ROUGH PLAN

CARPRENTARIA SHIRE PLANNING SCHEME NATURAL HAZARD RISK ASSESSMENT AND FEASIBLE ALTERNATIVE REPORT

SEPTEMBER 2026

Version Control

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1.0 Introduction

Land use planning and development decisions play an important role in ensuring that future development avoids, mitigates or manages the potential impacts of hazards to ensure that communities are more resilient to natural disasters.

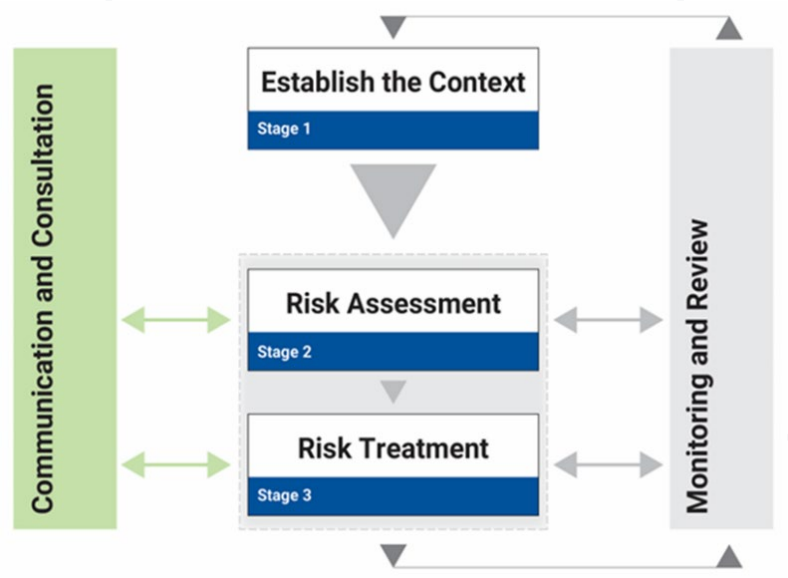
In Queensland, the State Planning Policy 2017 (SPP) adopts a risk management approach to managing natural hazards risks. The SPP requires local governments to undertake a fit-for-purpose risk assessment to identify and achieve an acceptable or tolerable level of risk for personal safety and property in natural hazard areas.

The purpose of risk assessment is to understand the likelihood and potential consequences of an event on the community. From a land use planning perspective, risk assessment needs to consider risk associated with future planning and development intentions. This risk assessment is intended to focus on how the land use planning framework should play its part in avoiding unacceptable risks and mitigating or managing other risks.

The risk assessment process adopted here adapts ISO 31000:2018 into a contextualised, 'fit for purpose' framework for land use planning purposes. This assessment has been undertaken cognisant of Carpentaria Shire's unique geography, remote location and low levels of growth and change. A risk assessment was first prepared in 2023 to support the new planning scheme. It has been updated in 2026 to reflect new, more accurate flood modelling work recently completed for Council.

Planning schemes can only influence new development and cannot retrospectively address existing uses and activities that are already at risk. Accordingly, it complements - but cannot not replace - disaster management responses and broader mitigation strategies (including associated risk assessments) which may be carried out by Council and emergency service agencies.

This report sets out the relevant context for Carpentaria Shire in section 2, assesses the nature and extent of hazards and the vulnerability of the Shire's communities (relevant to the land use and development context) in section 3 and outlines the proposed planning scheme response which reflects Council's position on acceptable or tolerable levels of risk for future development in section 4.



2.0 Context – Carpentaria Shire

2.1 Shire context

Carpentaria is a large local government area with a unique geography. It Shire contains seven major rivers systems - Mitchell, Norman, Staaten, Gilbert, Flinders, and Leichardt and Coleman Rivers - and the largest continuous marine intertidal flat system in northern Australia. This area includes extensive mangroves, saltmarsh and coastal wetlands.

The shallow and sheltered Gulf has limited wave action and the coastline is largely tidally dominated, with a maximum spring tidal range of around 2.6 metres. As a result, the region is vulnerable to rising sea levels and the increased frequency of storm tide inundation associated with tropical cyclones.

During the wet season many of the low-lying coastal plains of the Gulf are flooded. Tropical cyclones can cause extensive flooding through the combined impacts of storm tides and riverine flooding resulting from prolonged cyclonic rainfall. Seasonal inundation causes isolation of the shire's communities. As a result, the communities at Normanton and Karumba are relatively resilient and have established effective disaster management responses.

Carpentaria Shire's population has remained relatively stable at around 2000 people, of which over 40% is indigenous. It is the traditional country of the Gkuthaarn, Kukatj and Kurtijar people. The population can rise significantly in the peak season with the influx of tourists and cattle workers.

Based on the Australian Bureau of Statistics' Remoteness Structure under the Australian Statistical Geography Standard, Carpentaria Shire is classed as 'very remote', while 61 % of its population is categorised as 'most disadvantaged' under the Socio-Economic Indexes for Areas (SEIFA). The Council itself is a category 1 local government which is operationally small but large in area size (at 65,000km2). It relies on external grants and assistance for around 70% of its income stream, which enable projects and services to be undertaken.

Other significant characteristics of note include the following:

- Normanton is a major regional hub for the provision of many services for the local population, cattle stations, major works projects and tourists. These services include the hospital, indigenous and local health care, supplies and repairs, hospitality, and accommodation.
- Karumba's direct access to the Gulf and its related tourism, fishing and prawning industries. It also features the Les Wilson Barramundi Centre tourist attraction.
- Carpentaria is also home to around 20 major cattle stations - most with an area of some 1 million acres, with an estimated carrying capacity of 800,000 to 1,000,000 head of cattle. Each of these stations accommodates permanent and itinerant workforces and are largely self-sufficient.
- Carpentaria's tourist industry is based largely on adventure and grey nomad tourism. Normanton is located on the Savannah Way and Karumba is significant as the "end of the road" for the Matilda Way. The Shire also contains significant parts of the Bourke and Wills route.

Overall, the level of development activity across the area is low and Council's resources are limited. Accordingly, a relatively simple and straightforward approach is intended to be taken in the new planning scheme. Regulation will be targeted to where it adds value and protects the public interest, while removing unnecessary impediments or complexities.

2.2 Available data sources

The new planning scheme has been prepared on the basis of available data.

A coastal hazard adaptation strategy (CHAS) process was completed in 2021 (based on storm tide modelling undertaken by GHD in 2013[1]).The CHAS project involved mapping of **coastal hazards** for present day, 2050 and 2100 (including climate change factors) affecting Normanton and Karumba. The CHAS also included a risk assessment and adaptation strategy. The new planning scheme responds to the recommendations contained within the CHAS reporting (refer phase 7 and 8 reports). This report draws on, but does not duplicate, the risk assessment undertaken as part of the CHAS (refer phase 5 report). The CHAS did not cover non-urban parts of the local government area; the default State Planning Policy Integrated Mapping System (SPP-IMS) mapping of erosion prone areas and storm tide was used for this balance area.

The Normanton and Karumba Flood Study was prepared for Council by BMT in 2024-2026 (completed August 2026). It modelled **flooding** of the Norman River downstream of Glenore Weir (and covering the towns of Normanton and Karumba).

Prior to this, available flood information was generally aging and incomplete, and had included the following sources:

- 2005 Carpentaria Shire Drainage and Flood Study (AECOM) – this study is old and mapping is not available in a usable format;
- Gulf Rivers Floods January and February 2009 (Bureau of Meteorology) – this study reviews data from the 2009 event but does not provide new modelling and is incomplete (refers only to Normanton area);
- Normanton Flood Mapping Study 2013 Engeny for QRA – Council engineers are concerned there this study is inaccurate or incomplete;
- Feasibility Study into Raising Glenore Weir 2013 (Ausnorth Consultants) – this study reviewed previous studies but did not involve new modelling and is only relevant to the Normanton area; and
- Karumba Levee Pre-Feasibility Assessment Carpentaria Shire Council 2021 (SLR) – this study reviewed previous studies but did not involve new modelling and is only relevant to the Karumba area.

The new planning scheme uses flood hazard area mapping available from SPP-IMS for the balance of the local government area (referred to as the Level 1 – Queensland flood plain assessment area). The use of this mapping is required by the SPP in the absence of any locally modelled flood mapping, even though it appears to create blanket coverage over most of the local government area, and does not provide any information on flood levels.

Data on **bushfire** hazards is based on the available SPP-IMS mapping, although it has not been locally verified and Council is unsure of its accuracy.

Landslide is not an issue in Carpentaria given its generally flat topography. There are no areas at risk of landslide in or near Normanton or Karumba where new development is likely and the structural stability of all buildings will be regulated under the building assessment provisions. Accordingly, landslide is not deal with further in this risk assessment.

[1] Carpentaria Gulf Storm Tide Inundation Study GHD for Queensland Government, 2013.

The following guidelines have also been used in this risk assessment and in preparing the new planning scheme:

- National Land Use Planning Guidelines for Disaster Resilient Communities (PIA 2015);
- National Emergency Risk Assessment Guidelines (Attorney-General's Department 2020);
- Land Use Planning Guidelines for Disaster Resilient Communities (Australian Institute for Disaster Resilience 2020); and
- Queensland Emergency Risk Management Framework (QERMF) Risk Assessment Process Handbook (Queensland Fire and Emergency Services 2018).

3.0 Risk assessment

3.1 Nature and extent of natural hazards

An assessment of the likelihood and severity, of and exposure to, flood, coastal and bushfire hazards is provided, to the extent available, from the data and mapping available for Carpentaria. This is summarised below for each hazard type.

