



# Project Resilience

Mogo, NSW









**Our Intent**

Within Project Resilience, resilience is the ability of a system (like a community) to absorb disturbance and still retain basic function and structure. Building resilience means intentionally guiding the system’s process of adaptation to preserve some qualities and allow others to fade away, all the while retaining the essence—or “identity”—of the system.

In a human community, identity is essentially determined by what people value about where they live. However, what a community of people collectively values are open to interpretation and subject to disagreement. This suggests that people and the ways they come to a rough consensus—are necessarily at the centre of community resilience building.

Although many resilience frameworks and tools for building community resilience are now available across Australia, no single approach will likely work for all communities and their varied social and economic contexts. Therefore, the Project Resilience Team has identified six foundations that, in our view, are essential—no matter where or how resilience-building efforts are undertaken, or which challenges are of most concern locally. The foundations support building community resilience, rather than achieving resilience as a fixed goal, to emphasise resilience building as an ongoing process.

**What DRA thinks Resilience is:**

	<p><b>People</b> - The power to envision the future of the community and build its resilience resides with community members.</p>
	<p><b>Systems thinking</b> - Systems thinking is essential for understanding the complex, interrelated crises now unfolding and what they mean for our similarly complex communities.</p>
	<p><b>Adaptability</b> - A community that adapts to change is resilient. But because communities and the challenges we face are dynamic, adaptation is an ongoing process.</p>
	<p><b>Transformability</b> - Some challenges are so big that it’s not possible for the community to simply adapt; fundamental, transformative changes may be necessary.</p>
	<p><b>Sustainability</b> - Community resilience is not sustainable if it serves only us, and only now; it needs to work for other communities, future generations, and the ecosystems on which we all depend.</p>
	<p><b>Courage</b> - As individuals and as a community, we need courage to confront challenging issues and take responsibility for our collective future.</p>

**Note: This is a draft to determine content. Once content completed, I will add branding and layout elements.**

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## 1. Disaster Relief Australia Resilience Process

The Disaster Relief Australia (DRA) Resilience Process is a four-stage process with each stage broken down into various steps. Overall, the DRA Resilience Process provides effective guidance and direction to each DRT across Australia. A future DRA Resilience Framework is currently being developed (*yet to be drafted*). The purpose of the DRA Resilience Framework is to:

- Support Disaster Relief Team (DRT) Managers in the assessment and prioritisation of community-based resilience projects.
- Establish a consistent approach across each DRT to recognising what levels of vulnerability may exist within their regional operating areas.
- Guide, lead and mentor the Minderoo Foundation in the development of strategic and detailed analysis of where future resilience projects may be required.
- With DRTs as the strategic lead, create a targeted approach to building resilience through clear principles for decision making and prioritisation of future resilience workshops and adaption that can be applied across the public, private and community sectors.
- Recognise national and international disaster risk reduction, mitigation, and adaptation approaches, including the Sendai Framework for Disaster Risk Reduction.



Increasing our knowledge and awareness of community vulnerabilities, strengthening our capability and capacity to provide relief when required and tightening our community bonds are all key to DRA and the DRA Resilience Process. As an emerging area of culture and practice, DRA is leading the way in understanding, working with and empowering community lead discussions and community-based forums. For many DRA members, these forms of community lead discussions and forums are essentially second nature due to their previous operational experience within the Australian Defence Force and previously highly trained ability to assimilate risk and operational effectiveness on a battlefield. As an example, the large map discussion is based on a military wargame theory, therefore the purpose of using wargaming models is not to emulate reality, but to serve as a device for stimulating innovative thought.

## Mogo Resilience Project

The MOGO Community accepts that flooding is an inevitable natural process, which in many circumstances is beneficial for fisheries agriculture, ecosystems and water storages. Resilience and mitigation activities do not eliminate the risk of flood.

Acknowledgement of the risk of flooding focuses government and the community on managing risk and building resilience to flood related impacts. The purpose of the Mogo Community Resilience Project was to aid communities, which have been badly impacted during the Black Summer bushfires, to build resilience in their community. This was achieved by undertaking a Community Resilience Project.

Disaster Relief Australia is well regarded in the Eurobodalla and Bega Valley LGA (Local Government Areas) due to deploying in the area on Operation Corkhill. The Black Summer Fires in the Bega Valley LGA caused widespread loss: with the destruction of 465 houses, 1098 outbuildings and hundreds of other structures damaged. DRA was forced to pause fire recovery operations in March of 2020 in the Bega area with Op Ryan due to COVID-19.



Image 1: Mogo Big Map 6m x 6m. Community Engagement Tool

## The Mogo Resilience Activity

### Purpose:

Building resilient communities in the context of a disaster event integrates prevention, preparation, response, and recovery is a complex and continuous process, rather than a process with a definitive end point or 'destination'. The purpose of the Mogo Resilience Strategy was to better understand the community complexities and develop a community risk profile based on the exposure from flood that

leads to vulnerabilities and community risk. By understanding how, when and where this region is impacted by flood is vital to those who live here. Not just for safety, but for protecting livelihoods, property, and people. Businesses operating within the region also need to know how it works to make risk-informed investment and operational decisions in line with future Local Council objectives.

Managing flood risk is a cooperative and coordinated effort between all sectors of the community including individuals, businesses, non-government organisations and governments.

#### Method:

Disaster Relief Australia (DRA) in collaboration with the Minderoo Foundation's Resilient Communities Initiative conducted a locally led, scenario-based modelling exercise (*Australia Defence Force wargame approach*) in the Mogo Region, within the Eurobodalla Shire Council. Mogo is a small heritage town on the Far South Coast of NSW. It's located halfway between Batemans Bay and Moruya on the Princes Highway. Only a few hours from Canberra, it's a village full of hidden gems – brimming with retail shops and cafes with a fabulous, old-time atmosphere.

#### The DRA Endstate:

Locally led and regionally coordinated resilience solutions will always address recent and emerging disaster risks and provide pathways for improving community resilience over time. Flood waters don't respect boundaries. Therefore, it is critical to investigate ways we can better prepare for the future and keep our communities safe by coordinating efforts, sharing knowledge and capability, and setting a proactive agenda for improving resilience over time.

The exercise aimed to overlay your local knowledge with our aerial imagery and data mapping technology, empowering your community and its leaders to proactively reduce disaster risk and identify local solutions to help improve resilience over time.

Over the past three years, Mogo has been devastated by fire and flood. Mogo was chosen for this exercise because the community was passionate about building a local resilience plan, but did not yet have the manpower, technology, or actionable information, to deliver it.

DRA conducted a 'big map' scenario model and disaster planning workshop to collect community feedback. This assisted DRA to overlay the community's vital local knowledge with aerial imagery and data mapping technology, empowering the community and its leaders to proactively reduce disaster risk and identify local solutions to help improve resilience over time.

A Flood Wise community harnesses local resources and expertise to help themselves in an emergency, in a way that complements the response of the emergency services and other agencies. Flood Wise communities are better able to withstand a disaster event and recover quickly.

