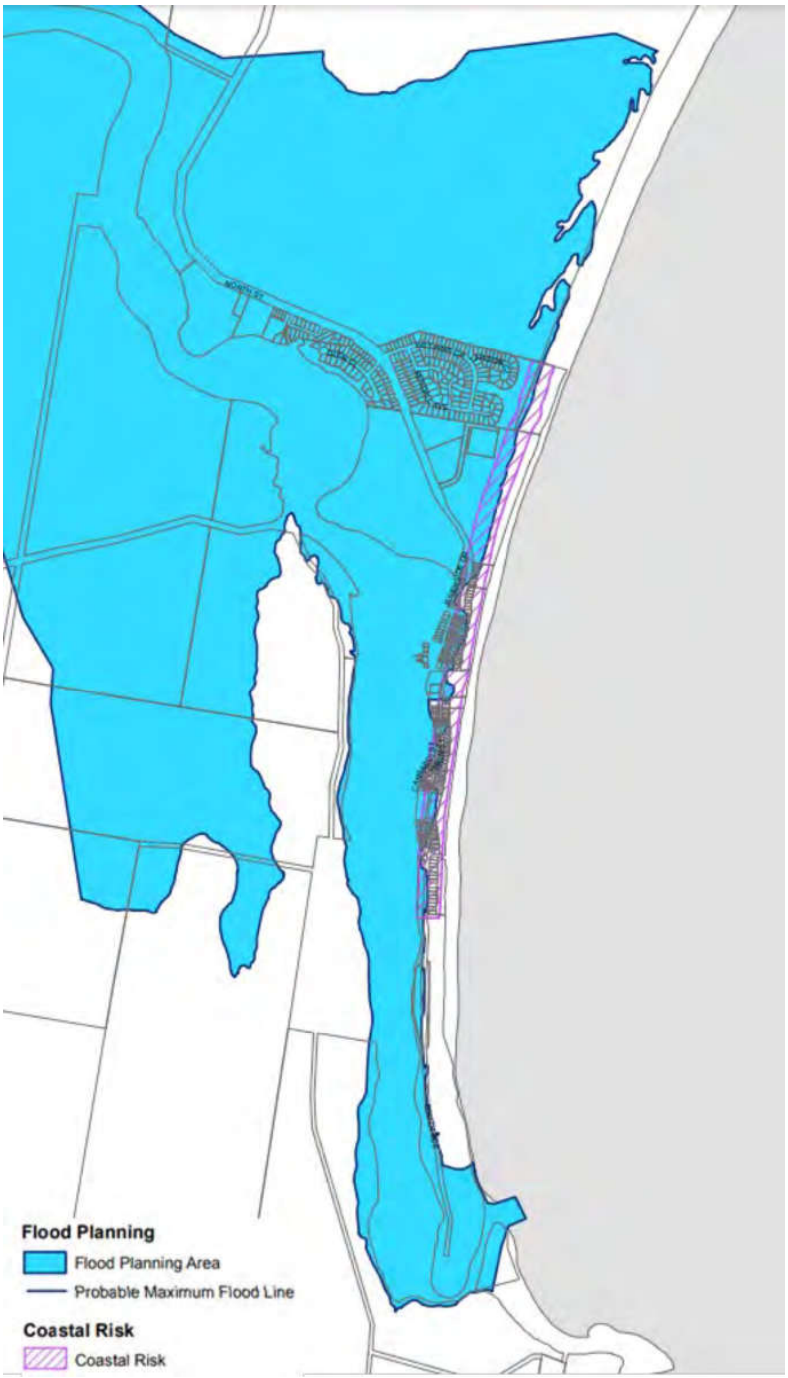


Figure 29: Coastal Risk Planning Map (2011 LEP) Sheet CL1_012F

Source: https://eplanningdlprod.blob.core.windows.net/pdfmaps/1730_COM_CL1_012F_040_20111115.pdf

Yamba Hill Controls (Part W of the DCP) do not specifically address the risk of slope instability although the Residential Zones DCP, Business Zones DCP (2020) and Industrial Zones DCP (2011) require geotechnical investigations for land subject to land slip/ geotechnical hazard.

8.1.2 State Environmental Planning Policy (Resilience and Hazards) 2021

The Resilience and Hazards SEPP consolidates and repeals the provisions of the Coastal Management SEPP, SEPP 33 - Hazardous and Offensive Development and SEPP 55 - Remediation of Land. Chapter 2 (Coastal Management) of the Resilience and Hazard SEPP is the key environmental planning instrument for land-use planning in the coastal zone and delivers the statutory management objectives for each of the four coastal management areas that make up the coastal zone:

- CWLRA - Coastal wetlands and littoral rainforests area: support high value biodiversity that are particularly sensitive to development. This management area is defined in the Act as land which displays 'the hydrological and floristic characteristics of coastal wetlands or littoral rainforests and land adjoining those features. This area focusses on protecting well established and more extensive vegetation communities (as opposed to single trees or isolated stands). The maps include a 100 m proximity area, applying to all land use zones, around coastal wetlands and littoral rainforests. The objectives of the CWLRA within the Act are to:
    - Protect coastal wetlands and littoral rainforests in their natural state, including their biological diversity and ecosystem integrity.
    - Promote the rehabilitation and restoration of degraded coastal wetlands and littoral rainforests.
    - Improve the resilience of coastal wetlands and littoral rainforests to the impacts of climate change, including opportunities for migration.
    - Support the social and cultural values of coastal wetland and littoral rainforest communities.
    - Promote the objectives of State policies and programs for wetlands or littoral rainforest management.
- CVA - Coastal vulnerability area: land which is subject to current and future coastal hazards including beach erosion, shoreline recession, entrance instability, coastal inundation, tidal inundation, slope instability and foreshore tidal erosion. The objectives of the CVA within the Act are to:
    - Ensure public safety and prevent risks to human life.
    - Mitigate current and future coastal hazards.
    - Maintain the presence of beaches, dunes and other natural features.
    - Maintain public access, amenity and use of the coast.
    - Encourage land use that reduces exposure to hazards, including through siting, design, construction and operational decisions.

- Adopt coastal management strategies that reduce exposure to hazards, in the first instance by restoring or enhancing natural defences such as dunes, and thereafter by taking other action and if taking other action, to:
  - avoid significant degradation or disruption of biological diversity, ecosystem integrity, coastal processes (ecological, biophysical, geological, geomorphological), beach and foreshore amenity, and social and cultural values.
  - avoid adverse offsite impacts, or otherwise restore the land if any impacts are caused by the action to reduce exposure to hazards.
- Maintain essential infrastructure.
- Improve community resilience and reduce reliance on emergency responses

- CEA - Coastal environment area: areas that are characterised by natural coastal features such as beaches, rock platforms, undeveloped headlands, coastal lakes and marine and estuarine waters. The area is made up of estuaries and a 100 m landward area, coastal lakes and lagoons and a 500 m landward area and specified sensitive coastal lakes and lagoons. The coastal management area is mapped upstream to one kilometre beyond the highest astronomical tide. The objectives of the CEA within the Act are to:
  - Protect and enhance coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes, coastal lagoons, and enhance natural character, scenic value, biological diversity and ecosystem integrity.
  - Reduce threats to and improve resilience of these coastal environments, including in response to climate change.
  - Maintain and improve water quality and estuary health.
  - Support social and cultural values of the coastal environments.
  - Maintain the presence of beaches, dunes and natural features of the foreshore.
  - Maintain and improve public access, amenity and use of the coast.
- CUA - The coastal use area: land adjacent to coastal waters, estuaries and coastal lakes and lagoons where impacts of development on the use and enjoyment of the beaches, dunes, estuaries and lakes need to be considered. The area starts at the seaward local government boundary, typically the low water mark and extends to the estuary limit (one km landward of coastal waters, estuaries and coastal lakes). The objectives of the CUA within the Act are to:
  - Protect and enhance the scenic, social and cultural values of the coast by ensuring that:
    - the type, bulk, scale and size of development is appropriate for the location and natural scenic quality of the coast.
    - adverse impacts of development on cultural and built environmental heritage are avoided or mitigated.
    - urban design, including water sensitive urban design, is supported and incorporated into development activities.

- adequate public open space is provided, including for recreational activities and associated infrastructure.
- the use of the surf zone is considered.

- Accommodate both urbanised and natural stretches of coastline

The SEPP gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone. This becomes relevant to the preparation of the CMP with regards to the intent and description of recommended actions and their intended approval pathways (if required) under the SEPP. For example, under the Resilience and Hazards SEPP, in order for certain coastal protection works to be undertaken without consent they need to be identified in a certified CMP.

Planning Circular PS 21-009 (NSW Government, 2021) provides guidance on assessment of coastal hazards under the *State Environmental Planning Policy (Coastal Management) 2018 (*now Resilience and Hazards SEPP*)* and *Coastal Management Act 2016* and Local Planning Direction 4.2 (Coastal Management) supports councils when developing and assessing planning proposals (such as proposals to rezone land) in coastal areas. Where a council has existing coastal risk provisions in its LEP, these generally continue to have effect, although this must be determined on a case-by-case basis as the LEP may be inconsistent with the SEPP. Any DCPs will continue to apply as they did prior to the commencement of the SEPP, noting they only provide guidance to consent authorities and people proposing to carry out development. An LEP or the SEPP will always prevail over a DCP if the DCP is inconsistent with them.

The CWLRA, CUA and CEAA are mapped in the SEPP as shown on Figure 2. The CVA has not been mapped as part of the SEPP or CVC's LEP. Consequently, development controls applying specifically to development on land within the CVA in clause 2.9 of the Resilience and Hazards SEPP are not yet active. Notwithstanding, clause 2.12 of the Resilience and Hazards SEPP requires all consent authorities, in the context of considering proposed development in the coastal zone generally, to be satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land. When assessing the risk of a current or future coastal hazard, councils and other consent authorities have discretion to consider:

- Any relevant floodplain risk management plans or estuary management plans prepared by or on behalf of a council or public authority that take into account tidal inundation in combination with catchment flooding.
- Coastal hazards identified in a relevant environmental planning instrument or DCP.
- Relevant coastal hazard, risk and vulnerability studies prepared by an appropriately qualified expert.
- Historic data, such as past storm event data and impacts, that identify risk exposure of coastal land (such as shoreline recession, coastal inundation, or geomorphic trends).
- Relevant scientific modelling (such as relating to sea level rise and climate variability).
- Relevant advice in the NSW Coastal Management Manual and associated Toolkit.
- Any other relevant information.

The CMP may identify land subject to one or more coastal hazards. This land can then be considered for inclusion in the CVA mapped under the Resilience and Hazards SEPP, which will also trigger a requirement for disclosure in planning certificates.