3.1.1 Coastal hazards

The coastal hazard adaptation strategy (CHAS) process was completed for Carpentaria Shire in 2021. An overview of coastal processes and mapped outcomes for erosion prone areas, tidal inundation and storm tide inundation is documented in the phase 3 report. This has provided the basis for the planning scheme mapping.

The CHAS work also involved a risk assessment process and established recommendations to which the new planning scheme has responded (refer phase 5 and 8 reports). This report does not attempt to duplicate that work and has relied on the CHAS recommendations.

The hazard mapping produced by the CHAS is summarised below. The 2100 mapping has been directly incorporated as the basis of the new planning scheme overlay mapping for Normanton and Karumba. In the absence of any better data, the default SPP-IMS mapping of erosion prone areas and storm tide was used for this balance area.

		Likelihood of occurrence	Hazard AEP	Epochs
Storm tide	Storm tide extents	Very likely	HAT	Present-day, 2050, 2100
		Likely	5%	Present-day, 2050, 2100
		Possible	1%	Present-day*, 2050*, 2100
		Rare	0.2%	Present-day, 2050, 2100
Erosion Prone Area	Erosion Prone Area Default tidal area (HAT + horizontal buffer)	Likely	-	Present-day, 2050, 2100
	Inundation due to sea level rise (HAT + vertical buffer)	Likely	-	Present-day, 2050, 2100

Source: Table 2, section 4.1 CHAS phase 3 report

The erosion prone area mapping contains a vertical 0.8m buffer from highest astronomical tide (HAT) to show the area inundated by a sea level rise by 2100 and a horizontal 40m buffer from HAT to show the area of potential shoreline erosion (refer table 4, section 4.2 CHAS phase 3 report).

Storm tide hazard affects both urban areas, with the 2100 mapping of likely possible and rare events adopted as the basis of the new planning scheme overlay mapping (and default SPP-IMS mapping adopted for areas not covered by the CHAS data). Peak storm tide (tide plus surge) water levels are shown below.

Location	Average Recurrence Interval		
	Likely (50 year ARI)	Possible (100 year ARI)	Rare (200 year ARI)
Present Day (2010)	m AHD	m AHD	m AHD
Karumba	3.0	3.4	3.9
Normanton*	3.0*	3.4*	3.9*
2050			
Karumba	3.4	3.8	4.3
Normanton*	3.4*	3.8*	4.3*
2100			
Karumba	3.9	4.5	5.0
Normanton*	3.9*	4.5*	5.0*

*Normanton levels are conservatively adopting the Karumba storm tide levels

Source: Table 5, section 4.3 CHAS phase 3 report

3.1.2 Flood hazards

3.1.2.1 Normanton and Karumba Flood Study 2026

Recent modelling of the Norman River downstream of Glenore Weir has provided detailed mapping of multiple flood event from a 20% annual exceedance probability (AEP) to a 0.05% AEP event (that is, from a frequent 1 in five year to a rare 1 in 2000 year event).

The 1% AEP event represents a typical 'design flood event', reflecting a default level of tolerance to flood risks usually adopted in planning and building regulation across Queensland. The flood modelling of this event for the Norman River includes consideration of climate change effects consistent with Australian Rainfall and Runoff (AR&R) projections (refer to the Normanton and Karumba Flood Study Final Report August 2026 for an explanation of the modelling approach taken).

The newly modelled 1% AEP is lower than the currently mapped 1974 level and spatially slightly less extensive across both Normanton and Karumba. There is no single flood height applicable (the height varies across the landscape), but is generally below 8m AHD for Normanton (compared to 8.8m AHD as the 1974 level).

The 1974 event is the highest known flood for Carpentaria's communities. The previous studies (2005 AECOM study, 2013 BOM report and Ausnorth Consultants study of Glenore Weir) indicate the 1974 flood level at Normanton as around 8.8m AHD (refer table 9, section 2.5.2 in the 2015 AECOM study) [2].

At Karumba Point, the new flood mapping ends along a straight line landward of the coast (generally along the north south alignment of Karumba Point Road). This represents the (computer generated) flood model boundary, which required an imposed edge to accurately deal with the interaction of riverine flood and storm surge conditions (refer Normanton and Karumba Flood Study August 2026 for further explanation). In the area outside the flood model extent, storm surge is expected to be the more significant inundation event.

3.1.2.2 Whole of local government area

Outside the town areas, the new planning scheme flood overlay maps adopt the SPP-IMS flood hazard area - level 1 - Queensland floodplain assessment layer. This is the only local government area-wide mapping that is available and appears to represent a probable maximum (whole of flood plain) flood. Flood levels for any event outside Normanton and Karumba are currently unknown.

[2] The 1974 level at Karumba does not appear to have been confirmed, although the 2021 SLR levee study suggests it may have been around 4.7m AHD based on available photography (section 3.3).

3.1.3 Bushfire hazard

The likelihood of a bushfire event of a certain intensity is a function of site-specific vegetation, topography and weather – these elements are reflected in the State-wide map of bushfire prone areas in Queensland (Leonard and Blanchi 2012; Leonard et al. 2014). The available state mapping represents a given event, with low, medium and high representing different levels of fire intensity (rather than likelihood of bushfire), while the buffer area indicates area at risk of ember attack.

The SPP-IMS layer is the only available bushfire hazard mapping for Carpentaria. It has not been locally verified and is likely to contain inaccuracies.

3.2 Vulnerability assessment

Risk assessment involves consideration of the vulnerability or resilience of people, buildings or infrastructure that could be subject to a hazard and the consequences of exposure to the hazard.

3.2.1 Exposure

Exposure is a direct result of the hazard mapping discussed in section 3.1. The following snapshots provided an overview of the extent of exposure of Normanton and Karumba to natural hazards. (Refer overlay mapping).

Normanton is primarily affected by flood, and partially by co-incident coastal hazards. Bushfire is potentially an issue to the south east of the town and in the rural residential zoned Lilydale areas to the southwest.

The existing extent of development in the town and proposed zoning tends to reflects these longstanding hazards, with historically subdivided land retained in public ownership and remaining undeveloped .

However, flood hazard does affect some developed urban zoned land. The extent and depth of various flood events is set out in the Normanton and Karumba Flood Study 2026. The snapshots on the following page shows the newly modelled 1% AEP (defined flood event) is less extensive than the previously flood overlay mapping included in the new scheme, which was based on the 1974 flood level.

In relation to coastal hazards, the CHAS phase 5 report stated: *"In general, it appears that there is a minor increase in the risk from tidal inundation and storm tide inundation in the area around Normanton, however, this increase can be considered minor, in particular if compared with the seasonal river flood risk for the area."*

Karumba is substantially affected by all hazards except bushfire. There is a high degree of coincidence between flood and storm tide hazards, given the very flat topography. The Karumba Levee Pre-Feasibility Assessment (SLR 2021) also notes that the Karumba development road has history of significant closures, isolating both parts of the community (Karumba town and Karumba Point) for 2-4 week periods.

Exposure to river flooding is significant, although the 1% AEP event is less extensive than and not as deep as the equivalent event for storm tide inundation. As for Normanton, the newly modelled flood event (at 1% AEP) is less extensive than the previously flood overlay mapping included in the new scheme, which was based on the 1974 flood level.

In relation to coastal hazards, the CHAS phase 5 report stated: *"In general, it is evident that an increase in the sea levels into the future will affect all recorded assets* [general infrastructure, utilities, roads and foreshore assets]*, with increased risk of erosion due to tidal inundation and increased frequency of temporary water coverage due to storm tide inundation. As a summary, the risk analysis to 2100 has shown:*

- *A significant increase (three or four times higher) in the risk from tidal inundation and storm tide inundation on key buildings and facilities, including Karumba Health Centre, Karumba State School, SES and police station*
- *A significant increase (three or four times higher) in the storm tide inundation risk to caravan park, water reservoir, electrical facilities and water facilities*
- *A significant increase (three or four times higher) in the storm tide inundation risk to roads and transport networks*
- *A significant increase (three or four times higher) risk on waterfront and beachfront facilities and defense structures, including the boat ramp"*

The CHAS noted an immediate need for mitigation strategy to address ongoing erosion and storm tide inundation exposure at Karumba Point (which is currently occurring) and suggested a likely need for mitigation by 2050 at Karumba town. It did not ultimately recommend retreat or transition options.