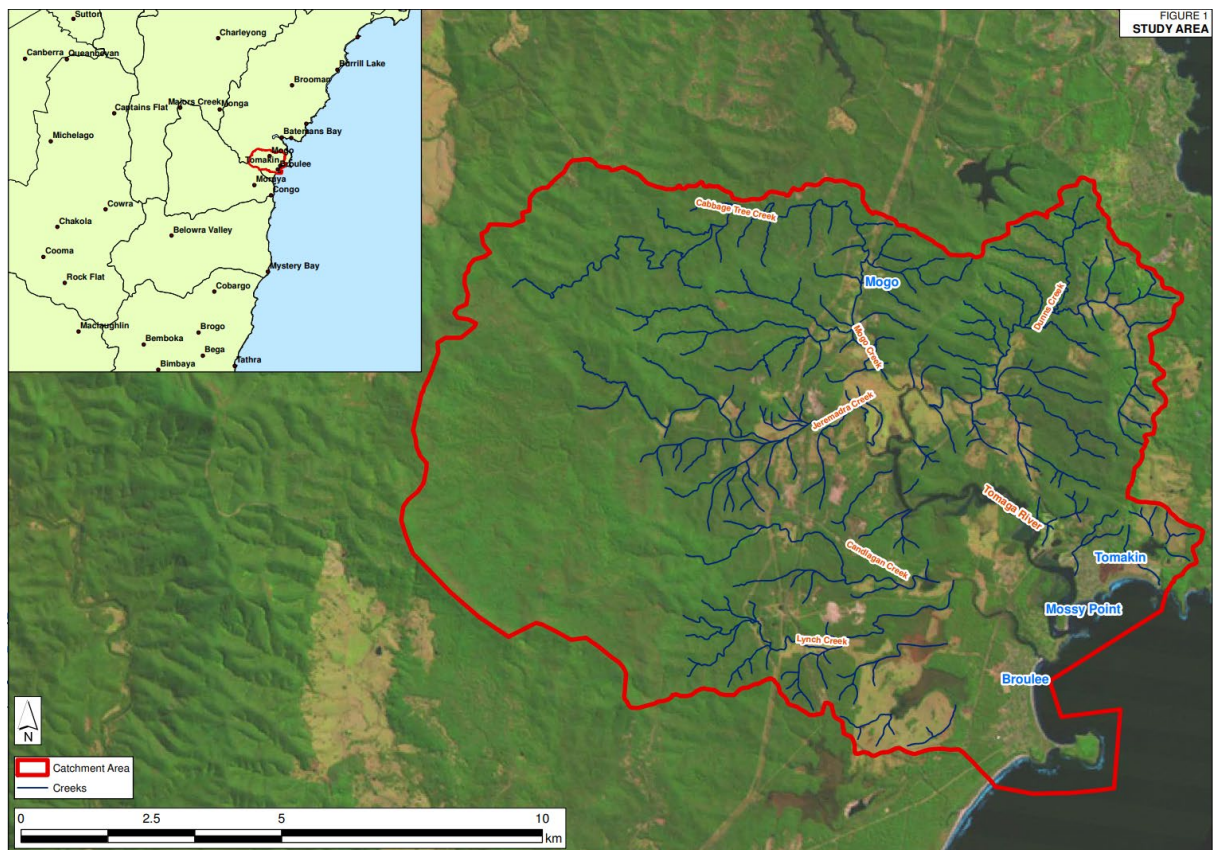


Image 2: Mogo, New South Wales

## The Intelligence Picture

Mogo is a small heritage town in the South Coast region of the state of New South Wales, Australia. Mogo is administered by the Eurobodalla Shire council. The town is located on the Princes Highway (Highway 1), south of Batemans Bay and north of Moruya. At the 2021 census, Mogo had a population of 332 consisting of 73 families across 130 private dwellings.

Mogo was established during the Gold Rush after a gold find was reported in 1851. Bimbimbie, the last gold mine in the Mogo area, closed in 1984. The town survived as a sleepy highway town, and during the 1990s was revitalised with the growth in regional tourism. Mogo is now home to a variety of tourist-centric stores including cafes, art galleries, potters, and furniture stores. Mogo is also a centre for the Aboriginal population of the area.

Mogo is home to the Mogo Zoo, a private zoo specializing in breeding programs for endangered species. Although small in comparison to metropolitan zoos, Mogo Zoo is home to many exotic species, such as the red panda and the snow leopard, the latter of which was successfully bred at Mogo Zoo in 1999. Mogo Zoo also participates in programs with other Australian zoos, and its collection of animals changes regularly.

Mogo has a small public primary school, Mogo Public School, that serves Mogo's sparsely populated surroundings. It has around 70 enrolled students, who usually continue their public secondary education at Batemans Bay High School or Moruya High School, or in the private secondary schools of Carroll College and St. Peters Anglican College, both at nearby Broulee.

Home to a vibrant art community, Mogo has established itself as one of the major centres of local art and craftwork,[2] and has more art galleries than any of the surrounding (larger) towns of Batemans Bay and Moruya, with people travelling from as far as Canberra in the Australian Capital Territory, as well as other parts of regional NSW and interstate to regularly view and purchase art and crafts.

The Mogo Local Aboriginal Lands Council (LALC) boundaries are located in the traditional country of a number of Aboriginal communities with distinct cultures and language groups: Whilst the original people of the area were the Monara and Yuin nations, who were the custodians of the land and waterways of southern New South Wales, from Cape Howe to the Shoalhaven River, the language groups were known as the Bidawal, the Thaua, Ngarigo and the Djiiringanj.

The Monaro and Yuin people have significant heritage in the area with many Aboriginal sites and features being identified. In the language of the Yuin people the word 'Mogo is said to mean ' Stone Axe and large camping ground'. The Aboriginal history of the area includes locations such as Tomakin and Barlings Beach where Aboriginal families tell of the significant spiritual and cultural associations of this area.

The Mogo LALC has mandate over a large geographical area one which ranges from the coast to the alpine regions of Mt Kosciuszko:-5,900 sq. km. The area includes the towns of Mogo, the seaside villages of Batehaven, Tomakin and Broulee and the inland hamlets of Captains Flat and Michalego.

### [Eurobodalla Shire Council, Tomakin, Mossy Point, Broulee and Mogo Flood Study](#)

In 2017, a flood study was prepared on behalf of Eurobodalla Shire Council (ESC)<sup>1</sup>, on the South Coast of New South Wales. It covers the areas of Tomakin, Mossy Point, Broulee and Mogo over two major catchments. The first catchment has an approximate area of 94 km<sup>2</sup> which drains to the Tomaga River while the second catchment has an approximate area of 26 km<sup>2</sup> draining to Candlagan Creek.

Little historical flooding has been reported in Tomakin, Mossy Point and Broulee. To date, studies have focused on Mogo which has experienced a number of flood events. Development pressures in Tomakin, Mossy Point and Broulee as well as elsewhere in the Tomaga River catchment (specifically along Dunns Creek Road) provides the impetus for the catchment-wide flood study.

Residential, commercial and light industrial development in Mogo accelerated in the mid-1980's creating pressure to develop potentially flood prone land adjacent Cabbage Tree Creek. Consequently, the Mogo Flood Study was commissioned by Eurobodalla Shire Council to clarify the existing flood affection of Mogo. The study established the flood extent and levels of the 20% AEP, 5% AEP and 1% AEP events within and in the vicinity of the town of Mogo. For the purpose of this resilience initiative very little of this information was accessed or utilised.

Subsequent to the completion of the Mogo Flood Study, the next phase of the Floodplain management process was undertaken comprising of the Mogo Floodplain Management Study. Both structural and non-structural measures to reduce the flood risk were considered. The study considered filling and channel upgrade to be the two most appropriate structural measures. However preference toward non-structural measures such as zoning and development controls which do not permit new building on land affected by flooding was expressed and no structural measure has been actioned.

The Mogo Commercial Area Drainage Study identified the preferred works for formalising a depression drain located on the east side of the Princes Highway, north of Tomakin Road. The depression drain

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<sup>1</sup> [https://www.esc.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0010/149356/Tomakin-Mogo-Broulee-Mossy-Point-Flood-Study-Part-1-page-1-66.pdf](https://www.esc.nsw.gov.au/__data/assets/pdf_file/0010/149356/Tomakin-Mogo-Broulee-Mossy-Point-Flood-Study-Part-1-page-1-66.pdf)



with a catchment area of 41.4 hectares discharges into Cabbage Tree Creek via two existing 0.9 m diameter culverts across the Princes Highway immediately north of Tomakin Road. The assessment considered the 1 year, 5 year, 20 year and 100 year ARI events and design flood flows were computed using the RAFTS-XP rainfall-runoff model. For the 100-year event, peak local flows of 14.3 m<sup>3</sup>/s and peak Cabbage Tree Creek of 195.7 m<sup>3</sup>/s were obtained.

While the proposed measures assist in alleviating flooding from the local catchment, the ability of a large event from Cabbage Tree Creek to backwater through the enhanced drainage system as well as the influence of an elevated sea level requires further consideration. The above works require further consideration and at the time of the resilience workshop it was unclear as to whether this scope of works had been completed.