When assessing proposed development on land within the coastal zone, including where there may be a risk of a current or future coastal hazard, councils and other consent authorities must consider any relevant CMP that has been certified by the Minister, or any CZMP adopted under the *Coastal Protection Act 1979* that continues to have effect under clause 4 of Schedule 3 to the *Coastal Management Act 2016*. CZMPs for Wooli Beach and Brooms Head have been certified by the Minister and will remain in force until 31 December 2023 or until replaced by a certified CMP. Where land affected by a coastal hazard is identified in a policy adopted by a Council (or another public authority that has notified the Council), this information must be disclosed on a planning certificate issued under section 10.7 of the *Environmental Planning and Assessment Act 1979*.

Once a CVA map is adopted under the Resilience and Hazards SEPP, clause 2.9 of the Resilience and Hazards SEPP will apply to land identified on that map as a CVA.

8.2 Council Plans of Management

Most of the beach areas of the study area not within National Park or Nature Reserve are Crown reserve. These Crown reserves are owned by the State but generally are managed by either DPE - Crown Lands or Council. Under the *Crown Land Management Act 2016*, Council manages Crown reserves as community land under the *Local Government Act 1993*.

Plans of Management (PoMs) establish the policy framework for Council's network of parks and reserves. They provide a broad-based mechanism to address issues common to all parks and reserves concerning management, maintenance, community use and environmental protection and provide the community with direction on how Council's parks and reserves can and cannot be used. Site specific PoMs contain detailed management strategies that target the unique values of the area, provide for the protection and enhancement of its social, cultural and/or natural attributes, identify likely future pressures and facility/service requirements and outline priorities, actions and work programs for the effective long-term management of the community land or Crown reserve area. A PoM is also a critical tool to ensure that any authorisation or restriction on the use of a Crown reserve, including proposed development and tenures, considers Aboriginal rights and interests in Crown land under the Commonwealth *Native Title Act 1993* and the NSW *Aboriginal Land Rights Act 1983*.

Council is currently updating the PoMs for community land, Crown reserves and other public places for coastal areas including Angourie Reserve, Brooms Head Public Reserve, Diggers Headland Reserve, Minnie Water Foreshore Reserve, Wooli Public Reserve and Sportsground, South Terrace, Wooli, Hickey Island Reserve, Pippi Beach and Dolphin Park, and the Brooms Head Holiday Park. The PoMs permit future development to safeguard against the effects of climate change, significant climatic events, bushfires and pandemics including climate change adaption measures, extension(s), renovations and improvements to the existing buildings and infrastructure pursuant to relevant legislation and planning controls, flood mitigation, implementing actions identified as part of the CMP and mitigation works to reduce coastal erosion, storm surge and landslide risks. Potential CMP actions should consider the scope and outcomes of related plans of management and identify the most appropriate mechanism for funding and delivery of these actions.

8.3 Review of NSW Coastal Design Guidelines

The draft *2022 Coastal Design Guidelines* (DPE, 2022b) will guide planning and decision-making to protect the coastline and ensure better-designed homes and places. The updated guidelines will give councils, communities and industry modern solutions that balance the needs of growing communities with the responsibility to preserve the NSW coastline including guiding decisions on:

- Requests for changes to planning rules in coastal communities (planning proposals).
- Appropriate design for homes and building.
- Managing growing coastal communities.

The guidelines aim to ensure that development in coastal areas is appropriate and sensitive to its environment through best practice strategic planning and approach to urban design. A renewed focus on connecting and collaborating with Aboriginal communities is central to the guidelines to ensure that land use planning and design begins with respect for Country and Aboriginal heritage (DPE, 2022b).

The guidelines will be used in strategic planning to inform planning rules along the NSW coast. Planning proposals in the NSW coastal zone must be consistent with and give effect to Chapter 3 of the guidelines. This is an existing requirement through Local Planning Direction 4.2: Coastal Management (DPE, 2022b).

The urban design guidance in Chapter 4 in the draft guidelines can also be used to inform:

- Master plans.
- Business cases.
- Development applications including coastal subdivisions.
- Infrastructure development.

8.4 Standard Conditions of Consent for Residential Development

The NSW Government has released a set of conditions for erosion and sediment control on construction sites as part of an initiative to improve water quality and reduce litter (DPIE, 2021). The aim is to increase consistency on all sites to ensure erosion and sediment control is a core part of all residential construction. These conditions are available as part of a broader set of standard conditions for residential development. The conditions are optional but may become mandatory in future. DPE Planning will update guidelines to help small-scale developers understand their obligations.

8.5 Potential Planning Amendments

There is a need for inclusion of current natural hazard information into Council's planning framework through the appropriate, transparent processes offered through the NSW coastal management framework or local planning provisions to ensure the community is informed about natural hazards and risk to property, and to minimise Council's risk of litigation from future planning and development decisions and coastal management actions. A coordinated and consistent approach to strategic planning and an appropriate level of protection of environmental, cultural, built and commercial assets in the coastal zone will ensure adequate planning for and protection from coastal hazards, future development pressures and emerging threats associated with a changing climate.

The Resilience and Hazards SEPP (and its maps) can be amended (e.g. to include CVA mapping or modify CWLRA maps) by another SEPP or a LEP made to implement a planning proposal. A planning proposal can be prepared by a local council or in some cases another planning authority. Before Council can make a LEP relating to SEPP maps, the minister who administers the *Coastal Management Act 2016* must make a recommendation confirming the mapping aligns with the objectives outlined in Section 3 of the Act. Where a council has existing additional local controls in a LEP or DCP, such as coastal risk planning provisions, these can continue to apply however duplicated planning controls should be removed from local provisions where practical. However, there may be localised reasons for councils to retain these provisions.

A planning proposal may propose to amend the Resilience and Hazards SEPP maps, including increasing or decreasing the land within the maps. A planning proposal must be supported by evidence in a relevant CMP that has been certified by the Minister, or by a CZMP under the former *Coastal Protection Act 1979* that continues to have effect under clause 4 of Schedule 3 to the *Coastal Management Act 2016.*

8.5.1 Coastal Vulnerability Areas

CVA mapping can include the seven coastal hazards (Section 2). The coastal hazard mapping developed in Stage 2 could be used in the development of CVA mapping. The coastal hazard mapping for erosion, recession and inundation is consistent across the CVC LGA urban areas and has quantified the nature and extent of exposure to these coastal hazards and threats to public and private assets (both natural and built) and allow the community to understand the factors that contribute to vulnerability to current and future risks. Mapping of coastal lake or watercourse entrance instability has not been undertaken due to the limited entrance instability. Mapping of foreshore erosion (part of hazard 7) is not available but may be considered (e.g. for the Wooli Wooli River) as part of CMP Stage 3. Mapping to address the inundation of foreshores under tides, waves and catchment flood waters will be undertaken through Council's flood risk planning.

FSG Geotechnics and Foundations (2022) recommended a review and update of planning and development controls relating to slope instability. This could be similar to landslide hazard mapping undertaken for a number of regional councils in Queensland including guidance for developers and property owners. This approach would remove the direct focus on the Pilot Hill properties and would place an emphasis on to all property owners to ensure that they keep their property internally and externally stable. This would also allow residents to undertake individual risk assessments for their properties to allow future development.

A planning proposal is required for the inclusion of a CVA in the Resilience and Hazards SEPP or as amended local provisions in the LEP. The DCPs may also be amended to support any SEPP or LEP

amendments. Interim measures such as a development code may also be appropriate. Council planning certificates will continue to identify land exposed to coastal hazards currently or potentially in future.

Potential CVA areas will be considered as part of Stage 3 and 4 of the CMP development to support a future planning proposal if adopted by CVC potentially addressing:

- Beach erosion/ coastal recession: based on the 1% EP (2123 SSP2 or SSP5) mapping.
- Tidal/ coastal inundation: based on the 1% EP (2123 SSP2 or SSP5) mapping.
- Slope instability: Areas to be determined following the additional geotechnical assessment recommended by FSG Geotechnics (2022) for Pilot Hill and Convent Beach but potentially applying to all areas within the coastal zone with slope instability.
- Erosion of foreshores: Wooli - areas to be determined require additional assessment.

Sea level rise may result in landward migration of coastal dune systems. Future planning should also consider the natural coastal landforms and processes that will continue to occur.

8.5.2 Other Coastal Management Areas

The Scoping Study found that the existing mapping for the CWLRA, CEA and CUA is considered suitable for management of the coastline and the estuaries. However, it was noted that there was no detailed recent mapping of the wetland and littoral rainforest communities in the study area available at that time. Detailed contemporary vegetation mapping was released by the NSW Government in 2022. The current SEPP CWLRA mapping is based on the now repealed SEPP No. 14 - Coastal Wetlands and SEPP No. 26 - Littoral Rainforests, amended based on a 2018 review. A review of the SEPP mapping of CWLRA is recommended to afford the ecological communities the required level of protection from future land use pressures, development and coastal hazards.

It may be advantageous to undertake a review of the CWLRA at the same time as the planning requirements for the CVA are investigated so that any changes to the CWLRA can also be included with the CVA in a single planning proposal. The NSW Government detailed vegetation mapping provides an opportunity to undertake a review of the CWLRA mapping during the CMP development.

The management of the river/ estuary catchments has a significant impact on the health of the estuary and coastal zone. Recognising the influence of the catchments on the health of the coastal zone, mapping of the CEA to include some or all of the estuary catchment areas within the study area has been considered. Given that the majority of the catchments for the estuaries within the CMP area are National Parks and Reserves, the catchments are largely protected by the C1 zoning and reserve designation, therefore this approach is not considered necessary for the CMP study area. There is an opportunity to consider the appropriateness of CEA mapping and expand this mapping to include important coastal features that are coastal dependant or would become 'coastal' under projected sea level rise scenarios, or areas that are critical to the coastal zone (e.g. areas currently upstream of tidal waters).

8.5.3 Blue Carbon projects

The *Coastal Management Act 2016* specifies management objectives that are to protect, rehabilitate and improve the resilience of coastal wetlands, including opportunities for migration. The Resilience and Hazards SEPP includes development controls to protect coastal wetlands and guide appropriate development (Section 8.1.2). Several other Acts, including the *Fisheries Management Act 1994* protect seagrass, mangrove and saltmarsh species.

Blue carbon projects (Section 7.7.1) will likely require a number of regulatory approvals under planning and other state and Commonwealth legislation. The NSW Government recognises that having certainty about the process to undertake a blue carbon project can greatly influence a proponent's decision to plan for and deliver such a project. There is an opportunity to streamline and simplify approvals for restoration projects to assist with reducing upfront costs and increasing investment certainty and project take-up. The NSW Government will embed blue carbon ecosystem projects and associated works into existing planning system provisions, with a view to streamlining approvals and facilitating project delivery. This will align the existing framework around aquatic habitat offsets for development impacts under the *Fisheries Management Act 1994* that generally also achieve blue carbon outcomes (DPE, 2022a).