Overall the CHAS assessed the towns' risk profile as follows:

	Open coast erosion			Tidal inundation			Storm tide inundation		
	Present day	2050	2100	Present day	2050	2100	Present day	2050	2100
Karumba Point	High	High	High	Low	Medium	Medium	Medium	Medium	High
Karumba Township	Low	Low	Low	Low	Medium	Medium	Medium	Medium	High
Normanton	Low	Low	Low	Low	Low	Medium	Low	Medium	Medium
Other areas*	Low	Low	Low	Low	Low	Medium	Low	Low	Medium

**Other areas within the coastal hazard areas, including natural and pastoral areas. Risk to natural areas is considered low, however pastoral areas and the cattle industry can be impacted by storm tide inundation events*

Source: table 17 Overview of changing risk profile by locality, CHAS report phase 5

Other relevant CHAS recommendations included:

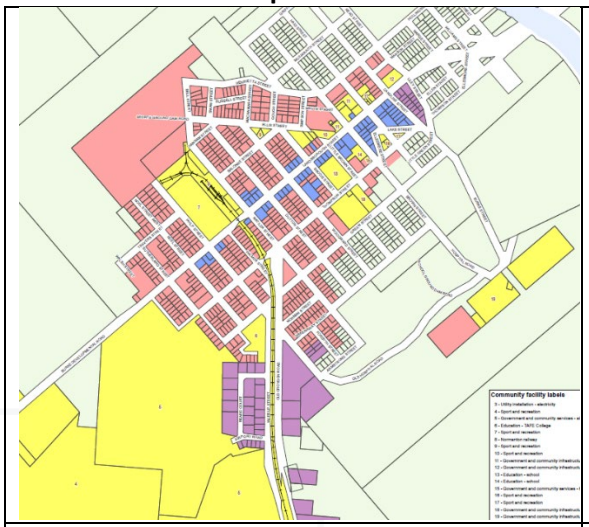
2.1 Land use planning *Use the outcomes of the Strategy to inform statutory planning and other strategic plans.*	*2.1.1 All planning matters undertaken by Council to incorporate and have regard to the new coastal hazard information presented in the Coastal Hazard Adaptation Strategy* *2.1.2 Consider implications (within Council) of the Strategy for future development approvals and conditions including:* *- approval conditions for lots of un-developed land with existing approvals* *- implications for future development approvals and conditions.* *2.1.3 For the next scheduled Planning Scheme update (2021-2022), use the updated Erosion Prone Area and storm tide inundation extent and outcomes of the Strategy to inform decisions on development areas and strategic land use planning.*
3.2 Resilient homes *Build homes following resilience guidelines and requirements*	*3.2.1 Integrate resilient homes criteria in the planning approvals procedures* *3.2.2 Promote resilient homes within the community and building sector (link in with knowledge sharing initiatives).* *3.2.3 Consider developing specific coastal hazard overlay code in future planning updates. Linked to action 2.1*

The CHAS recommendations also noted that for existing dwellings within the coastal hazard prone areas, planning regulations can only have an impact when changes are proposed that trigger a development application.

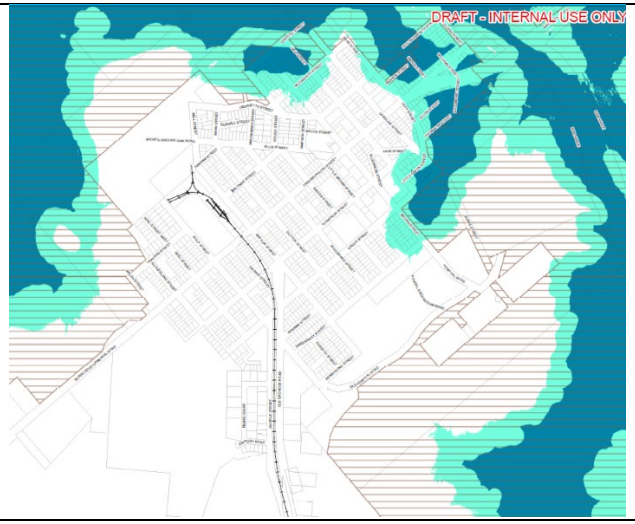
Balance of local government area consists of rural land primarily covered by a small number of large cattle stations which are largely self-sufficient. Based on the SPP-IMS, bushfire hazard is extensive, as is flooding based on the "level 1" flood layer. The latter may not accurately reflect likely risk and no information is available about flood levels. Erosion prone areas follow the coastal slat plain geography closely, while storm tide mapping (available from the state or the CHAS work) extends along the environs of the Norman River.

Little new development is anticipated in these areas. However, opportunities for limited scale tourism and rural industries are possible. New building work associated with existing lawful cattle and other rural enterprises may also occur, including for worker accommodation.

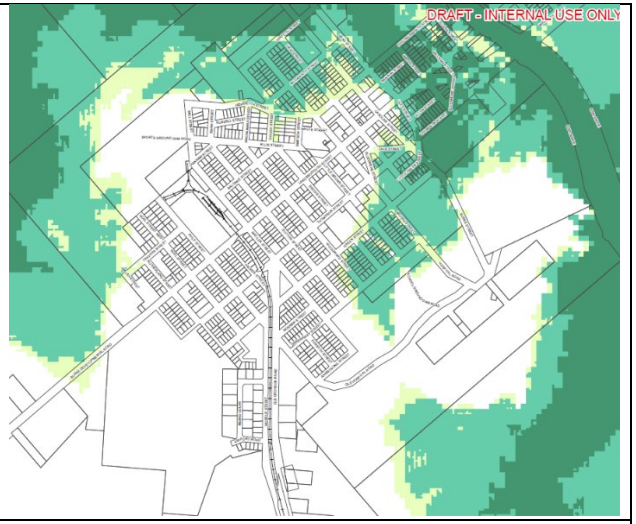
Normanton hazard exposure



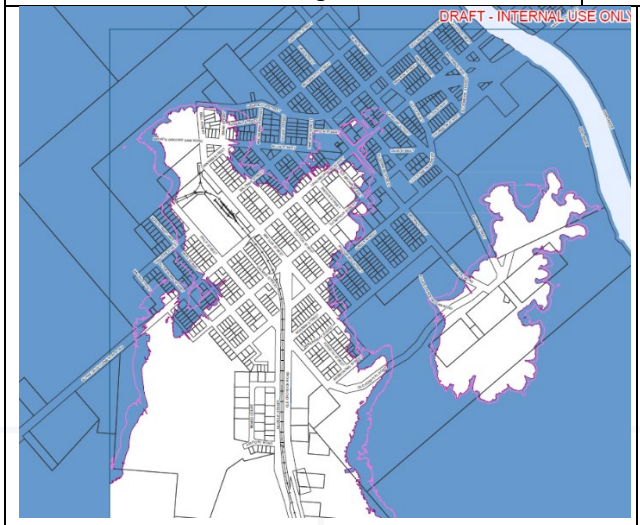
Zoning



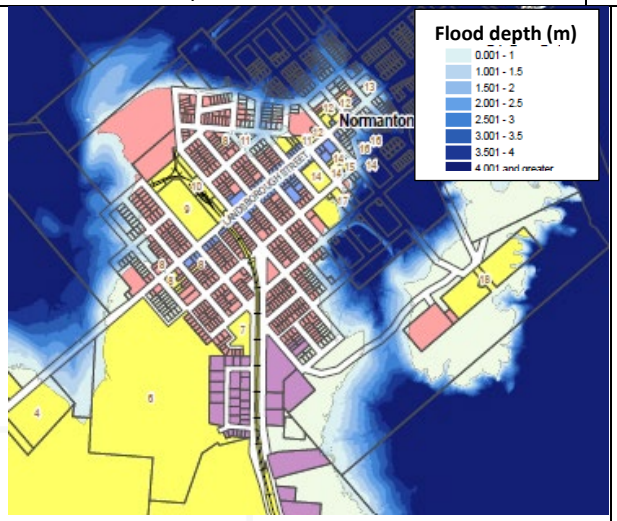
Erosion prone areas and HAT



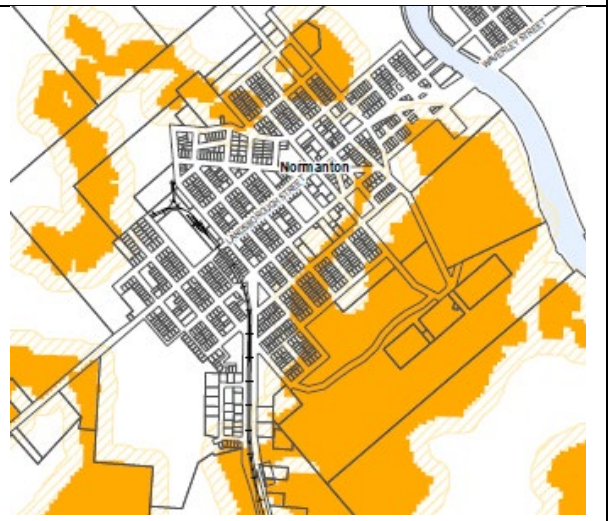
Storm tide



Flood (new planning scheme as notified end 2023)

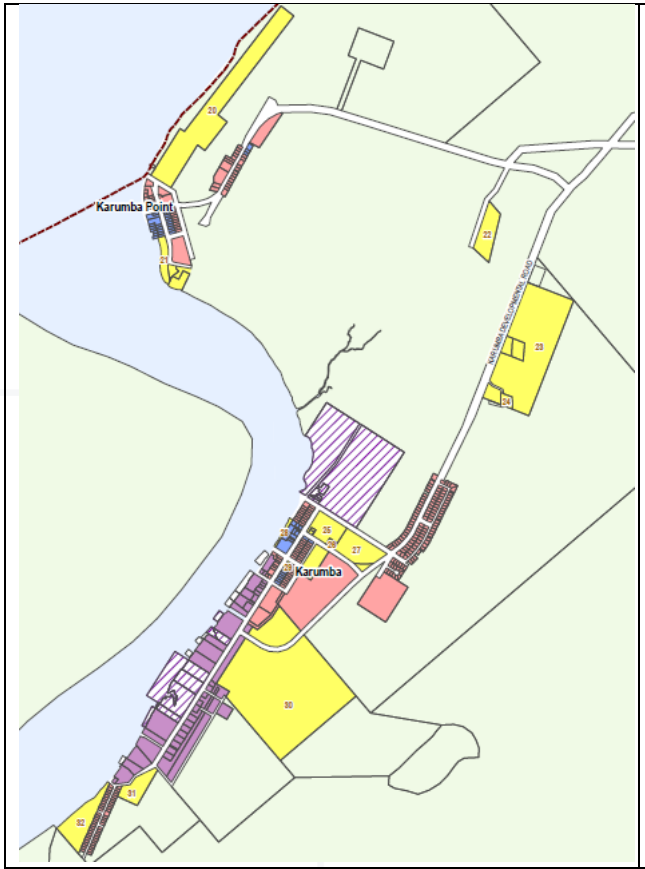


1% AEP (Normanton and Karumba Flood Study2026)