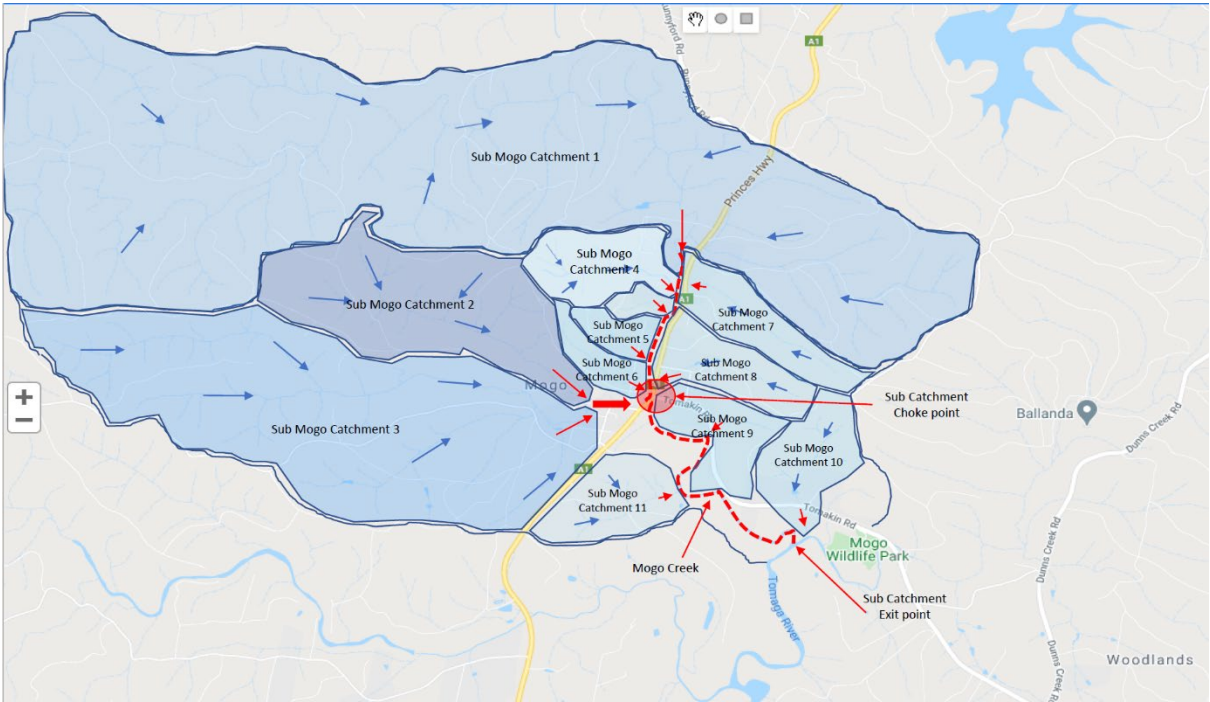


Image 3: Mogo Catchment Analysis

Overall, the Mogo sub catchment is typical of many other smaller catchments where communities have chosen to live within the creek line. The sub catchment is made up of 11 smaller catchments that when impacted by rain operate very differently. Cabbage Creek runs directly through the middle of the main business precinct within Mogo and during a flood event numerous businesses are impacted as a result. The red arrows (Image 3) indicate the exit point of each sub catchment. There is no flood infrastructure in the entire sub catchment nor the greater catchment that the Mogo sub catchment sits within.

On the 13<sup>th</sup> December 2021, The Eurobodalla Shire Council area was dealing with the aftermath of its eighth disastrous flood since the Black Summer in 2019-20. On the Friday, floodwaters impacted multiple towns across on the South Coast, which included Mogo on the Princes Highway.

The Cabbage Creek area is on private properties and Crown land that is not managed by Eurobodalla Council. The Mogo community sees the section of the creek running through the township as a priority and has asked for help to restore it. Post the fires in 2019-20 the Eurobodalla Council began a project to remove weeds from Cabbage Tree Creek. The progress of this project is not known the time of

writing t his report. The area was severely burnt during the fires and much of the vegetation growing back contains weeds, which boomed following high rainfall.



Image 4: The Princes Highway was flooded at Mogo, impacting shops on both sides of the road.



Image 5: Cabbage Creek in flood through Mogo township.

Prior to the workshop on the 17 June 2022, DRA conducted a reconnaissance and detailed mapping exercise of the area. Utilising specialist drone capabilities, DRA conducted an overhead analysis of Cabbage Creek and the surrounds. The following analysis was provided:



Image 6: Princess Hwy near Tomakin Rd Junction

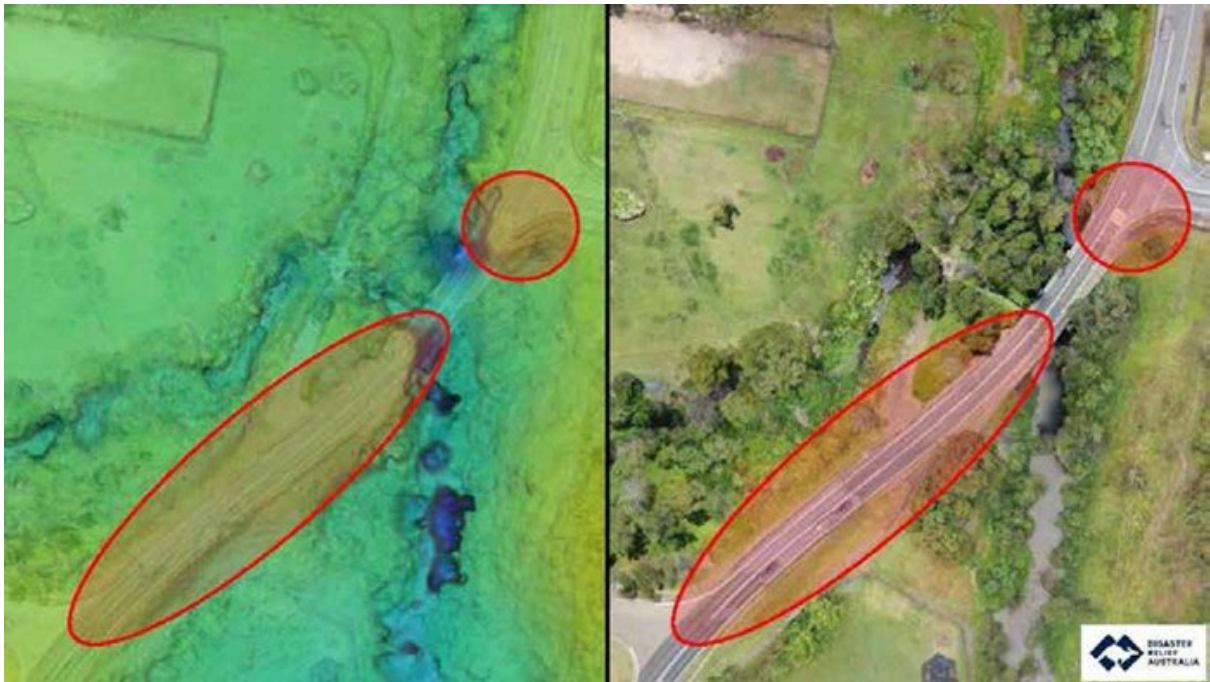


Image 7: Princes Hwy Bridge near Tomakin Rd junction has had earth mounds (in red) built up to shorten the required span of the bridge. This has created a narrowing of a natural choke point and the addition of bridge pillars which can collect debris, reducing water flow to the south.

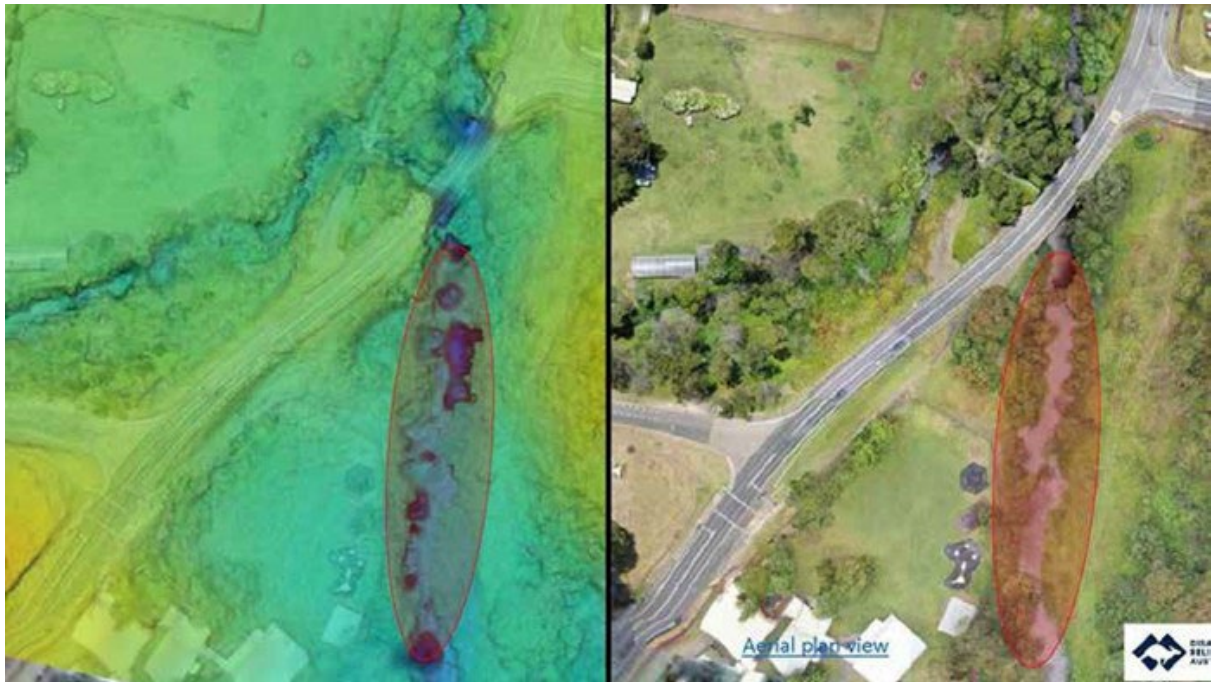


Image 8: Background map is a 2D elevation render on the left and orthomosaic colour map on the right. Created using images from an Area Damage Assessment Team (ADAT) drone. Areas highlighted in red indicate areas of built-up siltation, slowing the egress of water upstream.