9. NATIONAL PARKS AND RESERVES

NPWS is responsible for management of the *National Parks and Wildlife Act 1974* and management of National Parks and reserves across the CMP study area. NPWS responsibilities in these areas includes a wide range of activities such as active conservation and habitat protection, fire management, management of tourism and visitation, research and education. The coastline and small estuaries in the National Parks and Nature Reserves were included in the study area for the CMP Scoping Study. The *Bundjalung National Park and Iluka Nature Reserve Plan of Management* (NPWS, 1997) and *Yuraygir National Park and Yuraygir State Conservation Area Plan of Management* (NPWS, 2003) outline how these areas will be managed.

9.1 Coastal Hazard Response Plans for Campgrounds

NPWS has collaborated with CVC on the assessments of tidal/ coastal inundation and erosion/ recession with detailed assessments undertaken for Woody Head and Sandon (Section 2.4 and 2.5).

Woody Head campground in Bundjalung National Park and Sandon campground in Yuraygir National Park are culturally, recreationally and ecologically significant landscape features within the NPWS coastal reserve system. The values of the campgrounds are related to the scenic beauty, recreational opportunities and natural landscapes. The areas also have significant cultural heritage value including sites which are of spiritual significance and of contemporary importance to the Yaegl People as well as examples of European heritage. The high levels of biodiversity in the study area reflect climatic conditions which support a diverse range of subtropical coastal communities.

The Woody Head campground precinct has experienced significant historical coastal erosion and recession and there is a risk of further impact in future, particularly with the expected influence of climate change. NPWS considers that the coastal hazards are a major issue for the location and the long-term viability of the campground. NPWS has made significant investment in facilities and coastal protection works at Woody Head. A seawall and artificial dune were constructed to provide protection against beach erosion and shoreline recession. The aim of these works was to protect the camping ground amenities while a phased retreat program from the eroding section of the campground was formulated and carried out.

Coastal erosion and shoreline recession are occurring along Sandon Beach impacting foredunes, pedestrian and 4WD beach access and threatening the northern section of the campground. Hazard assessments indicate that some parts of the campground and sections of Sandon River Road (the only access to the campground) is at immediate risk of erosion and this risk is expected to increase into the future. Periodic inundation of Sandon River Road also occurs at present and the area impacted by inundation is expected to increase into the future. There is concern that the combined impacts of coastal recession and inundation will significantly impact Sandon River Road and access to the campground. Although, dune stabilisation measures have been implemented in response to coastal erosion events, there has been no formal strategic approach to coastal management at Sandon.

The Woody Head and Sandon campgrounds are addressed in separate Coastal Hazard Response Plans being prepared by NPWS. The NPWS Coastal Hazard Response Plans align with Stages 2 and 3 of the Clarence Valley Coastline CMP as they develop strategies and identify coastal management actions that address coastal management issues, reduce exposure to coastal hazards and take advantage of opportunities.

The draft Coastal Hazard Response Plans will be placed on public exhibition in early 2024 and NPWS will consider any feedback received in the finalisation of the Plans. Once adopted, NPWS intends to incorporate the outcomes of the Plans as actions in the CMP (Stage 4) to ensure integration of the CVC and NPWS management approach for the Clarence coastline. The Plans will include the expected timing and budget for implementation of the recommended actions suitable for inclusion in the CMP.

10. EMERGENCY RESPONSE

Emergency Action Subplans (EASPs) have been prepared for Brooms Head and Lake Cakora (CVC, 2017) and Wooli (Royal HaskoningDHV, 2018) as part of the respective CZMPs. The Yamba Coastline Emergency Management Plan supports the *Clarence Valley Local Emergency Management Plan 2020*. The EASPs will be reviewed and updated as a Coastal Zone Emergency Action Subplan (CZEAS) to form part of the CMP in accordance with statutory requirements and relevant guidelines.

The CZEAS will detail arrangements for the four emergency phases (prevention, preparation, response and recovery) to manage coastal emergency events relating to coastal erosion, cliff instability and coastal inundation. The purpose of the CZEAS is to provide emergency response actions in order to:

- Protect human life and public safety.
- Minimise damage to property and assets.
- Minimise impacts on social environmental and economic values.
- Not create additional hazards or risks.

A CZEAS is consistent with the objects of the *Coastal Management Act 2016* and the management objectives for the CVA, specifically to prioritise actions that support the continued functionality of essential infrastructure during and immediately after a coastal hazard emergency and to improve the resilience of coastal development and communities by improving adaptive capacity and reducing reliance on emergency responses. A CZEAS is also consistent with the emergency management provisions addressed in the state, regional and local emergency management plan (EMPLANs) and state and local flood plans (Figure 30).

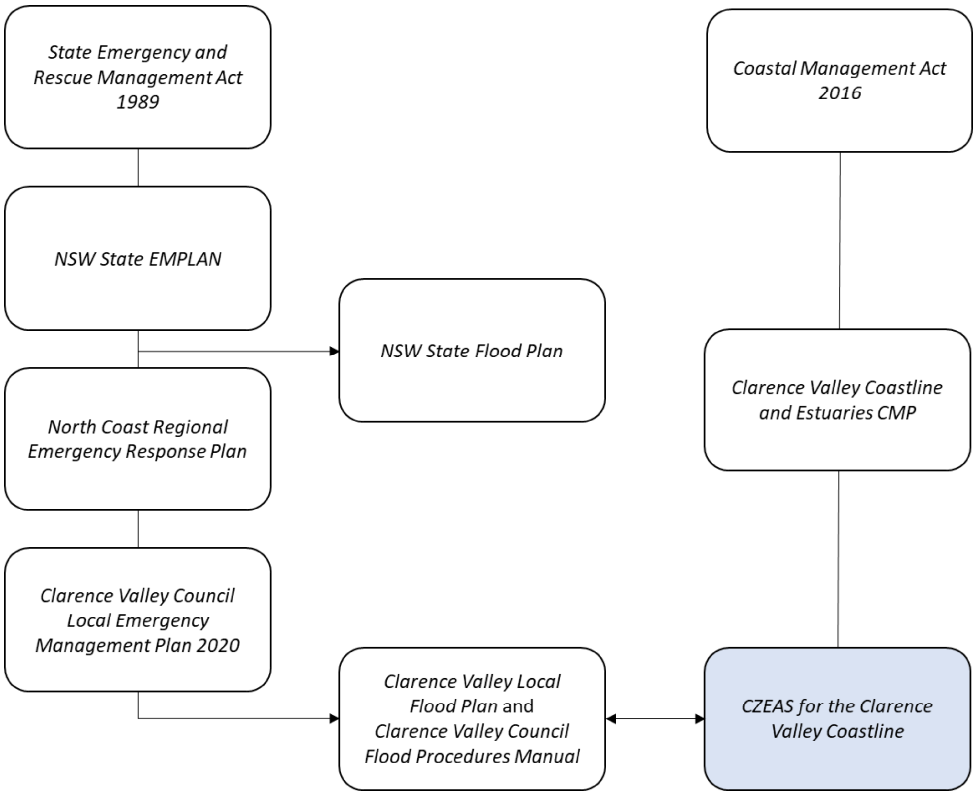


Figure 30: CZEAS legislative context

The CZEAS will detail:

- The triggers which define when a 'coastal emergency' is occurring (beach erosion, coastal inundation or cliff instability, where the beach erosion, coastal inundation or cliff instability occurs through storm activity or an extreme or irregular event).
- Areas at risk during coastal emergencies.
- Roles and responsibilities immediately preceding and during coastal emergencies. These roles may include the carrying out of works for the protection of property affected or likely to be affected by beach erosion, coastal inundation or cliff instability.
- Communications required before during and after an emergency to inform the public and potentially affected property owners about their responsibilities during a coastal emergency and what actions they are and are not permitted to undertake.
- The actions required to mitigate, prepare for, respond to and recover from coastal emergencies.
- The potential location and types of works that may be undertaken for the protection of property and assets.

11. STAKEHOLDER ENGAGEMENT

CVC is collaborating with land managers, state government agencies, industry and community representatives to provide effective and integrated coastal management outcomes. In particular, CVC has worked closely with the National Parks and Wildlife Service (NPWS) and Department of Planning and environment (DPE) to deliver the Stage 1 Scoping Study and Stage 2 detailed coastal hazard studies for the coastline.

Development of the Stage 1 Scoping Study included stakeholder engagement activities designed to inform and involve stakeholders by bringing all interested parties on board early to share information and ideas, identify stakeholders and prepare a stakeholder profile. Feedback from the community and other stakeholders was used to identify values and coastal management issues.

The CMP vision statement was developed from community feedback and is consistent with the objects of the *Coastal Management Act 2016*, the management objectives for the coastal management areas and Council's vision and objectives as identified in its Community Strategic Plan.

> *"The natural values of the Clarence Valley coastline and estuaries will be conserved and enhanced. Sustainable management of the coastline will include adequate resourcing and funding to preserve the environmental, cultural, recreational, amenity, local and tourism values with consideration of existing and emerging threats to improve resilience to current and future pressures."*

11.1 Engagement Strategy

A stakeholder engagement strategy for the preparation of the CMP was developed as part of the Scoping Study. This strategy was developed from the previous stakeholder consultation outcomes and the outcomes/ findings of consultation activities undertaken during Stage 1. The strategy for engagement with stakeholders during Stage 2 of the CMP development includes the following components (Appendix D of Hydrosphere Consulting, 2021):

- Engagement intent - empower community and stakeholders with knowledge to contribute to decisions in subsequent stages and share information equitably among stakeholders.
- Level of community influence on decisions - Council retains decision making. The community and stakeholders may contribute to detailed studies on issues of concern and participate in risk assessment and evaluation.
- Desired engagement outcomes:
    - Shared understanding of risks and opportunities over different timeframes, and the range of actions that could address different risks.
    - A shared understanding of the varied perspectives about coastal management within the community.
    - Council understands the community's 'attitude to risk'.
    - Community and stakeholders understand vulnerabilities, risks and opportunities, including technical aspects such as scenarios for sea level rise, hazards and impacts.

- Increased community trust of technical information based on their involvement and understanding of assumptions and limitations.

- Engagement tools:
  - Yaegl native title holders - meetings communicating progress of project, studies and outcomes.
  - Coast and Estuary Management Committee (CEMC) - workshops on study outcomes.
  - Government agencies (in addition to involvement through CEMC) - meetings or workshops as required.
  - General community, community groups and business/ industry groups - Clarence Conversations and webpage tools, Council's Noticeboard ENews and Clarence Magazine (depending on timing of publication).