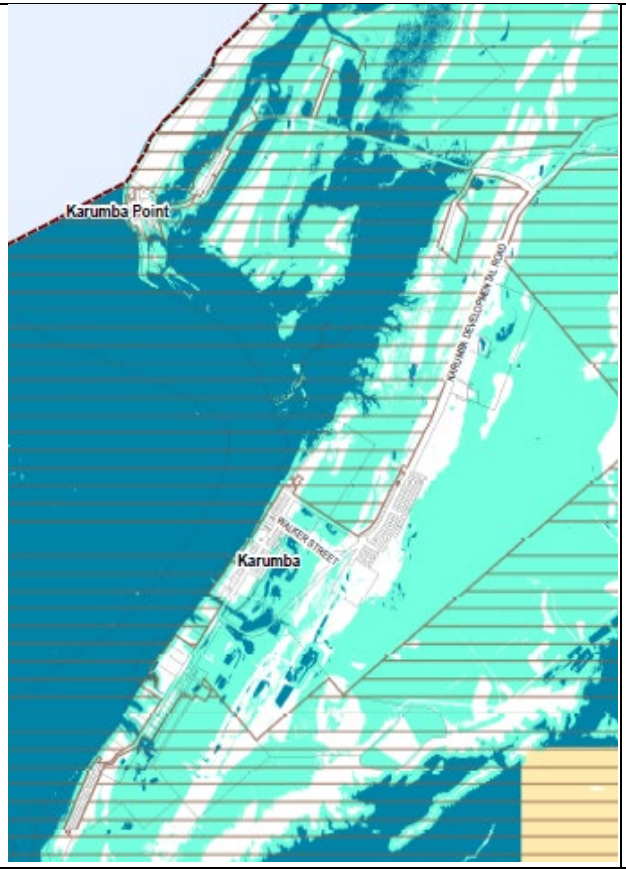


Bushfire

Karumba hazard exposure



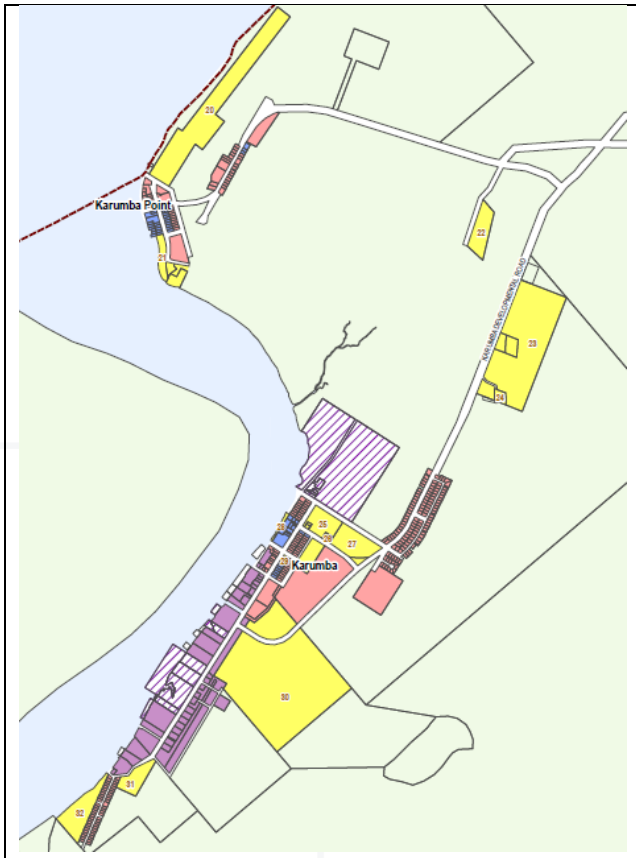
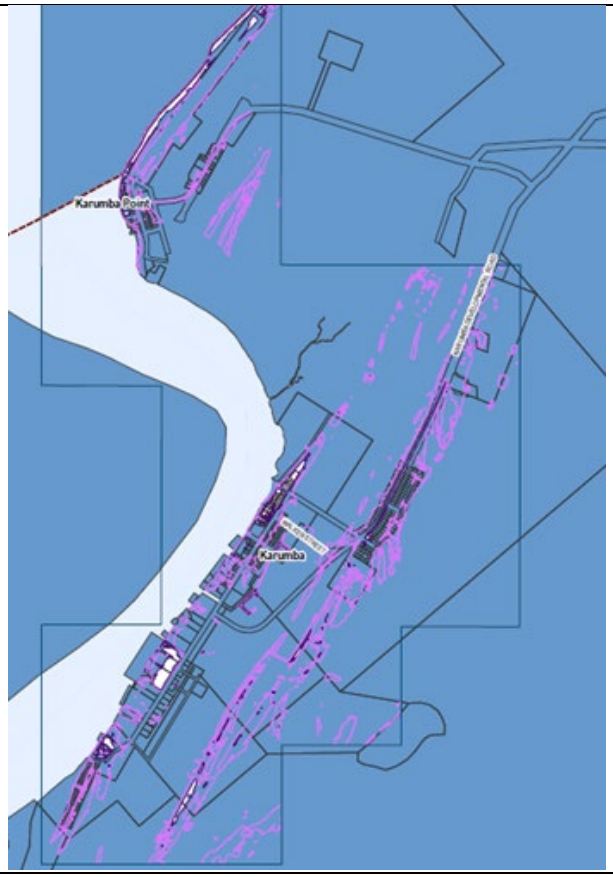
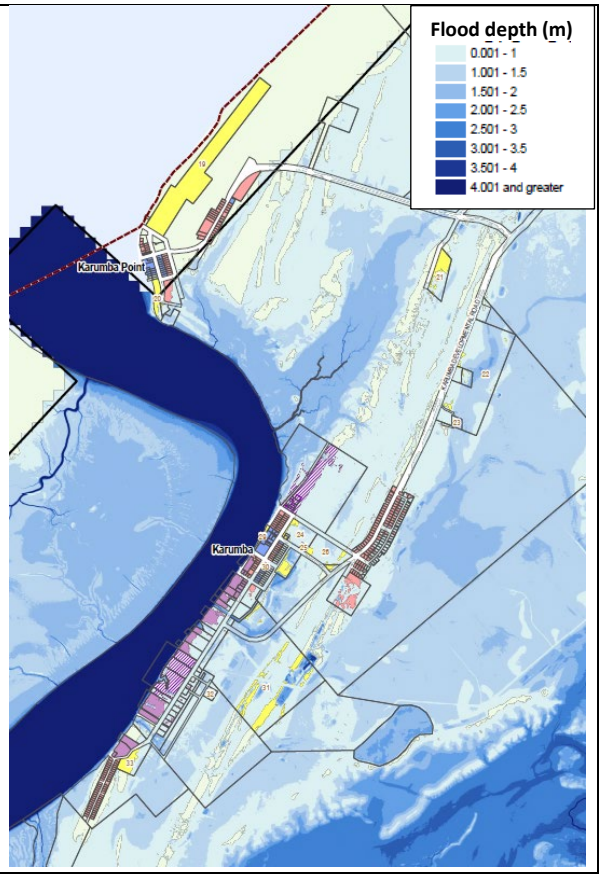
Zoning



Erosion prone areas and HAT



Storm tide

		
Zoning	*Flood (new planning scheme as notified end 2023)*	*1% AEP (Normanton and Karumba Flood Study2026)*

3.2.1 Vulnerability

Factors which affect vulnerability to flooding are many. Based on the Australian Bureau of Statistics' Remoteness Structure under the Australian Statistical Geography Standard, Carpentaria Shire is classed as 'very remote', while 61 % of its population is categorised as 'most disadvantaged' under the Socio-Economic Indexes for Areas (SEIFA).

At the same time, the local communities have developed a level of resilience to hazard events. For example, Karumba is accustomed to being isolated for extended periods and many businesses close during the high risk December to March period, especially in the more exposed Karumba Point area which predominantly accommodates tourists. Accordingly, 2021 SLR study suggested the main driver for flood mitigation in Karumba is to *"allow the residents to shelter in place and prevent the community from being displaced for excessive periods of time".*

In a fit for purpose risk assessment process which is intended to inform planning and development decisions into the future, the relative vulnerability of zones and the land uses that are likely to occur within them is a surrogate measure for broader community vulnerability. Importantly, as the spatial elements that ascribe development rights, they provide the most useful foundation for decision making about response which are within the jurisdiction of the planning scheme.

A qualitative and generalised overview of relative vulnerability to hazards and potential planning scheme responses is outlined in the following table. Overall, risks are assessed as tolerable, but should be mitigated to the greatest extent possible.