Via community consultation, it was conveyed that the area in red was once used as a swimming hole, but due to sediment build up, is usually dry or only 1-2 feet deep. Siltation issues were identified in the TMPBM Flood Study 2017.

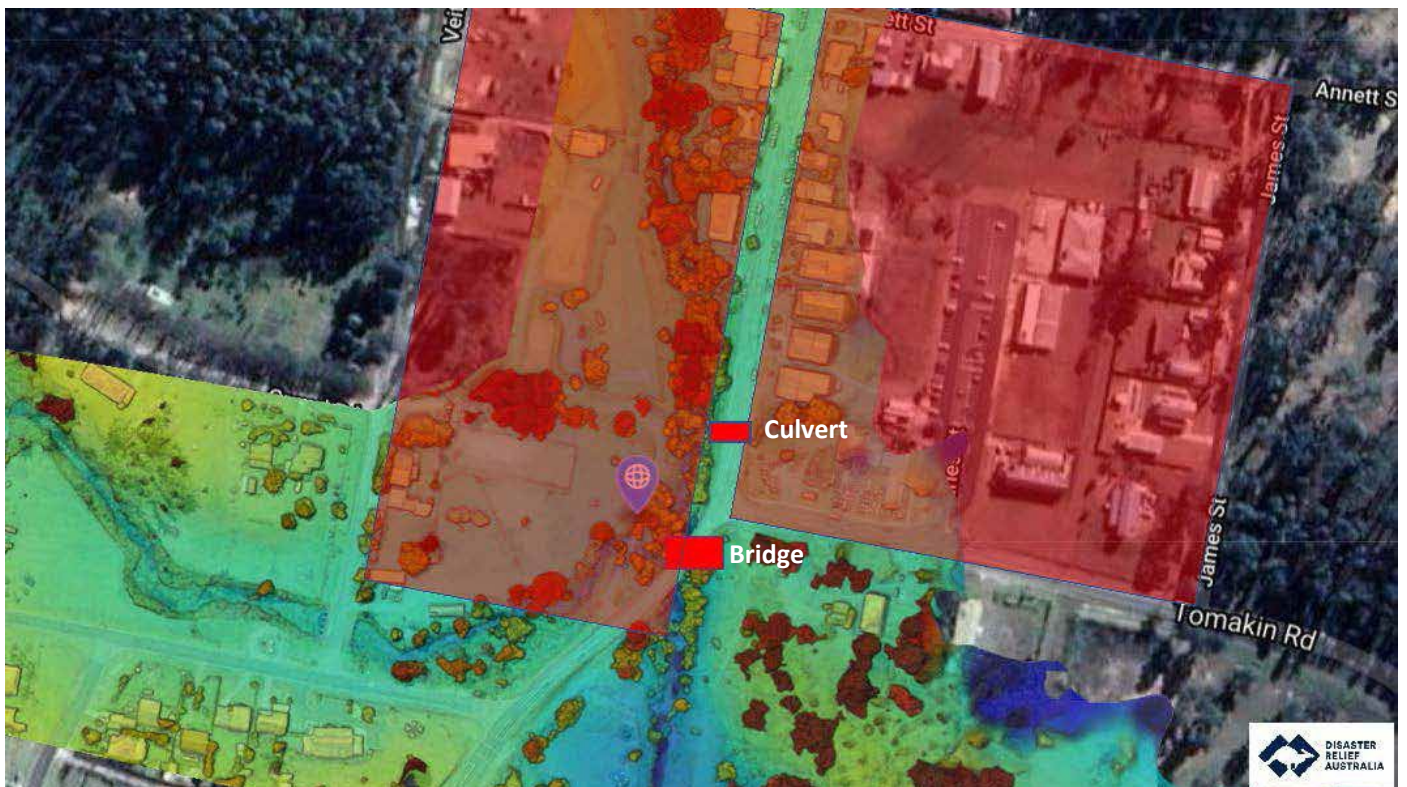


Image 9: Probable flooding areas as a direct result of the choke points in Cabbage Creek



Image 10: 2 culverts 0.9m in diameter allow water to drain from the business centre to the east to Cabbage Tree Creek on the western side of the highway. Culverts we identified in the TMPBM Flood Study 2017 as inadequate in diameter.

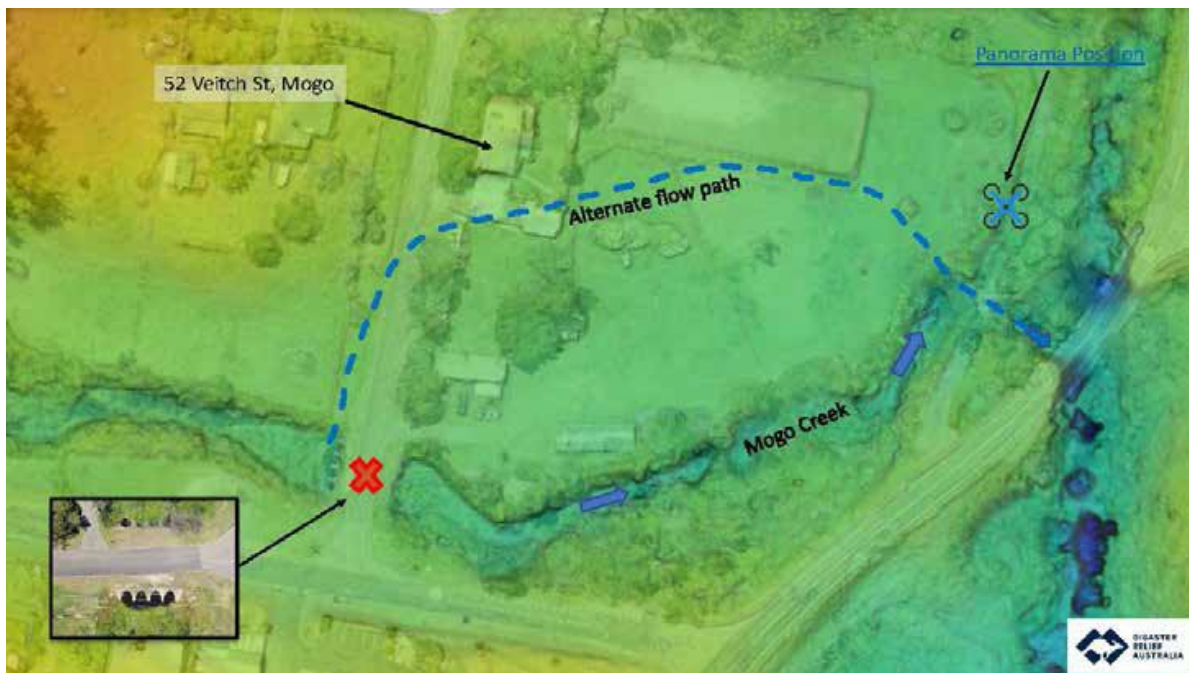





Image 10: X – Denotes causeway bridge which was blocked by debris causing the watercourse to alter direction during a recent flood event. Alternate flow path – caused water to inundate 52 Veitch St, Mogo, flooding stables and shed. It also swept away a large amount of gravel.