11.2 Stage 2 Engagement Activities

11.2.1 Yaegl

Representatives from CVC, NPWS and the project team held several discussions with Yaegl RNTBC members and NTSCorp representatives throughout 2021 and 2022 including a presentation introducing and explaining the projects and inviting Yaegl involvement. Stages 2 - 4 of the CVC coastline CMP will require ongoing liaison with Yaegl regarding outcomes of the CMP investigations. The project team recognises Council's requirements for Native Title Act notifications, although further information is required to clarify the requirements for these projects.

A summary of engagement during Stage 2 is provided below.

- 13/12/21: Presentation to Yaegl RNTBC on CVC CMPs and request for engagement with First Nations representatives.
- 9/2/22: Proposed scope for engagement with Yaegl Native Title holders including on Country meeting provided to YTOAC.
- 20/6/22: Meeting with traditional owners (RNTBC) - Native Title arrangements, Yaegl business activities, Yaegl history, language, knowledge and activities, discussion of project scope and study area for the CVC CMPs and the NPWS coastal hazard response plans for the campgrounds, request for ongoing involvement with Yaegl traditional owners, CMP forward plan tasks that are likely to be of interest to Yaegl, potential involvement and outcomes, Yaegl cultural mapping project.
- 13/4/22: The project team received written comments on the Clarence River CMP Scoping Study and Coastline and Estuaries CMP from NTSCorp, endorsed by the RNTBC. Background to the native title claims was also provided by NTSCorp. Comments on the CMP are as follows:

  Yaegl People have a deep and abiding connection to the lands and waters of their traditional country, and attribute particular cultural significance to the waterways, coastline and seas.

  The development of strong and mutually beneficial relationships between Yaegl People and the people and organisations working on Yaegl Country is of great importance to YTOAC.

We note that Hydrosphere and YTOAC have already begun an open dialogue and thank Hydrosphere for their commitment to collaborating with YTOAC throughout the studies.

The coastlines within Yaegl Country contain a high incidence of cultural sites of significance, middens and Aboriginal objects. Care must be taken throughout the study to ensure staff do not disturb or access Aboriginal sites. As such, ongoing consultation with YTOAC is essential for the entirety of the study, including before researchers do any activities on Yaegl Country.

Yaegl People also have a great interest in the methodologies and results of the studies, given that they will inform future management of Yaegl Country. It is also our view that the involvement and guidance of Yaegl People throughout the studies will lead to more accurate and reliable research.

We therefore seek a commitment from Hydrosphere to ensure their studies integrate the perspectives and wishes of Yaegl People, as Traditional Owners of a large portion of the relevant research locations, and that any cultural information received by researchers is handled with respect and sensitivity and is kept secure and only published with consent of the relevant Traditional Owners.

The directors of YTOAC suggest that opportunities should be provided for Yaegl People to be involved in the research activities. We submit that it is extremely important for researchers working on Yaegl Country to facilitate the involvement of and collaboration with Yaegl People in their studies.

We also note that it is appropriate for YTOAC representatives to be paid a fee for service in relation to any time and expertise offered to the study.

Due to the cultural importance and sensitivity of the study area to Yaegl People, it may be necessary at times for the engagement of paid cultural heritage officers to be present during the works, as advised by YTOAC.

The directors of YTOAC note Hydrosphere's commitment to provide ongoing updates as well as reports, and information relating to the progress of the study to YTOAC. The directors of YTOAC look forward to working further with Hydrosphere in relation to this study and to continue strengthening the relationship between the organisations.

- 12/9/22 - Presentation to Yaegl RNTBC on CVC CMPs and NPWS plans. Feedback from the Board was as follows:
    - Yaegl cultural mapping project is nearly finished. Cultural mapping could be overlaid with coastal hazard (erosion, recession, inundation) mapping to identify cultural sites/values at risk and inform future management. This mapping task could be a CMP project.
    - Cultural sites need to be considered in the design of projects including sites in the water such as fish traps.
    - Weeds are also an issue impacting coastal cultural sites.
    - Sandon and Woody Head are both culturally significant sites. Assessments have been done that indicate significant artefacts/values. Both Sandon and Woody Head are women's sites.

- Yaegl are working with Ashley Moran (NPWS - Heritage Conservation) to develop management approaches for cultural heritage values/sites e.g. Plover Island at Sandon. This could also feed into future coastal management options.
- Moving forward, Yaegl would like to be involved in any discussion around planning/ management options in the coastal zone. The project team needs to consult with the traditional knowledge holders. To do this the project team needs to contact the RNTBC who will advise the relevant knowledge holders.
- NTSCorp suggested on-Country discussions for consultation about specific sites.
- Next step is to present the coastal hazard mapping to Yaegl once it is finalised, then consult with Yaegl about management options for particular areas.

11.2.2 Coast and Estuary Management Committee

Updates have been presented to the CEMC on a regular basis as shown in Table 8.

Table 8: CEMC Meetings - Stage 2

Meeting date	Discussion topics	Feedback/ outcomes
24/9/21	• Coast and Estuary Grants received for follow up Wooli Beach nourishment, Coastline and Estuaries CMP (Stage 2 to 4). • Background to Wooli Beach Management Strategy.	Concerns with potential impacts of the Brooms Head revetment wall on properties located north of the bridge. Some protection of those properties is required. This would be considered through the hazard assessment in the CMP Stage 2 and physical modelling. It is also proposed there be a community meeting at Brooms Head to present assessment outcomes and potential management options.
9/9/22	• Introduction to CMP Stages 2-4, CMP study area, scope of detailed studies, consultation activities, • Wooli Beach Nourishment - no sand on beach so project is on hold, Brooms Head physical modelling - Council allocated funding to undertake modelling of proposed sea wall at the lake entrance. DPE has advised a method which can be followed. • Presentation of FSG Geotechnics and Foundations (2022) report and recommendations	Carried motion: *That the Clarence Valley Coast and Estuary Management Committee recommends Council adopts the following short-term options as recommended by FSG (geotechnical consultants), subject to grant funding:* • *Review and repair existing instrumentation* • *Review monitoring program* • *Additional geotech investigations* • *Update slope stability analysis and risk assessment* • *Undertake stormwater and landscaping improvements where recommended*
November 2023	• Stage 2 coastal hazard assessment outcomes	Not yet available.

11.2.3 Clarence Valley Council

Following commencement of Stage 2, an information report and recommendations were presented to Council at the Ordinary Council meeting of 27/9/22 - Pilot Hill Yamba Geotechnical Assessment (07.22.221). At that meeting, Council resolved [07.22.221] to:

…

3. Adopt the following short-term options for Pilot Hill Yamba as recommended by FSG (geotechnical consultants), subject to grant funding:

a. *Review and repair existing instrumentation*

b. *Review monitoring program*

c. *Additional geotech investigations*

d. *Update slope stability analysis and risk assessment*

e. *Undertake stormwater and landscaping improvements where recommended*

4. Include funding of the matching contribution for the Pilot Hill Yamba investigations as one of the projects within the Category D Local Government Recovery - Local Council Support "Improved drainage and flood immunity initiatives" allocation resolved at the August Meeting.

5. Investigate the feasibility of releasing land risk zoned properties from this study if they are zoned LRZ2 "acceptable/tolerable risk" and these properties have submitted their own current geotechnical reports to Council and report back to Council.

Ongoing meetings have been held with CVC staff to discuss project outcomes including a planned workshop with the Council Working Group on Stage 2 outcomes.

11.2.4 Government agencies

In addition to the CEMC meetings, engagement with NSW Government agencies has included:

- Department of Planning and Environment - Biodiversity and Conservation Division (DPE - BCD):
    - Ongoing liaison regarding technical aspects of the project including review of methodology, progress and reports.
    - In late December 2022, DPE representatives advised that the Department would conduct an external peer review of the draft coastal erosion/ recession assessment. The aim of the peer review was to contribute to a state-wide approach that DPE is developing to ensure a consistent, robust and legally defensible coastal hazard modelling and assessment approach is undertaken by all NSW councils. This is a developing specialist field and DPE - BCD is transitioning to a better-defined approach for the coastal hazard assessments. The peer review and delays in the project do not suggest any flaws in the approach undertaken by the project team to date. The project team has been working with DPE to confirm the approach to be undertaken to finalise this stage of the CMP development.

- NPWS:
    - Outcomes of Stage 2 studies for National Parks and Reserves.
    - Development of the Coastal Hazard Response Plans for Woody Head and Sandon campgrounds (Section 9.1).

11.2.5 Community and interest groups

The Clarence Conversations website includes project information, useful links, downloads, a discussion forum and questions page. The webpage will be updated through all stages of the CMP development. During Stage 2, the website included a link to the Scoping Study, a summary of feedback received during Stage 1, a summary of the Stage 2 studies and invitation to engage through the Questions Page or Discussion Forum.

Project updates were also provided on the Clarence Valley Noticeboard on 26 November 2021.

Social media posts were included on Council's Facebook page e.g.:

- 17 December 2021: providing an update and inviting feedback via the Clarence Conversations website.
- 11 January 2022: Erosion prevention measures at Wooli.
- 31 March 2022: Erosion at Brooms Head.
- 18 February 2022: Envite Recovery team repair of Brooms Head walking track.
- 28 March 2022, 30 March 2022, 14 April 2022: Pilot Hill landslip update and closure of roads and pedestrian access.
- 30 March 2022: Closure of pedestrian access at Brooms Head beach and caravan park due to hazardous surf warning and recent heavy rain.
- 6 April 2022: Construction of elevated walkway at Convent Beach
- 3 May 2022: Update on Yamba Hill zig zag pathway construction.
- 22 September 2022: New accessible walkway from William Ager Park to Pippi Beach.
- 14 August 2023: Wooli Beach access renewal project.

Since the preparation of the Scoping Study, community members have expressed concerns to CVC about coastal management issues including:

- Erosion along Brooms Head foreshore, recession of the shoreline beyond the extent of the existing seawall and the loss of foreshore.
- The application of the Emergency Management Plan for Pilot Hill and the response to rainfall events, particularly the restrictions imposed.
- Water quality in Lake Cakora when the entrance is closed.

Feedback from the community has been considered in the detailed risk assessment (Section 6).

11.3 Other stakeholder engagement activities

11.3.1 Wooli Beach Management Strategy

Community consultation was undertaken in November 2020 for the Wooli Beach Management Strategy (Section 7.2). A drop-in session was held at the Wooli Public Hall with approximately 20 local residents attending. All representatives were supportive of BMS proposed. The strategy was also presented to the CEMC in November 2020. Key comments received from the community consultation have influenced the design of the strategy (Royal HaskoningDHV, 2021).