Critical and vulnerable uses have been identified as follows:

Vulnerable uses

- Animal keeping (kennels or catteries)
- Child care centre
- Community care centre
- Community residence
- Community use
- Crematorium
- Detention facility
- Educational establishment
- Funeral parlour
- Hospital
- Relocatable home park
- Residential care facility
- Retirement facility
- Rooming accommodation

Critical uses

- Emergency services
- Hospital
- Major electricity infrastructure
- Renewable energy facility
- Substation
- Telecommunications facility
- Utility installation

Zones	Vulnerability Rank	Response considerations, including mitigation & management possibilities
General residential	**Major** Possible loss of life, major damage; difficult to recover	• Most of the affected areas cover existing developed town land where houses are at risk. • Redevelopment is possible, but unlikely to occur. • If it were to occur, greater resilience could be achieved by (for flood and storm tide) establishing higher floor levels or appropriate constructions standards (e.g. for bushfire affected land) • Where greenfield/undeveloped, back zoning could be considered or restricting development to parts of these areas that are not affected. • Although growth rates are low, the towns (especially Karumba) have limited options for new housing – where housing needs to be established filling and floor levels could minimise risk • Use of resilient housing guidance material could be encouraged (but are not suitable for regulation) • New development is likely to be undertaken by council or other public sector entity.
Rural residential	**Major** Possible loss of life, major damage; difficult to recover	• This zone is similar to general residential land but occurs only in one location. Development approvals are in place over most of this land. • For parts that are undeveloped, zoning may be adjusted to reflect approvals and avoid hazards in other areas. • Any future approvals should ensure filling and floor levels minimise risk and trigger relevant building assessment provisions • Use of resilient housing guidance material could be encouraged (but are not suitable for regulation) • New development is likely to be undertaken by council or other public sector entity.
Centre	**Moderate** Potential loss of life, significant damage; significant economic impact	• This zone contains important community facilities and is a significant economic driver. Impacts are likely to affect community wide resilience. May also be important for evacuation/ community gatherings. • This zone covers predominantly already developed land which is already exposed to hazards – primarily in Karumba. • Some re-development may occur but should be subject to appropriate floor levels / filling to mitigate. • Critical and vulnerable uses should be avoided in affected areas, but noting that in Karumba there are few or no hazard free sites on which necessary community facilities may be established.
Industry	**Moderate** Potential loss of life, significant damage; significant	• Industry land in Normanton is primarily affected by bushfire hazard, while land in Karumba is at risk of inundation and coastal erosion. However, many are coastal dependent or supporting activities.

Zones	Vulnerability Rank	Response considerations, including mitigation & management possibilities
	economic impact	• This zone is less likely to be as significant to community resilience, although economic and social impacts (loss of employment) may result. • The zoned land is predominant already developed. There is a low likelihood of substantive redevelopment. • Redevelopment may be subject to appropriate mitigation and subject to SPP tests for land in the EPA.
Community facilities	**Minor** Potential for minor damage and economic impact; easy to recover	• Land in this zone reflects existing, committed development and much is in public control. • Vulnerability associated with this zone may vary significantly according to the nature of the facility. • Sport and recreation facilities are likely to be less vulnerable and more resilient, while the hospital and some critical infrastructure may be highly vulnerable (note that the Normanton hospital is subject to bushfire hazard but is flood free, although road access to the hospital is affected.) • New critical and vulnerable uses should be avoided in hazard areas. • Redevelopment or intensification of existing facilities may need to be contemplated where meeting community needs and in the absence of alternatives.
	Major Possible loss of life, major damage; difficult to recover	
	High possible significant loss of life/damage; low ability to recover	
Rural	**Minor** Potential for minor damage and economic impact; easy to recover	• The rural zone covers the majority of the local government area and primarily accommodates a number of established cattle stations. • While these businesses may be significantly affected, they operate under existing use rights. New building work, including for worker accommodation, could occur as part of these operations. • New rural industries or tourism development could occur, and should be located and designed to mitigate risks. Only a limited number of such proposals are anticipated.

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4.0 Planning scheme response

The risk assessment process provides a decision-making framework to inform Council's policy choices about how best to manage future development through the planning scheme.

The planning scheme response needs to implement the SPP policy requirement to ensure development avoids hazards, or where it is not possible to do so, to mitigate risks to an acceptable or tolerable level. It needs to do this in a way that takes account of existing use rights and already embedded risk (illustrated by the risk assessment undertaken for this project) and which balances other important policy intentions, including biodiversity protection and rehabilitation as well as development intentions in various parts of the city (such as strategic industrial areas).

The planning scheme response also needs to provide a practical and effective assessment benchmark for use in development assessment, cognisant of the decision making rules established by the Planning Act 2016.

A key finding from this risk assessment is that most urban zoned land that is at risk is already developed or approved for development. There are only limited areas where new housing development is contemplated, commensurate with the low level of population growth.

Low development levels generally mean that substantive redevelopment of affected land is unlikely to occur. Accordingly, the community will need to rely on non-planning scheme risk responses in to a large extent to ensure risks are tolerable.

4.1 Mapping of hazards

The basis for the planning scheme hazard overlay mapping is:

- Coastal hazard overlay mapping uses the outputs of the CHAS process, reflecting events up to 2100 (in accordance with CHAS recommendations);
- Newly completed modelling of the 1% AEP flood event in the Normanton and Karumba Flood Study area is to replace the previously adopted hazard overlay mapping based on contours that reflect the 1974 flood level and those parts of the flood study area that were previously only covered by the SPP-IMS flood hazard area - level 1 - Queensland floodplain assessment layer.
- Outside the newly modelled area, flood hazard overlay mapping will continue to use the SPP-IMS flood hazard area - level 1 - Queensland floodplain assessment layer (as required by the SPP) for which there are no known flood levels.
- Bushfire hazard overlay mapping uses the SPP-IMS layer.

4.2 Changes to zoning and feasible alternative assessment

To address SPP expectations that development should, in the first instance, avoid hazards, a review of current and proposed zoning layers (which assign development rights) was undertaken at the time the new planning scheme was prepared. In particular, this review considered the suitability of undeveloped land subject to hazards for future development.

Proposed changes and a rationale for those changes which address feasible alternative reporting requirements established by the Minister's Guidelines and Rules (MGR) are set out in the tables in Appendix A, updated to include consideration of the 2026, newly modelled flood mapping. This land is predominantly in public ownership, minimising the potential impacts of the change.

At the time the new planning scheme was prepared, no changes to zoning were proposed for land that contains existing development[3]. This included existing housing, businesses and important community facilities. Risks already exist for this land and new scheme provisions are focused on ensuring any redevelopment reduces, minimizes or mitigate risks.

As outlined in Appendix A, some changes to zoning were made to avoid new development in areas subject to unnecessary risk. However, potential for new housing that may be needed by the community was retained in both Normanton and Karumba. In both areas, risks will feasibly be mitigated by filling and other development requirements. This enables community needs to be met while managing risks to a tolerable level.

No additional changes are proposed as a result of the new flood modelling, noting the new modelling reduces the extent of land (and depth of flood) associated with the adopted defined flood event (the 1% AEP).

4.3 Regulation of new development

4.3.1 Policy settings

The provisions of the new planning scheme recognise that substantial areas of existing development are affected by hazards in both towns – in particular, coastal hazards affect most of Karumba. Retreat or transition options were not recommended by the CHAS in either town.

A practical response is needed for these areas which ensures risks are not increased, and ideally reduced through mitigation, where redevelopment occurs.

While reduced from the previous planning scheme, some capacity is retained for new housing and other development in Karumba to ensure community needs can be met. Risks for this development will be minimised through filling. In addition, the SPP-required tests for development within the coastal management district and erosion prone area have been applied.

The new planning scheme is firm in requiring that development does not occur outside zoned land where it would be exposed to natural hazards.

Critical and vulnerable uses are discouraged from all areas subject to hazard. However, the planning scheme again recognises that some of these uses already exist within hazard areas. Provision is made for changes to these facilities in response to community need, subject to management measure which assist in managing the risks.

The Normanton hospital is potentially subject to bushfire risk and may be isolated on a ‘flood island’ during a flood event. While this is far from ideal, it is beyond the scope of the planning scheme to relocate the hospital.

New forms of development in rural areas, such as tourism facilities and rural industries are made assessable under the scheme and would be assessed against the flood overlay code.

The strategic framework provisions which establish the planning scheme’s policy foundation for natural hazards are set out in the following text box.

[3] Other zoning changes were made in Normanton and Karumba which are not related to natural hazards. These other changes either reflected the use of the land or the effect of approvals.

2.5 Strategic outcomes: natural hazards

2.5.1 Flood and storm tide hazard areas

(1) New subdivision in the general residential, rural residential, centre or industrial zones in Normanton:

(a) does not occur in an area subject to storm tide hazard; and

(b) may only occur within flood hazard area where only where floor levels can be established at a height that provides protection from inundation events.

(3) New subdivision in in the general residential, centre or industrial zones in Karumba may only occur within a storm tide or flood hazard area where floor levels can be established at a height that provides protection from inundation events.

(4) Other new development on land that is subject to storm tide or flood hazard in either Normanton or Karumba is to occur in a way that is consistent with the intentions for the zone but protects the safety of people and the resilience of property to the greatest extent possible.

(5) Urban or rural residential development does not occur outside relevantly zoned areas in either Normanton or Karumba.

(6) Flood flow conveyance paths and flood storage volumes of the floodplain are maintained.

2.5.2 Erosion prone areas

(1) In the erosion prone area that falls within the coastal management district, development does not occur unless the development cannot feasibly be located elsewhere and is:

(a) coastal-dependent development; or

(b) temporary, able to be abandoned or readily relocatable; or

(c) minor redevelopment of an existing building or structure.

(2) Development occurs in a way that maintains natural coastal processes, landforms and vegetation within the coastal management district, and minimises the need for coastal protection works.

2.5.3 Bushfire hazard

(1) Development in a bushfire hazard area is to occur in a way that is consistent with the intentions for the zone but is designed to ensure the safety of people and the resilience of property to the greatest extent possible.

2.5.4 All natural hazard areas

(1) Critical or vulnerable uses are not to be established in areas subject to hazards unless necessary to meet a significant community need and there is no alternative suitable location. Where they already exist, any change occurs in a way that maintains the safety of people and reduces service disruption to the greatest extent possible.

(2) The storage of hazardous materials does not increase the risk to public safety or the environment in a natural hazard event.

(3) Development does not worsen the severity of or exposure to the hazard either on the site or at other properties, including protected areas or areas of environmental significance.