# Mogo (Eurobodalla - NSW)

2021 Census All persons QuickStats

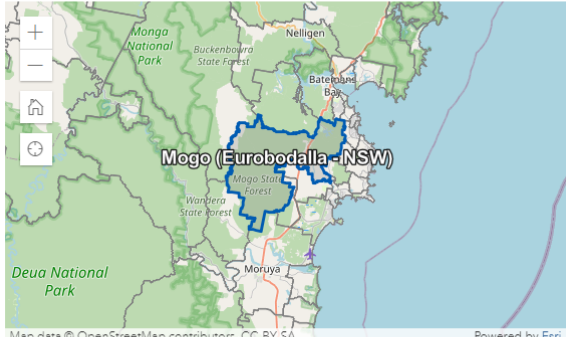
Geography type [Suburbs and Localities](#)  
 Area code SAL12671

	<b>People</b>	<b>332</b>
	Male	53.5%
	Female	46.5%
	Median age	44
	<b>Families</b>	<b>73</b>
	Average number of children per family	
	for families with children	1.9
	for all families	0.7
	<b>All private dwellings</b>	<b>130</b>
	Average number of people per household	2.7
	Median weekly household income	\$1,208
	Median monthly mortgage repayments	\$1,300
	Median weekly rent (a)	\$220
	Average number of motor vehicles per dwelling	2.4

(a) For 2021, median weekly rent calculations exclude dwellings being occupied rent-free.

Search all persons QuickStats for another area

2021



Map data © OpenStreetMap contributors, CC-BY-SA. Powered by Esri

Other 2021 Census products available for this area:

- [Community Profiles](#)

To view more QuickStats or Community Profiles for a different area, see [Search Census data](#).

Age	Mogo (Eurobodalla - NSW)		New South Wales		Australia	
All people		%		%		%
Median age	44	N/A	39	N/A	38	N/A
0-4 years	21	6.5	468,056	5.8	1,463,817	5.8
5-9 years	18	5.6	500,810	6.2	1,586,138	6.2
10-14 years	21	6.5	501,135	6.2	1,588,051	6.2
15-19 years	21	6.5	457,896	5.7	1,457,812	5.7
20-24 years	15	4.7	496,185	6.1	1,579,539	6.2
25-29 years	18	5.6	555,967	6.9	1,771,676	7.0
30-34 years	6	1.9	586,057	7.3	1,853,085	7.3
35-39 years	15	4.7	580,185	7.2	1,838,822	7.2
40-44 years	25	7.8	522,984	6.5	1,648,843	6.5
45-49 years	13	4.0	516,915	6.4	1,635,963	6.4
50-54 years	25	7.8	500,027	6.2	1,610,944	6.3
55-59 years	26	8.1	490,155	6.1	1,541,911	6.1
60-64 years	20	6.2	471,628	5.8	1,468,097	5.8
65-69 years	22	6.9	416,493	5.2	1,298,460	5.1
70-74 years	29	9.0	372,234	4.6	1,160,768	4.6
75-79 years	15	4.7	268,110	3.3	821,920	3.2
80-84 years	5	1.6	183,409	2.3	554,598	2.2
85 years and over	6	1.9	183,895	2.3	542,342	2.1

Household composition	Mogo (Eurobodalla - NSW)		New South Wales		Australia	
Occupied private dwellings (excl. visitor only and other non-classifiable households)		%		%		%
Family households	73	67.0	2,065,107	71.2	6,542,648	70.5
Single (or lone) person households	28	25.7	723,716	25.0	2,370,742	25.6
Group households	8	7.3	111,646	3.8	361,822	3.9

<b>Number of registered motor vehicles</b> <i>Occupied private dwellings (excl. visitor only and other non-classifiable households)</i>	<b>Mogo (Eurobodalla - NSW)</b>		<b>New South Wales</b>		<b>Australia</b>	
		%		%		%
None	5	5.1	262,031	9.0	673,969	7.3
1 motor vehicle	28	28.3	1,096,761	37.8	3,353,737	36.2
2 motor vehicles	30	30.3	989,258	34.1	3,366,738	36.3
3 or more vehicles	33	33.3	508,694	17.5	1,745,924	18.8
Number of motor vehicles not stated	3	3.0	43,732	1.5	134,848	1.5

<b>Household composition</b> <i>Occupied private dwellings (excl. visitor only and other non-classifiable households)</i>	<b>Mogo (Eurobodalla - NSW)</b>		<b>New South Wales</b>		<b>Australia</b>	
		%		%		%
Family households	73	67.0	2,065,107	71.2	6,542,648	70.5
Single (or lone) person households	28	25.7	723,716	25.0	2,370,742	25.6
Group households	8	7.3	111,646	3.8	361,822	3.9

<b>Australian Defence Force Service</b> <i>People aged 15 years and over</i>	<b>Mogo (Eurobodalla - NSW)</b>		<b>New South Wales</b>		<b>Australia</b>	
		%		%		%
Currently serving	0	0.0	24,512	0.4	84,865	0.4
Previously served (and not currently serving)	8	3.0	127,657	1.9	496,276	2.4
Has never served	221	82.2	6,050,636	91.6	18,954,152	91.2
Not stated	39	14.5	399,351	6.0	1,249,493	6.0

<b>Indigenous status</b> <i>All people</i>	<b>Mogo (Eurobodalla - NSW)</b>		<b>New South Wales</b>		<b>Australia</b>	
		%		%		%
Aboriginal and/or Torres Strait Islander	72	21.7	278,043	3.4	812,728	3.2
Non-Indigenous	210	63.3	7,404,499	91.7	23,375,949	91.9
Indigenous status not stated	42	12.7	389,616	4.8	1,234,112	4.9

## Flood Infrastructure

Only one piece of flood infrastructure exists within the Mogo area. A damaged flood board is located on a causeway at Church and Veitch Street Mogo. No other flood infrastructure was identified.

## Flood Mitigation Works

Very little flood mitigation work has occurred within Cabbage Tree Creek and above the township. In line with the Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.13<sup>2</sup> no services are provided within this small catchment.

## Flood Services

In line with the Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.13, no services are provided within this small catchment.

## Disaster Relief Australia – Operation Corkhill

DRA relaunched bushfire recovery operations in the Eurobodalla Shire LGA located on the south coast of New South Wales, to continue the work in those communities who were devastated by the 2019/2020 fire season. Whilst this operation did not involve Mogo DRA deployed approx. 166 volunteers in close proximity to Mogo.



<sup>2</sup> [http://www.bom.gov.au/nsw/NSW\\_SLS\\_Current.pdf](http://www.bom.gov.au/nsw/NSW_SLS_Current.pdf)

## The Mogo Resilience Workshop



Overall, the Mogo Resilience Workshop was deemed a large success. Community members were asked to remove their shoes and to step onto the 'DRA Big Map' which initiated the discussions throughout the day. An Agenda for the day was provided and the following information flowed freely. Mogo has been impacted by numerous floods and in 2019-20 Mogo was impacted heavily by wildfires causing property damage amidst other impacts. For the purpose of this workshop DRA made a deliberate attempt not to discuss the fire event unless it was initiated by a community member. The Mogo Village centre sits adjacent to Cabbage Creek and in some areas parts of the community centre have been built within the creek line. At the eastern end of the village, it's clear that the Mogo Creek Bridge adjacent to the Tomakin Rd Junction acts as a choke point for Cabbage Creek.