11.3.2 NPWS Coastal Hazard Response Plans

In partnership with NPWS, community reference groups were established to assist in the development of the NPWS Coastal Hazard Response Plans. The group consisted of Aboriginal representatives, community representatives, site users, state government agencies, Council and other interest groups. Two meetings were held with the community reference group:

- Meeting 1 - introduction to the project, presentation of information on coastal hazards and asset risks, determine community objectives and gather information
- Meeting 2 - present management options, obtain input into options, discuss management plan components.

Representatives from Yaegl traditional owners were included in the community reference group but were unable to attend the meetings. A separate meeting was held with the YTOAC to present the project scope. Yaegl requested further consultation on planning and management options for the coastal zone. This will be undertaken during the public exhibition phase and during the development of the Clarence Valley Coastline CMP.

DPE also provided a technical review role during the development of the plans.

Ongoing consultation with stakeholders will also be required as part of the plan implementation.

12. RECOMMENDATIONS FOR STAGE 3

Stage 2 has provided detailed information on coastal management threats and identified the highest risk threats to be addressed in the CMP. The recommended scope of Stage 3 is discussed in the following sections.

12.1 Scope of Stage 3

The work undertaken in Stages 1 and 2 of the CMP development provides information on the issues and risks affecting the CVC coastal zone. Stage 3 involves the identification and evaluation of management options and will include:

- Development of a strategic approach to risk management: (e.g. alert, avoid risks, active intervention, planning for change, emergency response, Section 12.3).
- Evaluating management actions, considering feasibility (is it an effective and sustainable way to treat the risks?), viability and acceptability to stakeholders.
- Engaging public authorities about implications for their assets and responsibilities.
- Preparing a business plan for implementation - capital and operational costs, distribution of costs and benefits, funding and delivery.

Stage 3 will consider all findings from Stage 1, Stage 2 and stakeholder engagement activities. Key Stage 3 stakeholders include Native Title holders, the CEMC, government agencies and the community. The Stakeholder Engagement Plan included in the Scoping Study details the required community engagement activities. Consultation will take also place with each agency with either a responsible or supporting role for each action.

The level of risk for each threat determines the options assessment process that will be followed in Stage 3 (Figure 31). Stage 2 has confirmed that some of the risks are high and it is anticipated that decision making in Stage 3 will be of moderate complexity. An intermediate level of economic assessment involving a net present value analysis of capital and operating costs is required to assess the viability of active intervention options. Benefits of potential management responses will be expressed qualitatively. A more detailed cost-benefit analysis may be required if any options require detailed analysis to determine socio-economic viability (potentially required for options >$5 million).

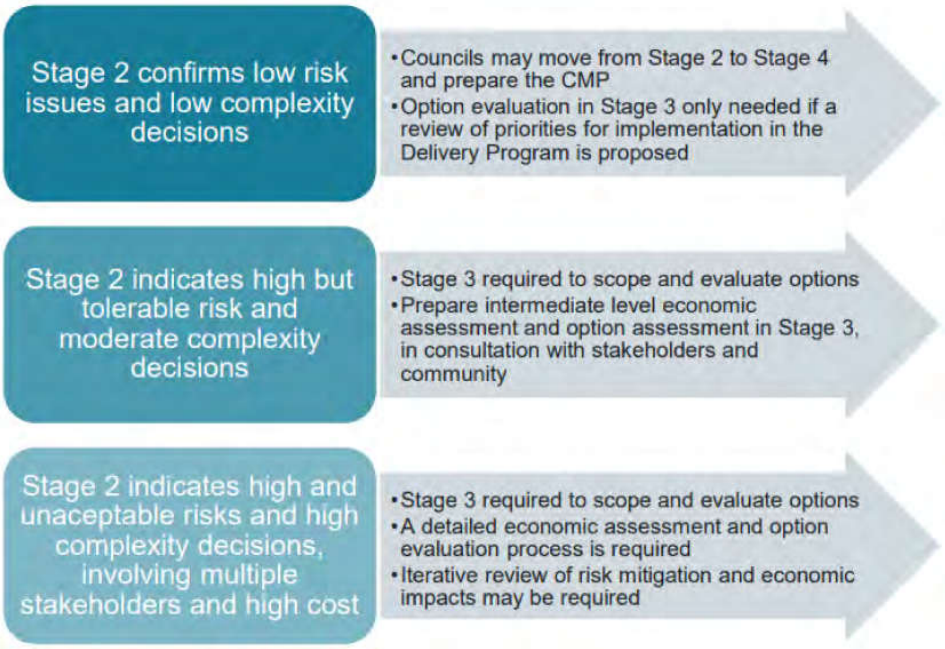


Figure 31: Level of options assessment required and moving on to Stages 3 or 4

Source: Figure B2.29, *Coastal Management Manual Part B* (NSW Government, 2019)

12.2 Key Present-Day Threats

Due to the large geographical area, environmental, social and cultural values of the study area and projected climate change impacts, there are several key management threats to be considered in the CMP. Based on the existing information, the threats with a moderate or high risk in the current timeframe are listed Table 9 and shown on Figure 32 to Figure 36 (refer risk assessment in Appendix 7). These threats will be the focus of the CMP and will require development and assessment of management options in Stage 3 including those discussed in Section 7. Stage 3 will identify which threats and actions will be prioritised in the CMP.

Table 9: Key threats to be considered in Stage 3 of the CMP - moderate or high present-day risk

Key threats	Locations
North of Clarence River	
T1 - Beach erosion	Shark Bay, Woody Head campground[1], Woody Bay[2]
T2 – Shoreline recession	Shark Bay, Iluka Road, Woody Bay[1,2]
T9 - Invasive weeds	Bundjalung National Park[2]
T17 - 4WD/ motorbikes on beaches	Shark Bay (Bundjalung National Park) [2]
T18 - Predation and invasion by introduced animals	Bundjalung National Park[2]
T22 - Modification of coastal wetland habitat due to coastal hazards	Bundjalung National Park
T43 - Damage to beach access points	Shark Bay[2], Iluka

Key threats	Locations
T47 - Reduced accessible beach at high tide due to coastal protection works	Woody Head[1]
T60 - Fallen/ dangerous trees on eroded beaches	Woody Bay[1,2]
Clarence River entrance	
T1 - Beach erosion	Whiting Beach
T2 – Shoreline recession	Whiting Beach
T3 - Tidal/ coastal Inundation	Whiting Beach
T22 - Modification of coastal wetland habitat due to coastal hazards	Hickey Island
T31 - Shoaling and sediment movement within estuaries	Clarence River entrance
T32 - Erosion and sedimentation affecting navigation	Clarence River entrance
Yamba/ Angourie	
T1 - Beach erosion	Yamba Main Beach, Convent Beach
T5 - Slope instability/ landslip	Pilot Hill, Convent Beach
T8 - Foreshore development	Yamba - Angourie
T9 - Invasive weeds	Yamba - Angourie coast
T17 - 4WD/ motorbikes on beaches	Barri Point
T43 - Damage to beach access points	Yamba, Spooky Beach
Brooms Head/ Lake Cakora	
T1 - Beach erosion	Lake Cakora (Ocean Road properties), Lake Cakora entrance, Brooms Head (foreshore reserve)
T2 – Shoreline recession	Lake Cakora entrance, Ocean Road properties, Brooms Head (foreshore reserve)
T3 - Tidal/ coastal Inundation	Lake Cakora (Ocean Road properties), Brooms Head (village)
T4 - Entrance instability	Lake Cakora
T6 - Erosion of foreshores	Lake Cakora
T9 - Invasive weeds	Brooms Head beach, Yuraygir National Park[2]
T16 - Uncontrolled dog access	Brooms Head beach
T17 - 4WD/ motorbikes on beaches	Brooms Head beach

Key threats	Locations
T22 - Modification of coastal wetland habitat due to coastal hazards	Brooms Head north, Lake Cakora
T25 - Poor flushing of ICOLLs	Lake Cakora
T43 - Damage to beach access points	Brooms Head
T47 - Reduced accessible beach at high tide due to coastal protection works	Brooms Head
Sandon	
T1 - Beach erosion	Sandon campground[3], Sandon village
T2 – Shoreline recession	Sandon campground[3], Sandon village
T3 - Tidal/ coastal Inundation	Sandon campground and access road[3], Sandon village
T9 - Invasive weeds	Yuraygir National Park[2]
T11 - Seagrass decline	Sandon River (particularly Toumbaal Creek)
T17 - 4WD/ motorbikes on beaches	Sandon (Yuraygir National Park)[2]
T18 - Predation and invasion by introduced animals	Yuraygir National Park[2]
T22 - Modification of coastal wetland habitat due to coastal hazards	Yuraygir National Park and surrounds[2]
Wooli/ Diggers Camp/ Minnie Water	
T1 - Beach erosion	Diggers Camp, Wooli village (south)
T2 – Shoreline recession	Wooli village
T3 - Tidal/ coastal Inundation	Wooli village (north), Wooli village (south)
T6 - Erosion of foreshores	Wooli Wooli River
T7 - Historic clearing of riparian vegetation and adjacent habitat	Wooli Wooli River
T9 - Invasive weeds	Wooli Wooli River, Wooli Beach, Yuraygir National Park[2]
T11 - Seagrass decline	Wooli Wooli River
T17 - 4WD/ motorbikes on beaches	Wooli Beach
T18 - Predation and invasion by introduced animals	Yuraygir National Park[2]
T22 - Modification of coastal wetland habitat due to coastal hazards	Minnie Water Beach, Wooli Wooli River, Yuraygir National Park[2]
T31 - Shoaling and sediment movement within estuaries	Wooli Wooli River
T32 - Erosion and sedimentation affecting navigation	Wooli Wooli River

Key threats	Locations
T43 - Damage to beach access points	Wooli, Diggers Camp, Minnie Water
All areas	
T52 - Inaccurate or incomplete mapping of coastal management areas	CVA, CWLRA
T53 - Inadequate land use planning and development controls	All areas
T54 - Damage to cultural heritage items/ sites	All areas
T62 - Litter	All areas

1. Likely to be addressed through inclusion of recommendations from the Coastal Hazard Response Plan for Woody Head Campground (Section 9.1) in the CMP.

2. Likely to be addressed through NPWS operations and plans of management. Actions may also be included in the CMP.

3. Likely to be addressed through inclusion of recommendations from the Coastal Hazard Response Plan for Sandon Campground (Section 9.1) in the CMP.