(4) Development does not impede effective and efficient disaster management response and recovery capabilities.

(5) The function of vegetation and natural landforms in providing protection from natural hazards is maintained.

(6) The cost to the public of measures to mitigate risks of natural hazards or respond to natural disasters is minimised.

4.3.2 Interface with building regulations

The role of the planning scheme in triggering building assessment provisions (BAPs) for flood and bushfire hazard areas has been recognized. However, care has been taken not to duplicate the effect of the BAPs. This relationship is explained in section 1.7 of the planning scheme and users are reminded by editor's notes in the overlay assessment benchmarks.

In the absence of applicable BAPs, requirements for floor heights are set for development in the storm tide inundation area.

The building assessment provisions are limited to the regulation of residential and community buildings. The planning scheme does not attempt to take on the role of the BAPs for other non-residential development (which would lead to inconsistent standards across the state). However, the new scheme does regulate development primarily through provisions applying to material changes of use and reconfiguration of land.

4.3.3 Approach to defined flood level for rural parts of Carpentaria

As noted above, flood levels of any type are not known for the balance rural parts of the shire. Nor does Council have the data or expertise available to it to determine levels on a case by case basis. As a consequence, the new planning scheme does not declare a defined flood level and therefore does not trigger particular building floor level requirements under the building assessment provisions.

Appendix A: Assessment of Zone Changes under the New Planning Scheme and Feasible Alternatives

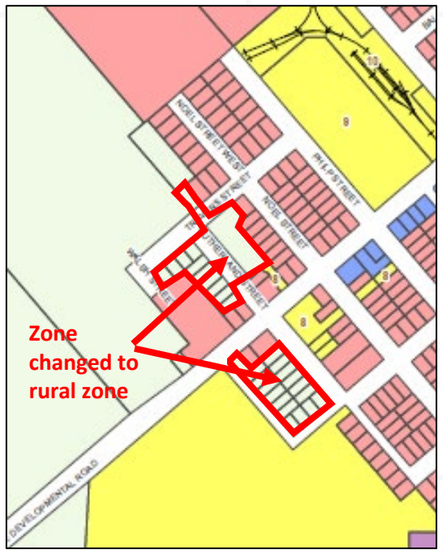
NORMANTON - WEST

Change to zone - current and proposed zones

2008 zoning

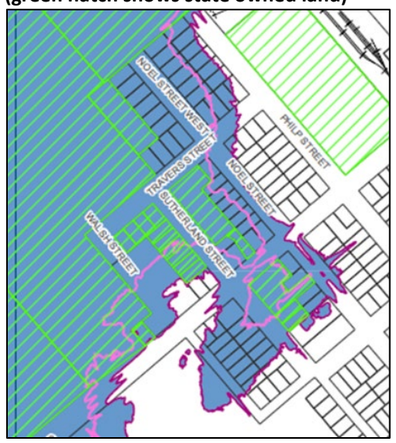


New planning scheme zoning

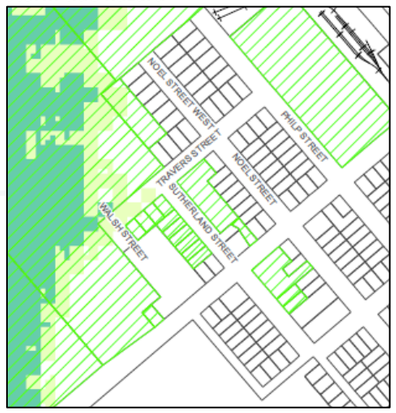


Hazard mapping (green hatch shows state owned land)

Flood hazard overlay as notified end 2023 (green hatch shows state owned land)



Storm tide hazard



Bushfire hazard

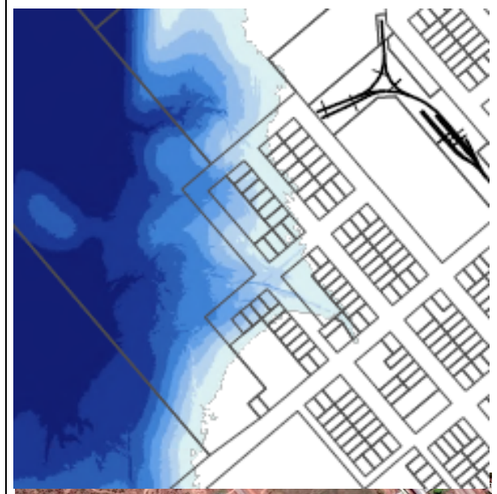


Rationale and feasible alternative considerations

RPD / Address

RPD	Address	Owner	Current zoning	Proposed zoning
Lot 10 N14858		Qld Government	Residential	Rural
Lots 42-48 N14839	Sutherland Street	Qld Government	Residential	Rural
Lots 59-60 N14839	Balonne Street	Qld Government	Residential	Rural
Lot 2 N14893	Travers Street	Qld Government	Residential	Rural
Lot 26 SP136532	Travers Street	CSC	Residential	Rural
Lots 103 – 119 N14850	10-14 Landsborough Street	CSC	Residential	Rural

New 2026 flood modelling (1%AEP) ***- NO FURTHER CHANGE IS PROPOSED AS A RESULT OF THE NEW FLOOD MAPPING***





Existing uses
This land is vacant and is in public ownership.

Previously intended outcomes
The land was zoned residential in the 2008 planning scheme, which was a very simple scheme with generalized zoning.

Anticipated risk
Properties north of Landsborough Street are affected by flood risk with most below 8m AHD and in areas known to flood. While some are higher than the newly modelled 1%AEP, they remain at risk form larger events (including the 1974 level). Given public ownership, it would be undesirable for government to develop land that put people and property at risk.

Private land zoned residential corresponds with existing houses and is retained in the residential zone. Planning scheme provisions trigger floor levels above DFL for any new housing on these lots.

Effect of zone change
Zone changed from residential to rural zone. Provisions in the zone code (and strategic framework) discourage dwelling houses.

Consistency of change with the SPP
The change is consistent with the SPP requirement to avoid hazards.

Feasible alternatives

1. Making the change - The change removes risk of serious harm to persons or property on these lots. The change is the most effective way of reducing the risk of serious harm to an acceptable level.

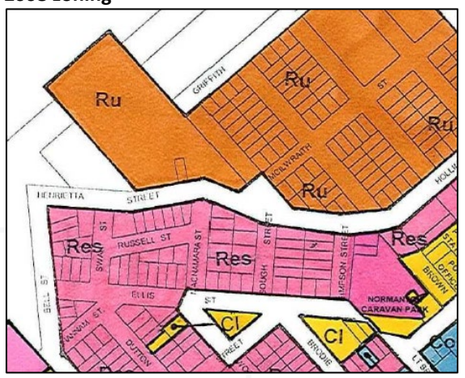
2. Retaining and imposing development conditions on development approvals - Retaining the lots in the residential zone on this undeveloped land creates new risk of serious harm to persons or property. While the land could be filled, this would be at significant public cost and the lots would likely be isolated in the event of a flood. Public ownership (and development) of this land would make these outcomes unacceptable.

3. Other defence/mitigation - No other flood mitigation measures are available for this land.

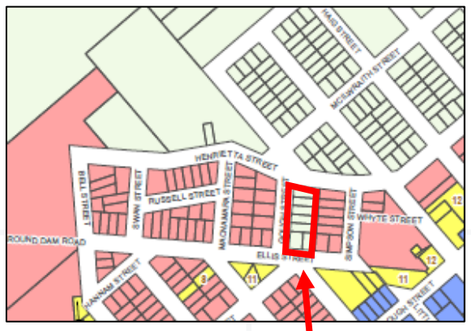
NORMANTON NORTH

Change to zone - current and proposed zones

2008 zoning



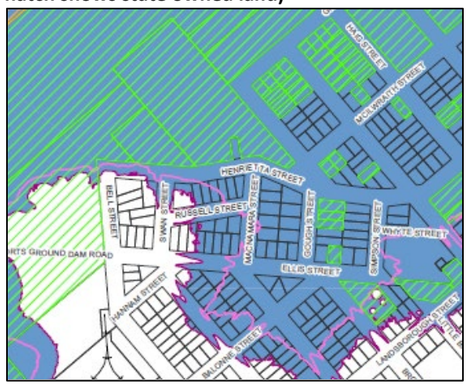
New planning scheme zoning



Zone changed to rural zone

Hazard mapping
(green hatch shows state owned land)

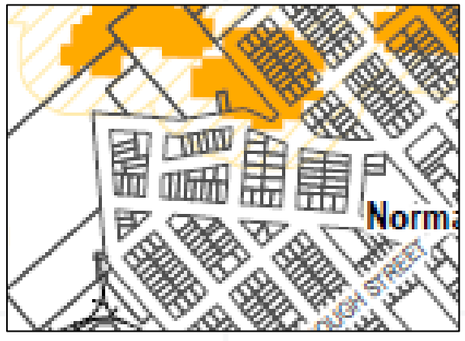
Flood hazard overlay as notified end 2023 (green hatch shows state owned land)



Storm tide hazard



Bushfire hazard

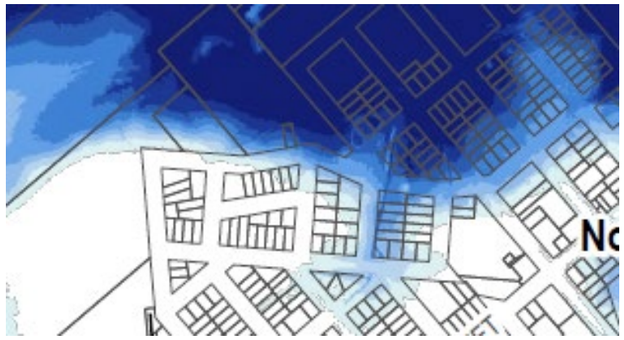


Rationale and feasible alternative considerations

RPD / Address

RPD	Address	Owner	Current zoning	Proposed zoning
Lots 903-904 N1481	33-35 Ellis Street	CSC	Residential	Rural
Lots 905-906 N1481	Gough Street	CSC	Residential	Rural
Lots 907-909 N1481	Gough Street	Qld Government	Residential	Rural

New 2026 flood modelling (1%AEP) - NO FURTHER CHANGE IS PROPOSED AS A RESULT OF THE NEW FLOOD MAPPING





Existing uses
This land is used as a drainage channel. No other development occurs on the land.