Image 11: Mogo Creek Bridge



Image 12: Mogo Creek and Cabbage Tree Creek

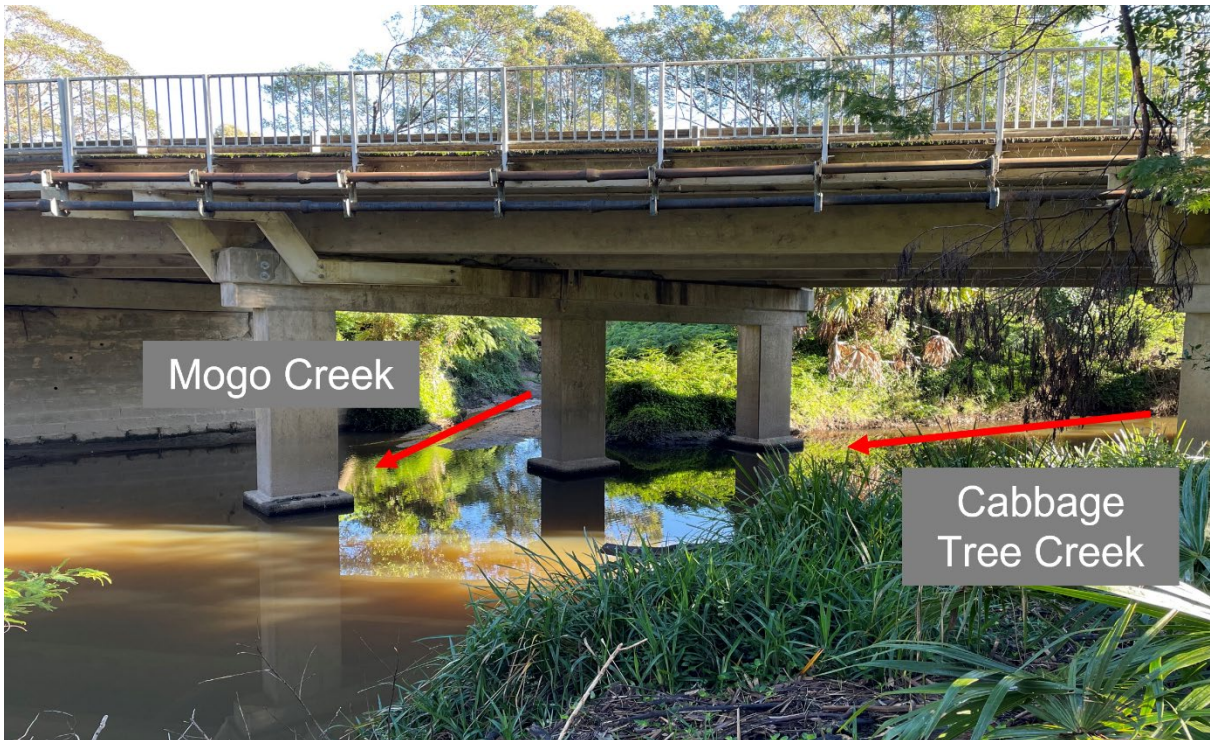


Image 13: Mogo Creek and Cabbage Tree Creek combine under the Mogo Creek Bridge

## The Mogo Creek Bridge

A key discussion point on the large map was the Mogo Creek Bridge (Image 11). The community spoke of a flood event (10 December 2021) and the fact that the bridge acted as a choke point. Based on the large influx of rainfall above Mogo within Cabbage Tree Creek and Mogo Creek, water was unable to flow freely under the bridge and subsequently backed up. Large amounts of debris left unmanaged from previous floods under Mogo Creek Bridge caused the flow of water to slow down, causing a dam effect. As a result, significant flooding occurred within the Mogo township.

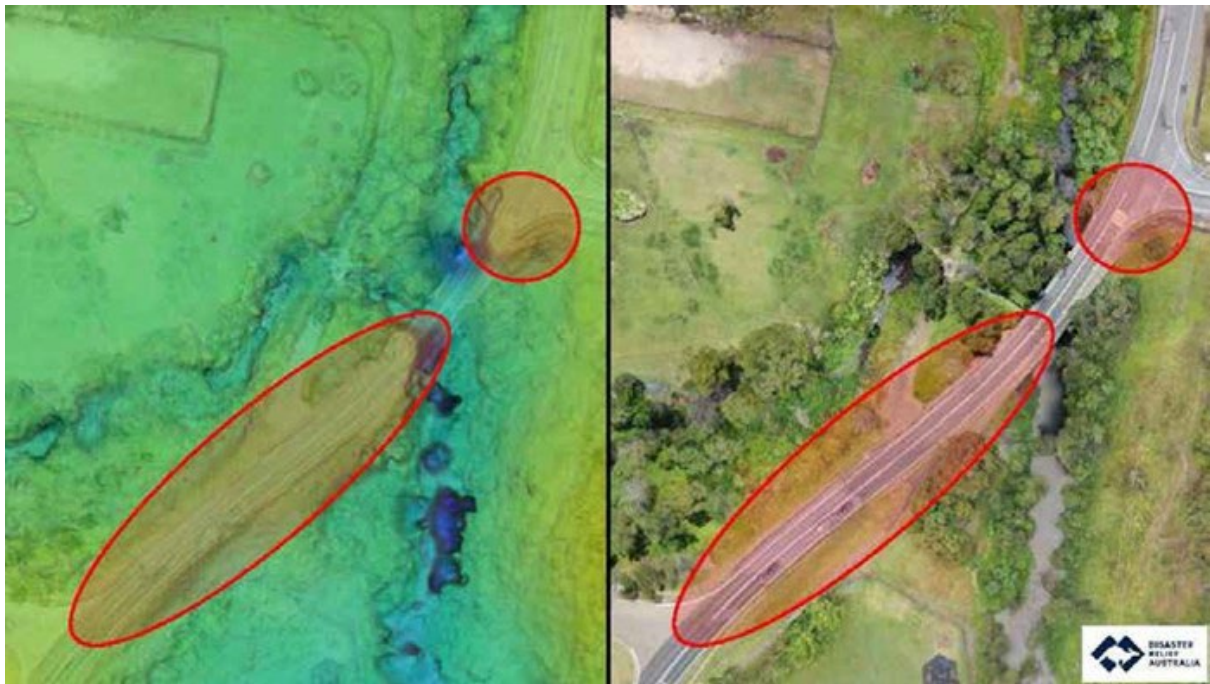


Image 14: Mogo Creek and Cabbage Tree Creek combine under the Mogo Creek Bridge

As detailed in (Image 14) Mogo Creek Bridge has had earth mounds (in red) built up to shorten the required span of the bridge. This has created a narrowing of a natural choke point and the addition of bridge piers which can collect debris, reducing water flow to the south.

## Mogo Flood Impacts (10 December 2021)

The man-made choke point, the collection of debris and the amount of rainfall on the 10 December 2021 within Mogo possibly caused significant impacts within the Mogo Village. A true height of the flood water was discussed at length during the workshop and numerous property owners and business owners provided various stories and anecdotes on how the floodwaters impacted them however a true flood height was never determined. One community member identified that during the flood event Mogo Creek broke its banks first at the Mogo Creek Bridge. This rise in flood waters had a negative impact on the rising flood waters of Cabbage Tree Creek. Essentially there was too much water in Cabbage Tree Creek with limited exfiltration therefore the Cabbage Tree Creek backed up and severely impacted the Mogo Village.

Within images, 15,16,17 and 18 a true scale of the flood impacts can be easily observed by the imagery provided. Within image 17, approximately half a metre of water can be observed inundating local businesses. From the analysis it's clear that on the 10 December 2021, Mogo Village was inundated by flood waters in excess of half a metre.



Image 15: 10 December 2021, Mogo main street flooded (height of water not determined)



Image 16: 10 December 2021, Mogo main street flooded (height of water not determined)



Image 17: 10 December 2021, flood waters from flood event inundate Mogo businesses (height of water not determined)

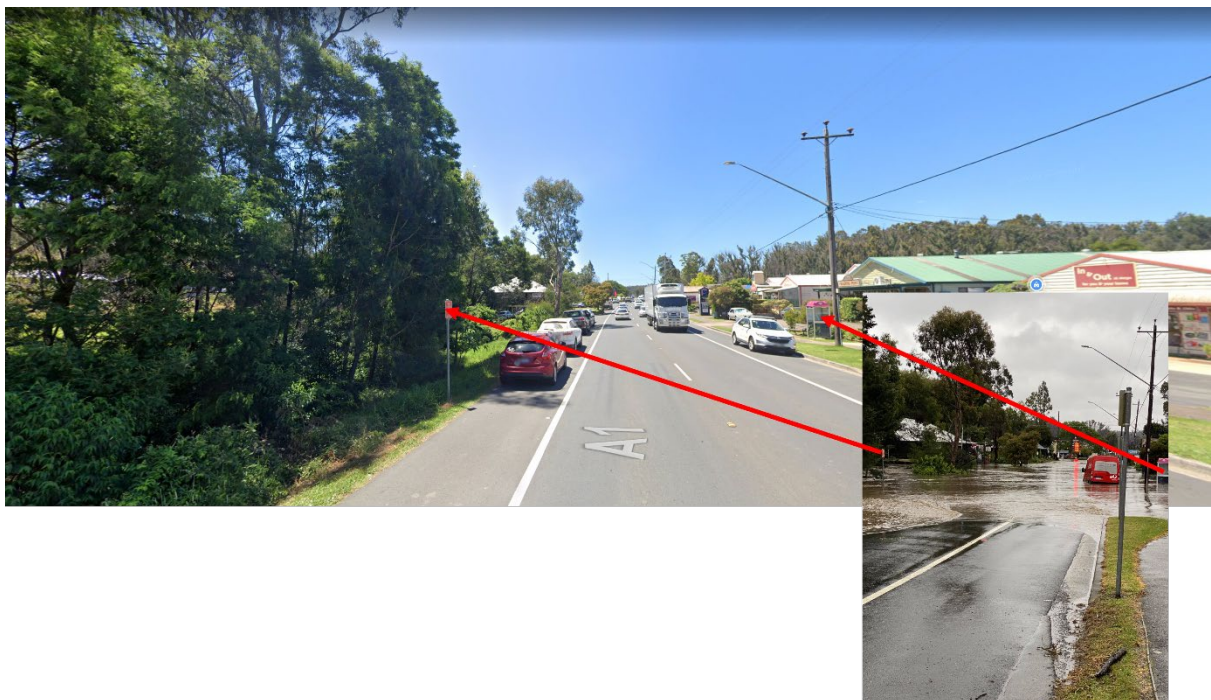


Image 18: 10 December 2021, flood waters from flood event inundate Mogo businesses (height of water not determined)

## The Identification of own property, business

All community members readily identified their own home and business. The township of Mogo is relatively small, and a large proportion of the village resides within Cabbage Tree Creek. The centre of the Mogo precinct is essentially within the Cabbage Tree Creek floodplain.