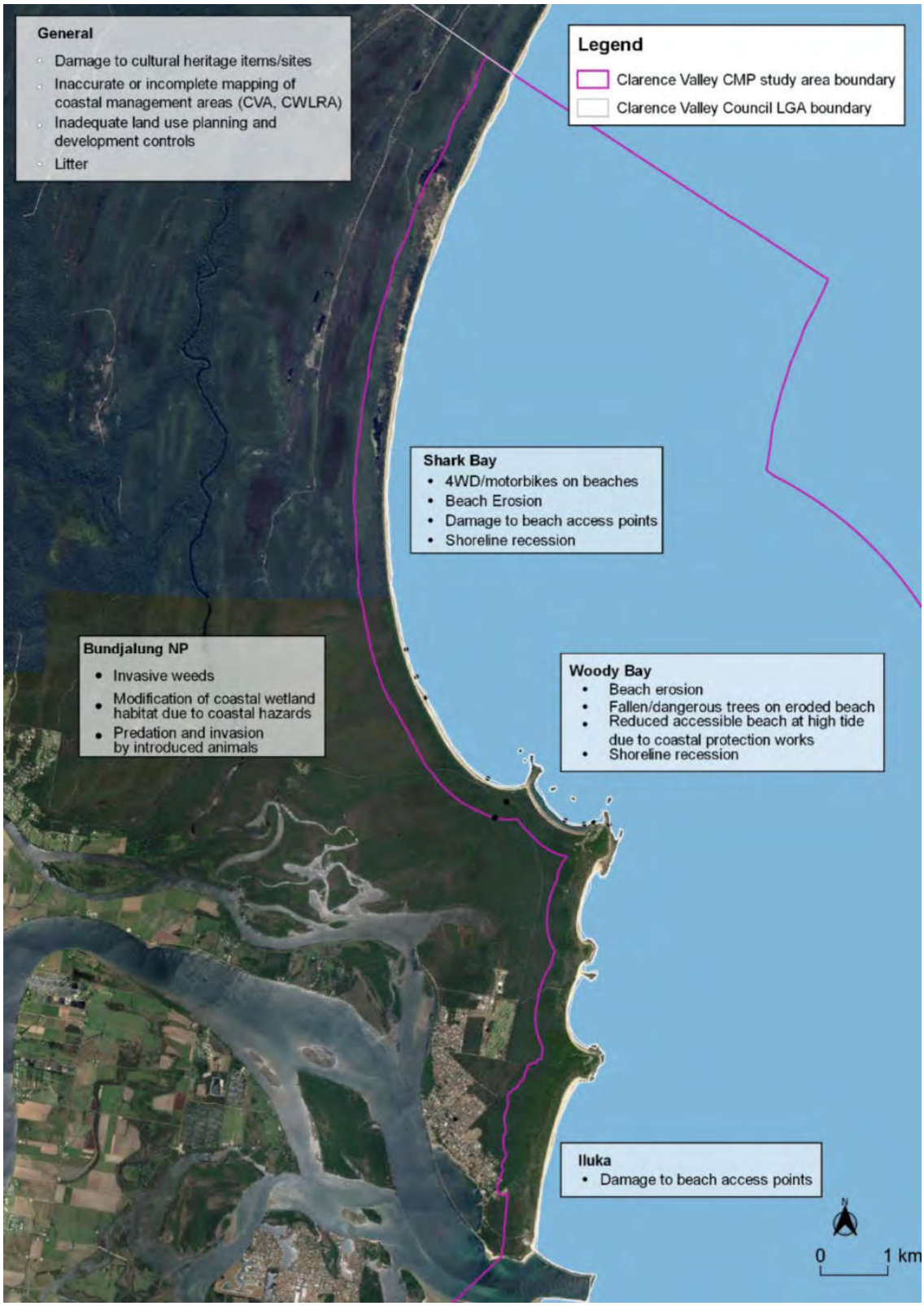


Figure 32: Key risks and threats to be addressed in the CMP - moderate or high present-day risk: Shark Bay to Iluka

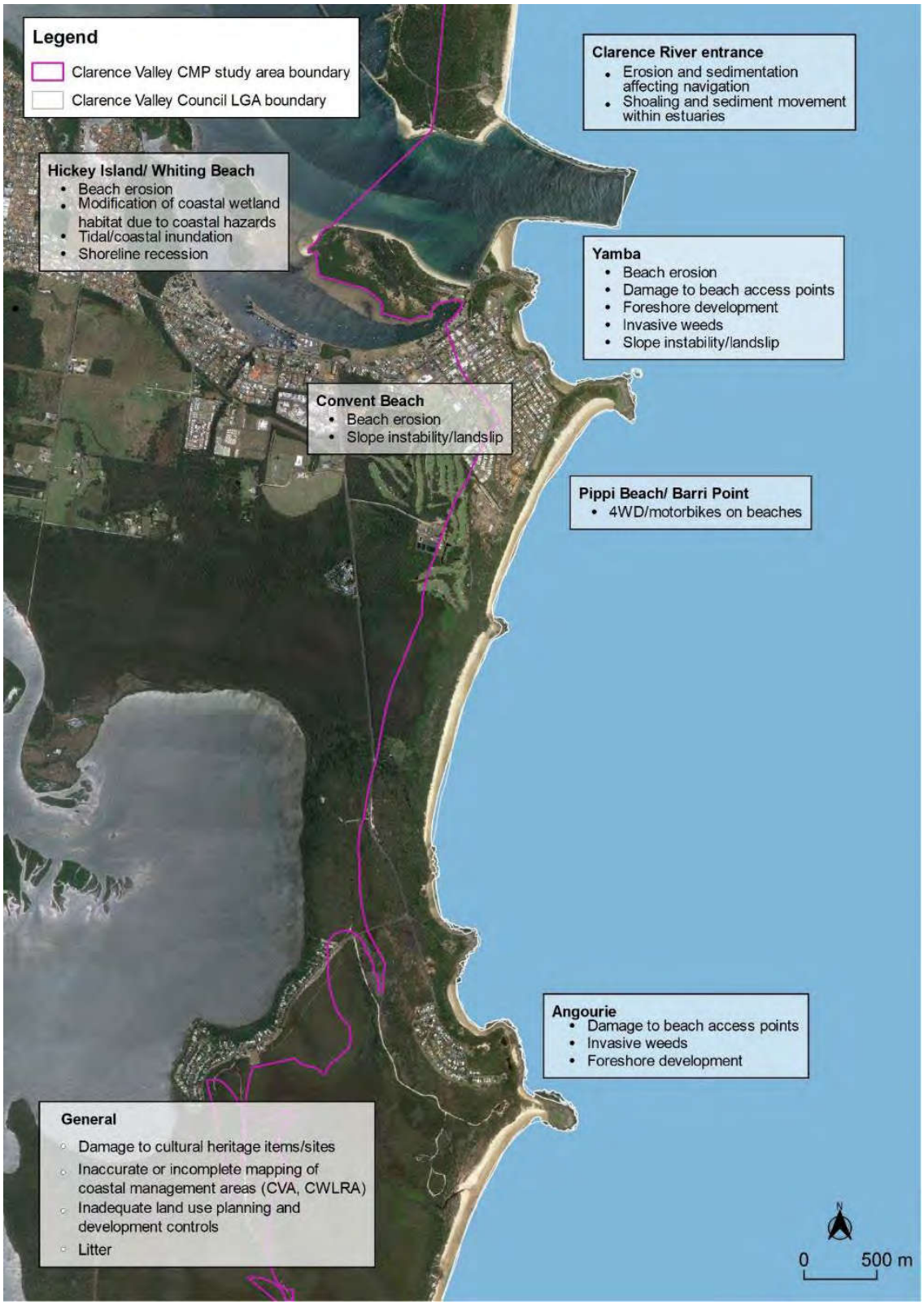


Figure 33: Key risks and threats to be addressed in the CMP - moderate or high present-day risk: Clarence River to Angourie

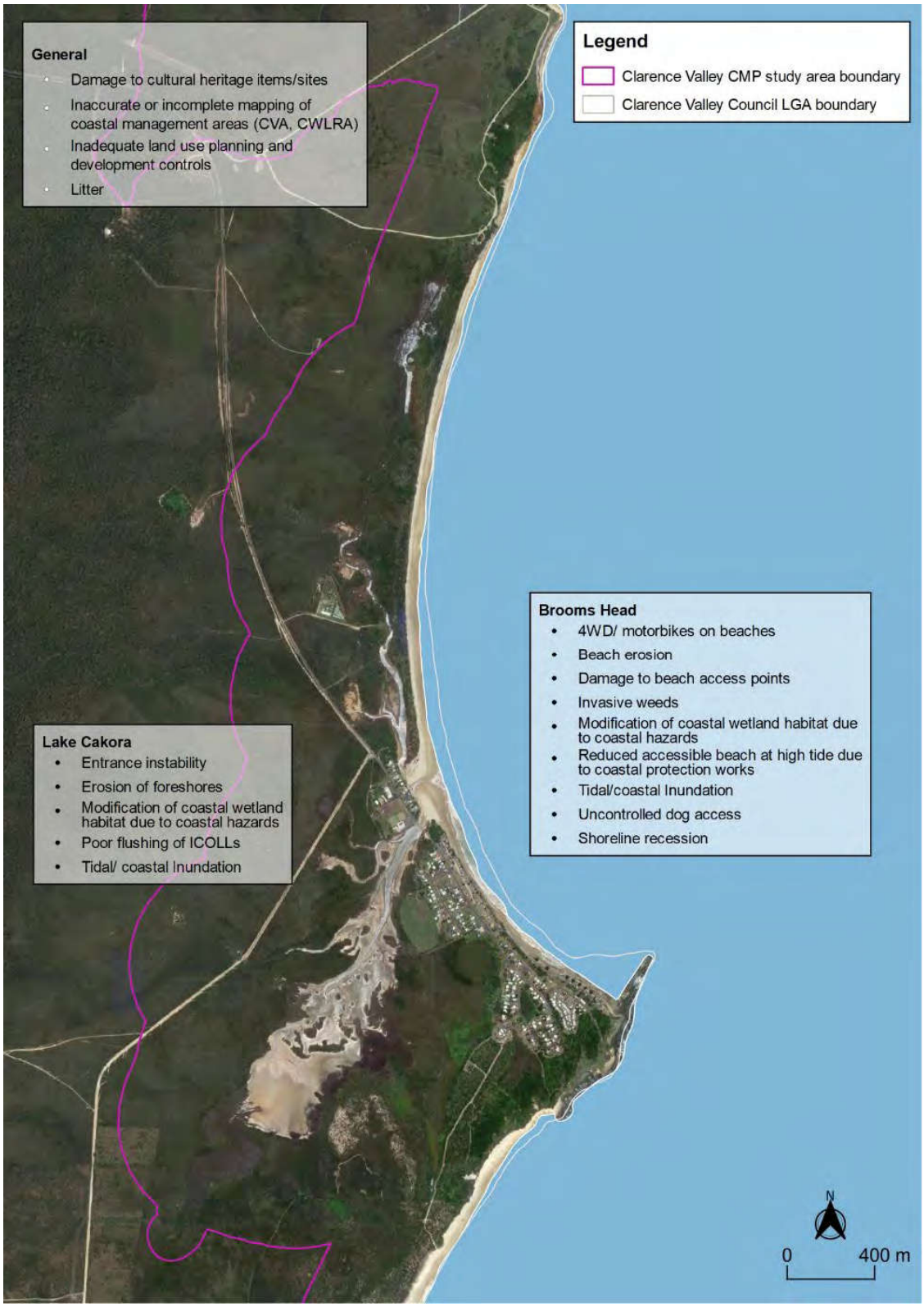


Figure 34: Key risks and threats to be addressed in the CMP - moderate or high present-day risk: Brooms Head and Lake Cakora