Previously intended outcomes
The land was zoned residential in the 2008 planning scheme which was a very simple scheme with generalized zoning. However, the land is in public ownership.

Anticipated risk
All properties significantly affected by flood risk with most below 8m AHD and in areas known to flood during the DFE. The land is used and needed for drainage purposes.

Private land zoned residential corresponds with existing houses and is retained as residential. Planning scheme provisions trigger floor levels above DFE for any new housing on these lots.

Effect of zone change
Zone changed from residential to rural zone. Provisions in the zone code (and strategic framework) strongly discourage dwelling houses.

Consistency of change with the SPP

The change is consistent with the SPP requirement to avoid hazards.

Feasible alternatives

1. Making the change - The change removes risk of serious harm to persons or property on these lots. The change is the most effective way of reducing the risk of serious harm to an acceptable level.
2. Retaining and imposing development conditions on development approvals - Retaining the lots in the residential zone is impractical given its drainage function. Public ownership (and development) of this land for residential purposes is unacceptable.
3. Other defence/mitigation - No other flood mitigation measures are available for this land.

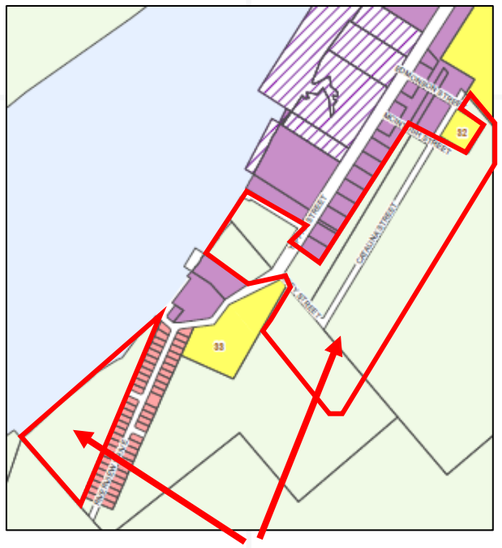
KARUMBA – TOWN SOUTH

Change to zone - current and proposed zones

2008 zoning



New planning scheme zoning

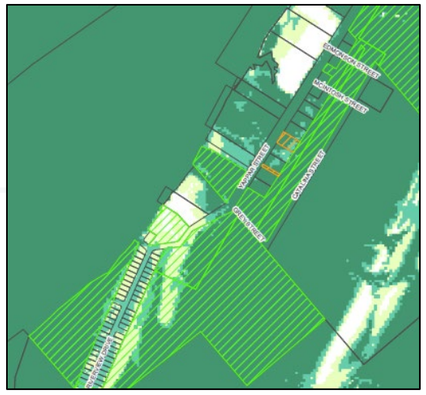


Hazard mapping
(green hatch shows state owned land)

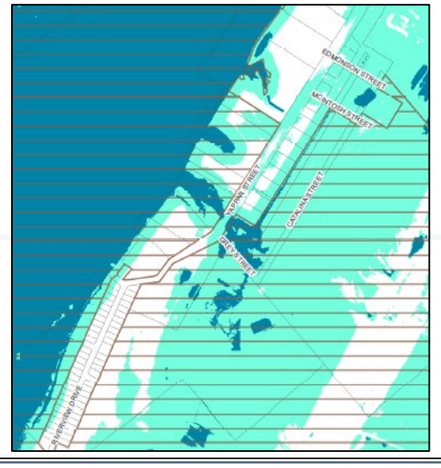
Flood hazard overlay as notified end 2023 (green hatch shows state owned land)



Storm tide hazard



EPA /CMD

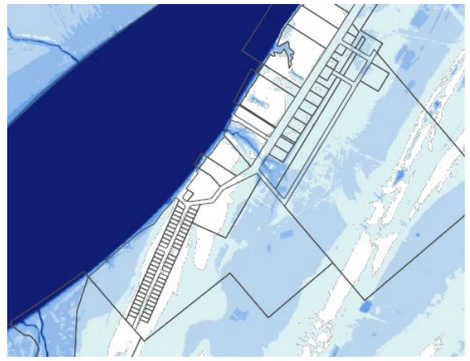


Rationale and feasible alternative considerations

RPD / Address

RPD	Address	Owner	Current zoning	Proposed zoning
Lot 88 NM100	Yappar Road	Carpentaria Shire Council	Community infrastructure	Rural
Lot 2 SP252497	Yappar Road	DNRM	Residential	Rural
Lot 3 SP252497	Yappar Road	DNRM	Industry	Rural
Lot 76 SP116588	Yappar Road		Industry	Rural
Lot 3 SP127907	Yappar Road		Industry	Rural
Lots 4 & 5 - 7 SP252497	Yappar Road	DNRM	Industry	Rural
Lot 2 SP171573	Yappar Road	Morr Morr Pastoral Company	Industry	Rural

New 2026 flood modelling (1%AEP) ***- NO FURTHER CHANGE IS PROPOSED AS A RESULT OF THE NEW FLOOD MAPPING***





Existing uses
All lots are unused, apart from various access tracks. Lots 3 and 76 contain waterway and vegetation.

Previously intended outcomes
Residential zone - Land was zoned residential in the 2008 planning scheme. However, the land is in public ownership (DNRM).

Community infrastructure zone – This zone covered the waterfront land . It is a generic zone which allows a narrow range of infrastructure and community uses. This land is also in public ownership (CSC). It allows beach access for residents. Department of Agriculture and Fisheries (DAF) requested change of zoning due to presence of marine plants.

Industry zone – This zone allows for a range of industrial activities, although potential of this land is constrained by the SPP requirements applying to land in the erosion prone area within the CMD. Department of Agriculture and Fisheries (DAF) requested change of zoning for lot 3 SP311929.

Anticipated risk
All properties significantly affected by flood and storm tide risk and are within the CMD. Some is tidal. Karumba generally is at risk from significant isolation.

Effect of zone change
Zoning changed to rural zone. This limits subdivision potential and allows a narrower range of uses. Some development (including industrial) is still possible subject to tests in rural zone. Under any zoning all land use is restricted in the coastal management district (CMD) pursuant to state requirements. Where in public ownership, it would be undesirable for government to develop land that put people and property at risk. Private land zoned residential corresponds with existing houses and is retained as residential. Planning scheme provisions trigger floor levels above DFL for any new housing on these lots.

Consistency of change with the SPP
The change is consistent with the SPP requirement to avoid hazards and restrictions on development within the CMD.

Feasible alternatives

1. Making the change - The change removes risk of serious harm to persons or property on these lots. The change is the most effective way of reducing the risk of serious harm to an acceptable level and is consistent with the requirements for land in the CMD.

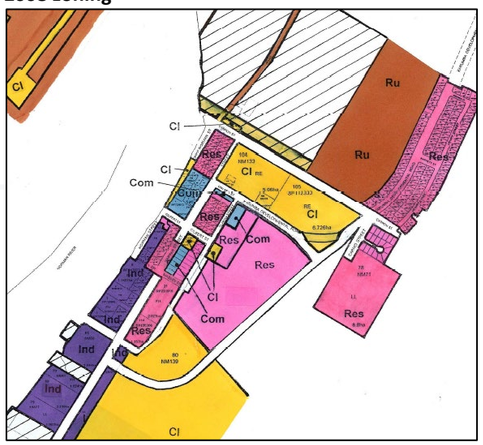
2. Retaining and imposing development conditions on development approvals - Public ownership (and development) of land for urban purposes would represent unacceptable risk. The change to private land (lot 2 on SP171573) reflects the effect of the requirements for land in the CMD. Filling the land to mitigate risks is unlikely to be acceptable to the state. However, it is still possible for some forms of development to meet those tests even under the rural zone.