## Vulnerable locations

Based on the location and proximity to Cabbage Tree Creek a number of vulnerable locations were identified and discussed at length.

- Mogo Fuel Station – This is the only location to refuel in Mogo apart from travelling back into Batemans Bay.
- Sewerage Transfer Pump – A Sewerage Transfer Pump is located on Church Street within Mogo Creek. As detailed (image 19) the transfer pump is vulnerable to flood waters therefore a vulnerability exists.

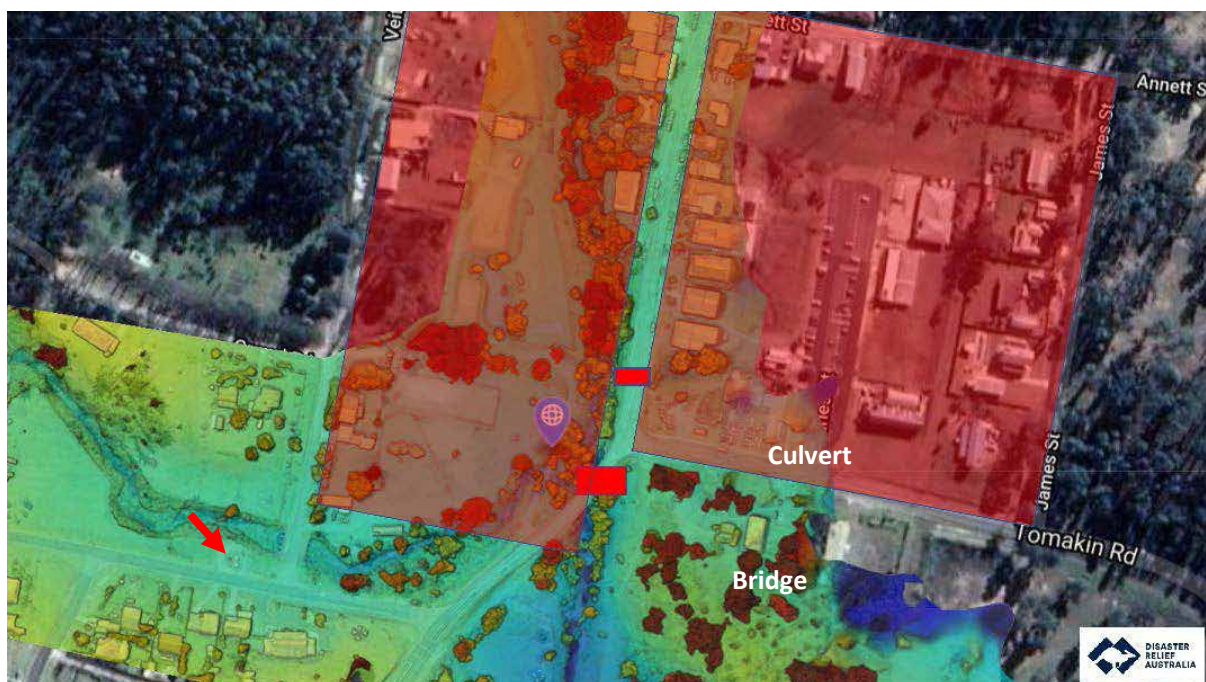


Image 19: Sewerage Transfer Pump, Church Street Mogo

## Flooding Discussion

### Flood Classifications

Flood Classifications were discussed at length within the group. As detailed in the Service Level Specification for Flood Forecasting and Warning Services for New South Wales<sup>3</sup>. It was identified that no flood infrastructure exists within the entire sub catchment within Mogo.

### Community Warnings

Social media, word of mouth and local knowledge come with the territory when living in Mogo. Residents monitor the BOM Web Page as required. Without suitable infrastructure highlighting rainfall levels and location very little community warnings will be provided.

<sup>3</sup> [http://www.bom.gov.au/nsw/NSW\\_SLS\\_Current.pdf](http://www.bom.gov.au/nsw/NSW_SLS_Current.pdf)

## Flash Flooding

Due to the location and establishment of the Mogo Township Flash Flooding from Cabbage Tree Creek could be assessed as high risk based on its location and the fact that a majority of Mogo sits within Cabbage Tree Creek. No flood infrastructure and the surrounding terrain only amplify this risk. Residents were quick to acknowledge that the creek can rise and fall rapidly.

The Flash Flood Advisory Resource (FLARE)<sup>4</sup> was discussed in detail. FLARE is an authoritative resource created to assist agencies with flash flood warning responsibilities, such as councils and emergency services, to design, implement and manage fit-for-purpose flash flood warning systems.

FLARE is not an operational service; rather it provides access to a wealth of information that supports local organisations to develop flash flood warning systems. Co-ordinated by the Bureau of Meteorology, FLARE includes a website and advisory service for registered users.

Within Mogo and the short run time of Cabbage Tree Creek and or Mogo Creek during a Major flood event the FLARE service would provide no assistance for flash flood advice and community warning. This is based on the fact that both creeks would of already flushed through Mogo before strategic assets would event know. This only adds to the risk of Mogo during a heavy rainfall event.

## Road Closures

As detailed in image 16 and 17 the main street (Princess Hwy) of Mogo is closed. This has an impact on the residents and their ability to evacuate to higher ground if required.

## Establishing a Community HUB

At the end of the workshop the idea of developing a localised community - led Community HUB was discussed. Community members run a HUB without official assistance - it's essentially a place for neighbours to help neighbours in a coordinated way. Each HUB is based at the community level, and it explains how to organise an emergency relief and recovery effort based on community expectations, needs, and associated local requirements. It also sets out and describes the different roles needed.

The primary role of the Community HUB however is to act as the link between the associated Local Government and the community.

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<sup>4</sup> FLARE Flash Flood Advisory Service <http://www.bom.gov.au/australia/flood/flashfloodadvisoryresource/>

Post a disaster event the community will naturally come together to support one another after as required. Strong, connected communities are better prepared to respond to and recover from disasters when they occur. In a major emergency, official responders will always need to prioritise the most urgent issues, so it is likely that for the first few days the community will need to help each other within the disaster. The Community HUB is a designated place where they can gather, connect with one another, and solve problems using the skills and resources which already exist among their community.



During this workshop it was clear that if a Community HUB was established the Five Pillars of the DRA Recovery model could easily be lead and fully utilised. The Five Pillars of the DRA Recovery model are as follows:

**Human and Social** - This relates to the emotional, social, physical, and psychological health and well-being of individuals, families and communities following a disaster. The Human and Social pillar within a community aims to:

- Gain access to timely information from the Local Government
- Aids in providing assistance to reconnect with families, friends and community networks
- Enables community members to manage their own recovery through access to information and the knowledge of where to find Local, Regional and State services and/or practical assistance, including financial assistance for those individuals and households who are most vulnerable and do not have the means to finance their own recovery.
- Acts as the lead for the community and the vital link between Local Government and the community to access emotional, psychological, and mental health support at individual, family, and community levels (psychosocial support).
- Tasks include:
  - Identify and select a Community HUB leader
  - Identify a suitable location and secondary location to act as a community HUB / community centre immediately post a disaster event
  - Understand the roles and responsibilities of the Red Cross, Vinnies, Disaster Relief Australia, other Community Groups, GIVIT, State and Federal Recovery and Funding Arrangements, and Local Government Relief and Recovery arrangements.
  - Understand and identify the location of the critical care members of the Community, and
  - Lead and interpret the needs and requirements of the community when outside assistance arrives.

**Economic** - The effects of a disaster on the economic environment can be classified in terms of direct and indirect impacts. The tangible impacts can usually be given a monetary value and may include loss of tourism, employment opportunities and reduction in cash flow for businesses. Each community has a business lead and chamber of commerce established. A community member from these groups is always very well connected and fully understands the community in which they live. A Community Hub with this type of leading community member is always a great asset to have.