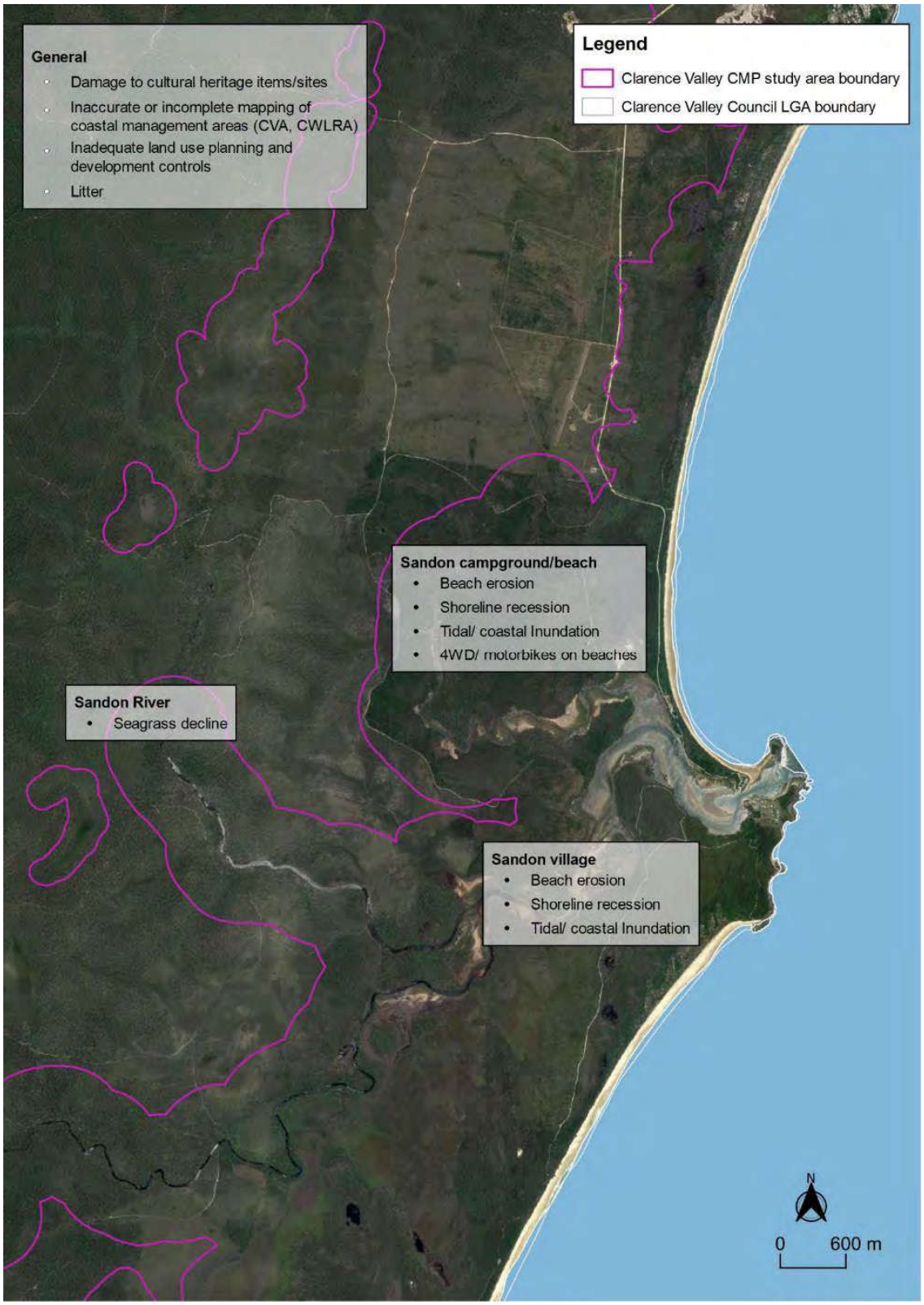


Figure 35: Key risks and threats to be addressed in the CMP - moderate or high present-day risk: Sandon area

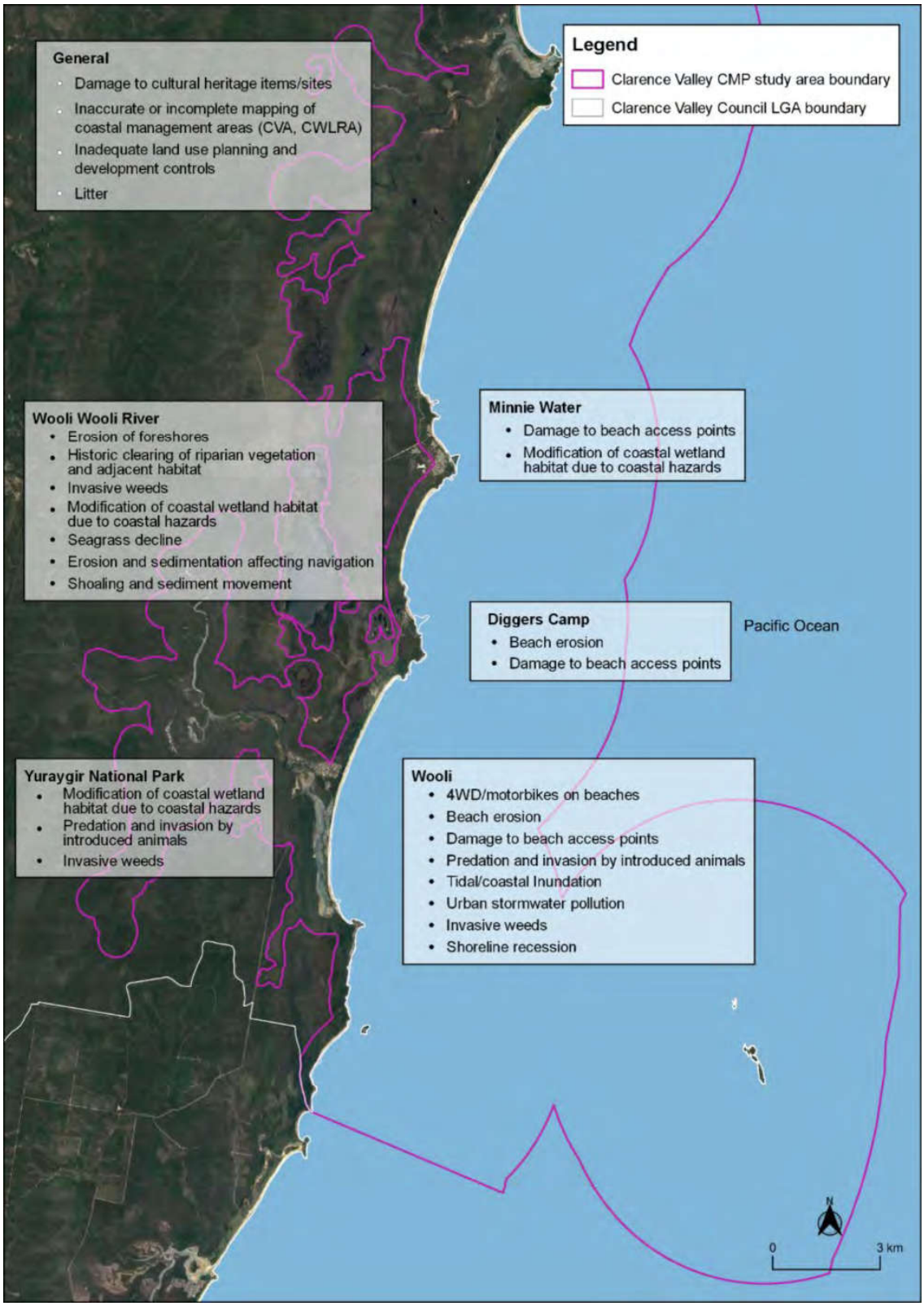


Figure 36: Key risks and threats to be addressed in the CMP - moderate or high present-day risk: Minnie Water to Wooli

12.3 Emerging Threats

Even though some risks may not be apparent at present, risks that require complex strategies such as updates to planning controls or address complex and/or large-scale risks that require longer term planning will also be considered in the CMP (Table 10). General, shire-wide management actions to be considered in Stage 3 (e.g. planning amendments discussed in Section 8.5) are also likely to address other lower priority threats and the threats that are expected to emerge over time.

Table 10: Emerging threats to be considered in Stage 3 of the CMP - moderate or high present-day risk

Emerging threats	Locations	Timeframe
T1 - Beach erosion	Ten Mile Beach, Illaroo campground, Minnie Water Beach	20 years
	Pippi Beach, The Sandon, Wooli Beach (north), Wooli village (north)	50 years
T2 – Shoreline recession	Yamba Main Beach, Brooms Head (Main Beach)	20 years
	Convent Beach, Pippi Beach, The Sandon, Illaroo campground, Minnie Water Beach, Wooli Beach (north)	50 years
	Turners Beach	100 years
T3 - Tidal/ coastal Inundation	Illaro campground	20 years
	Iluka, Yamba Main Beach, Diggers Camp	50 years
	Shark Bay, Brooms Head Foreshore Reserve	100 years
T6 - Erosion of foreshores	Sandon River	50 years
T15 - Anthropogenic barriers (i.e. physical barriers, land use and planning constraints) to migration of vegetation communities with sea level rise	Lake Cakora, Sandon River, Wooli Wooli River	50 years
T26 - Sea level rise increasing salinity within the estuary	Lake Cakora, Sandon River, Wooli Wooli River	50 years
T27 - Climate warming and extreme temperatures	Study area	50 years
T28 - Increased storminess and changed rainfall patterns	Study area	50 years

12.4 Potential Strategic Approaches

Stage 3 will consider the strategic approaches adopted in the Coastal Management Manual (OEH, 2019b) with identification of management options to reduce the identified risks and create opportunities to manage any unacceptable risks, development of adaptation pathways over time and evaluation of potential actions. The potential strategic risk management approaches are:

- Alert - coastal management actions that seek to 'watch and wait' such as monitoring change and setting thresholds, "low regret" responses and research to improve knowledge.
- Avoid future impact - proactive land use planning and development only in low-risk locations.
- Active intervention - includes coastal management actions that seek to protect assets or accommodate change, while maintaining current systems and values.
- Planning for change - includes planning to relocate or redevelop assets to consider the dynamic and ambulatory nature of the shoreline. This may be timed to commence as opportunities arise or when thresholds of exposure, impact and risk are exceeded.
- Emergency response - includes actions to address residual risk in emergency situations.