3. Other defence/mitigation - No other inundation mitigation measures are available for this land.

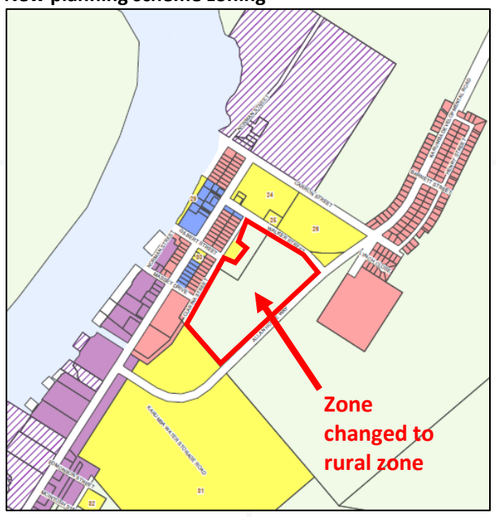
KARUMBA - TOWN NORTH

Change to zone - current and proposed zones

2008 zoning



New planning scheme zoning

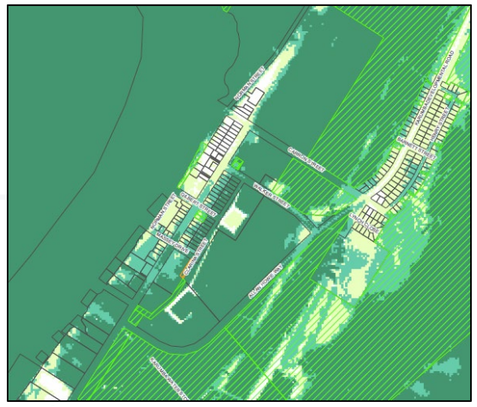


Hazard mapping
(green hatch shows state owned land)

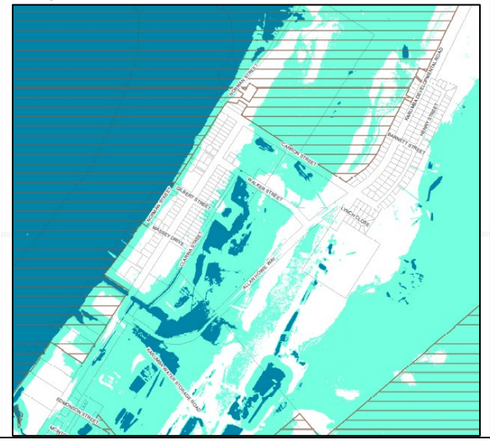
Flood hazard overlay as notified end 2023 (green hatch shows state owned land)



Storm tide hazard



EPA /CMD



Rationale and feasible alternative considerations

RPD / Address

RPD	Address	Owner	Current zoning	Proposed zoning
Lot 2 SP172670	Yappar Road	Carpentaria Shire Council	Residential	Rural

New 2026 flood modelling (1%AEP) - NO FURTHER CHANGE IS PROPOSED AS A RESULT OF THE NEW FLOOD MAPPING



Existing uses
The land is unused, apart from a constructed car park/trailer parking that has been retained in the community facilities zone.

Previously intended outcomes
Residential zone - The land was zoned residential in the existing (2005) planning scheme. However, the land is in public ownership (CSC).

Anticipated risk
The land is tidal and significantly affected by flood and storm tide hazards.

Effect of zone change
Zoning changed to rural zone. This limits subdivision potential and allows a narrower range of uses. Where in public ownership, it would be undesirable for government to develop land that put people and property at risk.

Private land zoned residential corresponds with existing houses and is retained as residential.

Residential land south of Lynch Close retained to accommodate future housing if needed. This area is contiguous with existing and less affected by storm tide and erosion and is council owned. Planning scheme provisions require filling and floor levels above DFL for any lots.

Other land zoned residential corresponds with existing houses and is retained as residential. Planning scheme provisions trigger floor levels above DFL for any new housing on these lots.

Consistency of change with the SPP
The change is consistent with the SPP requirement to avoid hazards.

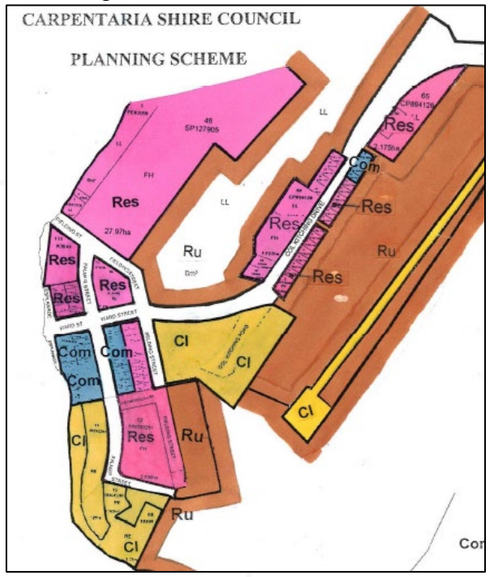
Feasible alternatives

1. Making the change - The change removes risk of serious harm to persons or property on these lots. The change is the most effective way of reducing the risk of serious harm to an acceptable level.
2. Retaining and imposing development conditions on development approvals - Public ownership (and development) of land for urban purposes would represent unacceptable risk.
3. Other defence/mitigation - No other inundation mitigation measures are available for this land.

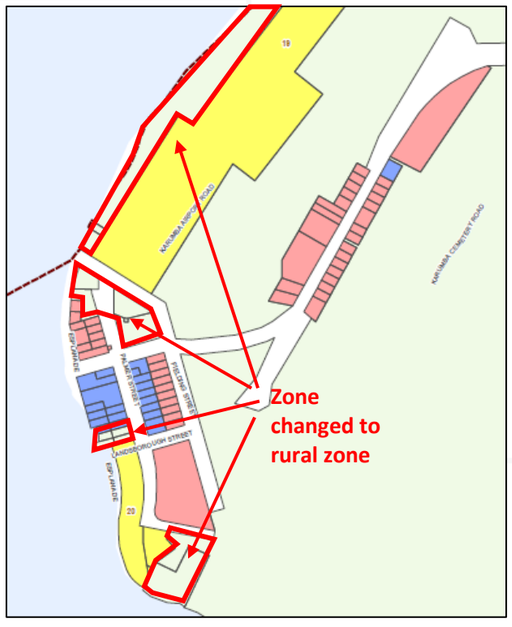
KARUMBA POINT

Change to zone - current and proposed zones

2008 zoning



New planning scheme zoning

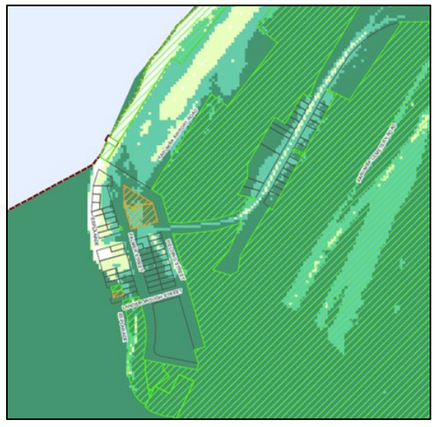


Hazard mapping
(green hatch shows state owned land)

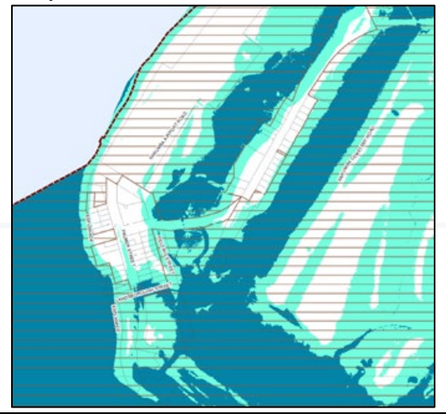
Flood hazard overlay as notified end 2023 (green hatch shows state owned land)



Storm tide hazard



EPA /CMD



Rationale and feasible alternative considerations

RPD / Address

RPD	Address	Owner	Current zoning	Proposed zoning
Lot 12 SP252497	lot 1 Karumba Point Road	DNR	Residential	Rural
Lot 4 K3646	lot 4 Fielding Street	CSC	Residential	Rural
Lot 119 K3646	119 Palmer Street	Reserve	Residential	Rural
Lot 52 NM21	52 Palmer Street	Qld Government	Residential	Rural
Lot 114 SP136519	8b Palmer Street	Qld Government	Residential	Rural
Lot 113 SP287778	8 Palmer Street	DAF	Residential	Rural
Lot 52 AP15679	38 Palmer Street	CSC	Centre	Rural
Lots 51, 69-70 K3645	38 Palmer Street	CSC	Centre	Rural
Lot 68 NM98	Palmer Street	CSC	Community infrastructure	Rural
Lot 11 SP258858	Palmer Street	DNR	Community infrastructure	Rural

New 2026 flood modelling (1%AEP) - NO FURTHER CHANGE IS PROPOSED AS A RESULT OF THE NEW FLOOD MAPPING



Existing uses
All lots are unused, apart from lots 113 and 114 which contain government housing/DAF facilities. However, these lots are inside the CMD.

Previously intended outcomes
Residential zone - The land was zoned residential in the 2008 planning scheme allowing housing.
Centre zone – This zone allows for a range of activities, although potential of this land is constrained by the SPP requirements applying to land in the erosion prone area within the CMD.
Community infrastructure zone – This zone covered vacant tidal waterfront land. It is a generic zone which allows a narrow range of infrastructure and community uses. This land is also in public ownership (CSC). Department of Agriculture and Fisheries (DAF) requested change of zoning.

Anticipated risk
All properties significantly affected by flood and storm tide risk and most are within the CMD. Lots 68 and 11 are tidal. Karumba generally is at risk from significant isolation. This means they put potential housing and infrastructure at significant risk.

Effect of zone change
Residential, centre and community infrastructure zones removed from land within the CMD and other vacant government owned land. Zoning changed to rural. This limits subdivision potential and allows a narrower range of uses. Some development is still possible subject to tests in rural zone. Under any zoning all land with be subject to CMD restrictions. Where in public ownership, it would be undesirable for government to develop land that put people and property at risk. Land retained as residential zone corresponds with existing houses that are outside the CMD. These lots are retained as residential. Planning scheme provisions trigger floor levels above DFL for any new housing on these lots.

Consistency of change with the SPP
The change is consistent with the SPP to avoid hazards and restrict development within the CMD.

Feasible alternatives
1. Making the change - The change removes risk of serious harm to persons or property on these lots. The change is the most effective way of reducing the risk of serious harm to an acceptable level and is consistent with the requirements for land in the CMD.
2. Retaining and imposing development conditions on development approvals - Public ownership (and development) of land for urban purposes would represent unacceptable risk.
3. Other defence/mitigation - No other inundation mitigation measures are available for this land.