It is recognised that coastal processes will impact on the natural landscape over time and that intervention may not be able to stop "nature taking its course". However, there is uncertainty with the extent and timing of the coastal hazards. This uncertainty and the need to be adaptive to changing circumstances will be acknowledged in the selection of management options.

The broad strategic approaches that will be applied are shown on Figure 37. Management approaches will aim to enhance natural defences and/or avoid future risk by encouraging land uses that reduce exposure to coastal hazards.

Figure 37: Strategic risk management approaches to address coastal hazards

Source: OEH (2019b)

12.5 Stakeholder Engagement

The outcomes of Stage 2 will be presented to stakeholders including:

- The CEMC including representatives from Council, state government authorities, Native Title holders and the community.
- Yaegl Traditional Owners.
- NPWS (in relation to Parks and Reserves).
- Update of the Stage 1 webpage on Clarence Conversations including webpage tools to enable provision of information and collection of feedback from the community.

This Stage 2 report and detailed studies will be available for download from the Clarence Conversations webpage once adopted by CVC.

Stage 3 consultation activities will include:

- Meetings with the CEMC and NSW government agencies.
- Community displays - Stage 2 outcomes and potential management options.
- Workshop/s with community/industry and business groups.
- Meeting with YTOAC - Stage 3 potential management options.
- CEMC workshop - Stage 3 potential management options.
- Ongoing meetings will be held with CVC staff to discuss project outcomes including a workshop with the Council Working Group on Stage 3 outcomes.

The Stage 3 report and detailed studies will be available for download from the Clarence Conversations webpage once adopted by CVC. Feedback on Stage 3 outcomes and input into Stage 4 will be invited.

Where CMP actions are required to be implemented by government agencies, agreement with these agencies will be obtained as part of Stage 3 and 4.

REFERENCES

100% renewables (2021) Clarence Valley Community Energy and Emissions Reduction Strategy. Prepared for NSW DPIE: Sustainable Councils and Communities

BMT WBM (2017) *NSW Marine Estate Threat and Risk Assessment Report.* Prepared for the NSW Marine Estate Management Authority.

BMT WBM (2009) *Wooli Wooli River Estuary Management Plan.*

Clean Energy Regulator (2022) *2022 Blue Carbon Method under the Emissions Reduction Fund*. Accessed April 2022 from: http://www.cleanenergyregulator.gov.au/About/Pages/News%20and%20updates/NewsItem.aspx?ListId=19b4efbb-6f5d-4637-94c4-121c1f96fcfe&ItemId=1043

Coastal Council of NSW (2003) *Coastal Design Guidelines for NSW.*

Commonwealth of Australia (Geoscience Australia) (2019) *The Australian Rainfall and Runoff: A guide to flood estimation (ARR).* Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors)

CVC (2014) *Clarence Valley Community Land, Crown Reserves and other Public Places Generic Plan of Management 2014 - 2023*

CVC (2015) Y*amba Coastline - Interim emergency management strategy, February 2015*

CVC (2017) *Brooms Head Beach and Lake Cakora Coastal Zone Management Plan,* originally prepared by SMEC

DLWC (2001) C*oastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle

DPIE (2019) *NSW Coastal Dredging Strategy 2019 - 2024*

DPIE (2020) *NSW Landuse 2017 v1.2*. Dataset. Available at https://datasets.seed.nsw.gov.au/dataset/nsw-landuse-2017-v1p2-f0ed

DPE (2022a) *NSW Blue Carbon Strategy 2022-2027*

DPE (2022b) *NSW Coastal Design Guidelines - draft update - for a thriving and resilient coast.* July 2022

DPE (2023a) *Wooli Wooli River Estuary Report Card.* Available at: https://www.environment.nsw.gov.au/topics/water/estuaries/estuaries-of-nsw/wooli-wooli-river. Accessed July 2023

DPE (2023b) *Sandon River Estuary Report Card.* Available at: https://www.environment.nsw.gov.au/topics/water/estuaries/estuaries-of-nsw/sandon-river. Accessed July 2023

DPE (2023c) *Cakora Lagoon Estuary Report Card.* Available at: https://www.environment.nsw.gov.au/topics/water/estuaries/estuaries-of-nsw/cakora-lagoon. Accessed July 2023

DPE (2023d) *Lake Arragan Estuary Report Card.* Available at: https://www.environment.nsw.gov.au/topics/water/estuaries/estuaries-of-nsw/lake-arragan. Accessed July 2023

DPIE (2019a) *NSW Coastal Dredging Strategy 2019-2024*

DPIE (2021) *Standard conditions of development consent - Residential development*

DLWC (2001) C*oastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle

Dwyer PG and Dengate C (2021a) *An audit of trained river entrances, armoured harbours and groynes and their multi-use and eco features in NSW (summary report)*. NSW Government.

Dwyer PG and Dengate C (2021b) *An audit of trained river entrances, armoured harbours and groynes and their multi-use and eco features in NSW: Queensland border to Stockton (illustrated volume I)*. NSW Government.

FSG Geotechnics and Foundations (2022) *Northern NSW Coastal Hazard Assessment - Desktop Review*

GHD (2012) *Coastal Zone Management Plan for the Sandon River Estuary (Draft)*

Hanslow, D. J., Dela-Cruz, J., Morris, B. D., Kinsela, M. A., Foulsham, E., Linklater, M. and Pritchard, T. R. (2016) *Regional scale coastal mapping to underpin strategic land use planning in Southeast Australia*. Journal of Coastal Research 75, 987-991.

Hydrosphere Consulting (2021) *Clarence Valley Coastline and Estuaries Coastal Management Program Stage 1: Scoping Study*. March 2021.

Hydrosphere Consulting (2023a) *Review of Management Responsibility - Structures on NSW Coastal and Submerged Crown Land.* DPE - Crown Lands

IPCC (2023) *Sixth Assessment Report*, https://www.ipcc.ch/assessment-report/ar6/, accessed October 2023

JBP (2022) *Clarence Coastline Tidal and Coastal Inundation Hazard Mapping*, 20 June 2022.

JBP (2023) *Coastal Erosion and Recession Hazard Assessment*, October 2023.

JK Geotechnics (2017) *Risk Assessment and Stabilisation for Pilot Hill Yamba, NSW*. Technical Report 3. Report to Clarence Valley Council

JK Geotechnics (2021) *Geotechnical opinion on the Yamba Coastline interim emergency strategy, for Pilot Hill Yamba*, ref 19314L3 Let3

Kinsela, M. A., Morris, B. D., Linklater, M. and Hanslow, D. J. (2017) *Second-Pass Assessment of Potential Exposure to Shoreline Change in New South Waters, Australia, Using a Sediment Compartments Framework*. Journal of Marine Science and Engineering 5,61.

Maclean Shire Council (2004) *Yamba Coastline Management Plan Implementation Strategy*

MEMA (2018) *Marine Estate Management Strategy 2018-2028*

MEMA (2021a) *Initiative 1 - NSW state-wide estuarine water quality monitoring and report cards*. MEMA Online Forum July 2021 Presentation Slides

MEMA (2021b) *Marine Estate Management Strategy. Triannual snapshot, reporting period - July - October 2021*

MEMA (2022) *Implementation Plan 2022 - 2024 - Marine Estate Management Strategy*

MHL (2003) *Yamba Coastline Management Study - Stage 4 Draft Coastline Management Plan*

NSW Government (2021) *Planning circular PS 21-009 Planning for coastal hazards*

OEH (2018a) *Our future on the coast, NSW Coastal Management Manual Part A: Introduction and mandatory requirements for a coastal management program*

OEH (2018b) *Our future on the coast, NSW Coastal Management Manual Part A: Introduction and mandatory requirements for a coastal management program*

OEH (2019a) *Our future on the coast, NSW Coastal Management Manual Part B: Stage 2 - Determine risks, vulnerabilities and opportunities*

OEH (2019b) *Our future on the coast, NSW Coastal Management Manual Part B: Stage 3 - Identify and evaluate options*

Rayner, D., Glamore, W., Grandquist, L., Ruprecht, J., Waddington, K. and Khojasteh, D. (2021) *Intertidal wetland vegetation dynamics under rising sea levels*

Risk Frontiers (2021) *Physical Climate Risk Assessment - Coastal Flood and Sea Level Rise, Supplementary Report S6*

Royal HaskoningDHV (2012) *Yamba Main Beach Revetment Data Status, Condition and Project Report*

Royal HaskoningDHV (2015a) *Options to Manage Recession of Whiting Beach*

Royal HaskoningDHV (2015b) *Dredging between Hickey Island and Dart Island and Placement of Sediment as Beach Nourishment at Whiting Beach in Yamba, Preliminary Review of Environmental Factors*, 14 April 2015

Royal HaskoningDHV (2018) *Draft Wooli Beach Coastal Zone Management Plan*

Royal HaskoningDHV (2021a) *Wooli Beach Management Strategy.* Technical Report

Royal HaskoningDHV (2021b) *Brooms Head Revetment Extension Review of Environmental Factors*

Royal HaskoningDHV (2021c) *Brooms Head Revetment Extension Design Drawings (for tender)*

Sadat-Noori, M., Rankin, C., Rayner, D., Heimhuber, V., Gaston, T., Drummond, C., Chalmers, A., Khojasteh, D., Glamore, W. (2021) *Coastal wetlands can be saved from sea level rise by recreating past tidal regimes*

SEED (2023a) *NSW Estuary Water Quality Data Compilation: 2007 - 2020 https://datasets.seed.nsw.gov.au/dataset/nsw-estuary-water-quality-data-compilation-2007-2020,* accessed July 2023

SEED (2023b) *Explore NSW Blue Carbon data https://www.seed.nsw.gov.au/news-and-resources/news/explore-nsw-blue-carbon-data,* accessed February 2023

SMEC (2012) *Cakora Point Slope Stability Risks and Assessment*, ref 30011071

WorleyParsons (2010a) *Wooli Village Coastline Management Strategy Update and Options Review*

WorleyParsons (2010b) *Wooli Beach/ Village Review of Coastal Hazards*

WRL (2021) *Blue Carbon*. Accessed April 2022 from: https://www.wrl.unsw.edu.au/expertise/blue-carbon