- Tasks include:
  - Identify and understand the key economic drivers of the community. What's unique to this community and if its impacted how will this impact the community over the next 3, 6 months if lost or damaged?
  - Understand the State and Federal Recovery and Funding Arrangements.
  - [https://recovery.gov.au/?gclid=EAlaIQobChMI1NHI69b-9wIVtppmAh2AQA2wEAAAYASAAEgJtpvD\\_BwE&gclidsrc=aw.ds#/404](https://recovery.gov.au/?gclid=EAlaIQobChMI1NHI69b-9wIVtppmAh2AQA2wEAAAYASAAEgJtpvD_BwE&gclidsrc=aw.ds#/404)

**Environmental** – Impacts to the environment may include damage or loss of flora and fauna, poor air quality, reduced water quality, land degradation and contamination, or damage to heritage listed places. A representative from the community who understands these impacts and is willing to step forward and guide the Local Government as required.

- Tasks include:
  - Identify and understand the environmental impacts across the community
  - What do these impacts have on farming, businesses and or private landowners.
  - Understand localised flood mitigation options, bushfire mitigation strategies etc

**Building** - The effects of a disaster on the built environment often result in damage and disruption which inhibits the capacity of essential services and services such as housing, accommodation, education, and health facilities. A representative from the community (local builder, plumber etc) who understands these impacts and is willing to step forward and guide the Local Government as required.

- Tasks include:
  - What has been damaged or impacted in the community (Minor, Moderate Major).
  - Are there likely to be insurance issues?
  - Will outside contractors impact the community if utilised?
  - What building capabilities exists within the community?

**Roads and Transport** - The effects of a disaster on transport networks, including road, rail, aviation and maritime normally result in difficulty accessing communities and disruption to critical supply chains (both within and outside of the impacted area). Restoration of these networks, or the identification of alternatives, is a priority in disaster recovery. A representative from the community who understands these impacts and is willing to step forward and guide the Local Government as required.

- Tasks include:
  - What local roads, bridges and or access routes have been impacted?
  - What is the result of these impacts (can't access property, roads damaged, bridges damaged etc)?



## Group Activities

For the purpose of the Mogo Resilience Workshop no group activities were conducted.



## Utilising the DRA Resilience Framework




In the last decade, resilience has evolved from a specialist term used largely in materials science and environmental studies to become a concept employed frequently and passionately by policymakers, practitioners, and academics in various disciplines. The concept has become embedded in laws, government, doctrines, and plans, and universities across the world have established resilience centres, institutes, and research programs.


Within DRA, we believe a resilient community is one whose members are connected to one another and work together in ways that enable it to function in the face of stress and trauma. A resilient community has the ability to adapt to changes in the physical, social or economic environment, and the potential to learn from experience and improve over time. A resilient community can also be self-sufficient, at least for a time, if external assistance is limited or delayed

As communities are complex and dynamic social structures, levels of community resilience are not static. It is important that those utilising the concept of community resilience make efforts to regularly measure it.

The first step towards enhancing the resilience of a community involves understanding the community's strengths and vulnerabilities, as well as its physical characteristics (e.g., local infrastructure), procedural characteristics (e.g., disaster policies and plans) and social characteristics (e.g., level of community cohesion).

	<p><b>People</b> - The power to envision the future of the community and build its resilience resides with community members.</p>
<p><b>What does success look like</b></p>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>• We have access to people that can assist when required and provide situational awareness when we need it</li> <li>• We understand the weaknesses and vulnerabilities across our community</li> <li>• Our community understands and is involved in disaster risk management</li> <li>• Our community is at its strongest when we work together</li> </ul>
<p><b>Our commitments to the community</b></p>	<ul style="list-style-type: none"> <li>• We act with every possible kindness and humanity, and no matter what, hold ourselves to a higher standard. Be respectful: Be respected.</li> <li>• Swift mobilisation to rapidly deploy Disaster Relief Teams in the wake of a natural disasters to assist the community</li> <li>• Increase community awareness and preparedness for all hazards through community engagement</li> <li>• Show, through action, how the latent leadership and service potential of our nation's veterans and emergency service specialists can be harnessed to build disaster resilience and relief capability.</li> </ul>
	<p><b>Systems thinking</b> - Systems thinking is essential for understanding the complex, interrelated crises now unfolding and what they mean for our similarly complex communities.</p>
<p><b>What does success look like</b></p>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>• We know that beyond the next hill is a river and beyond the river another hill. Yet we will march undaunted until we reach those who need us.</li> <li>• We understand that the community is connected and or influenced by internal and external factors</li> <li>• We understand the Local economic activity, relationships among different</li> </ul>

	<p>social groups, local cultural patterns... they all influence the community from the inside out.</p> <ul style="list-style-type: none"> <li>The challenges we face are complex, we understand that we cannot approach them as if they were linear problems. Systems thinking helps us understand the complex crises before us.</li> </ul>
<b>Our commitments to the community</b>	<ul style="list-style-type: none"> <li>Identify and connect with change leaders in the NGO and disaster relief sectors to ensure we are constantly at the cutting edge of both technology, practice, and the community.</li> <li>The conduct of disaster risk mitigation and preparedness activities in Australia and overseas, particularly in under resourced and high-risk areas of operation.</li> <li>Recognised leader in spontaneous volunteer management throughout Australia and a proven track record of connecting businesses to communities through corporate volunteering.</li> </ul>
	<b>Adaptability</b> - A community that adapts to change is resilient. But because communities and the challenges we face are dynamic, adaptation is an ongoing process.
<b>What does success look like</b>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>Our disaster management systems are scalable to accommodate the future changes and risk.</li> <li>Our community looks to the future and continuous improvement.</li> <li>we take a proactive approach to resilience building, rather than a reactive one</li> </ul>
<b>Our commitments to the community</b>	<ul style="list-style-type: none"> <li>Operating within existing international disaster relief frameworks across the Asia Pacific Region, supported by established relationships with government, industry and local communities.</li> <li>We act without fear or favour in the best interests of the communities we serve and each other.</li> <li>we embrace a culture of ongoing improvement through regular monitoring and information sharing.</li> </ul>
	<b>Transformability</b> - Some challenges are so big that it's not possible for the community to simply adapt; fundamental, transformative changes may be necessary.
<b>What does success look like</b>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>We know that transformation must occur. Our ability to transform as a community will not be successful unless the community involved recognise the need for it.</li> <li>We will need options for change. New ideas for dealing with new situations will only be available if there is room for them to be developed and tested.</li> <li>Transformative change needs support from higher scales and also depends on having high levels of all types of capital—natural, human, built, financial, and social.</li> </ul>
<b>Our commitments to the community</b>	<ul style="list-style-type: none"> <li>We serve without expectation of personal gain, recognition or reward.</li> <li>Provide a steady-state engagement model that provides continuous touch points with our Tribe between disaster relief missions.</li> <li>Deploy highly trained personnel in the wake of natural disasters to deliver timely and effective disaster relief wherever and whenever it is needed.</li> </ul>
	<b>Sustainability</b> - Community resilience is not sustainable if it serves only us, and only now; it needs to work for other communities, future generations, and the ecosystems on which we all depend.
<b>What does success look like</b>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>Sustainability helps us understand in a more general sense our extremely complex relationship with the natural world, and the consequences of getting that relationship wrong.</li> <li>Identify adaptation opportunities following disasters and in anticipation of climate change</li> <li>We explore how our actions impact the biosphere, how the biosphere in turn impacts us, and how our actions need to change over the long term</li> </ul>
<b>Our commitments to the community</b>	<ul style="list-style-type: none"> <li>Promote a culture of creativity, continuous learning, a bias for action and trust over control.</li> <li>Ensure we have mechanisms to listen to the views of our stakeholders, communicate effectively and continuously learn to improve our performance.</li> <li>A world class provider of Remotely Piloted Aircraft capability, aerial damage assessment, mapping and Geographic Information Systems (GIS), in Australia and overseas.</li> </ul>

	<p><b>Courage</b> - As individuals and as a community, we need courage to confront challenging issues and take responsibility for our collective future.</p>
<p><b>What does success look like</b></p>	<p>We are resilient within a community when:</p> <ul style="list-style-type: none"> <li>• We know that we need to face problems head on. Resilience building makes us grapple with complex problems that don't have easy or obvious answers</li> <li>• We know it's hard enough to work on these issues as individuals and households; it's harder still to work on them as a community, with people who may see things differently.</li> </ul>
<p><b>Our commitments to the community</b></p>	<ul style="list-style-type: none"> <li>• We act without fear or favour in the best interests of the communities we serve and each other.</li> <li>• we embrace a culture of ongoing improvement through regular monitoring and information sharing.</li> <li>• Courage brings us back around to the first foundation, People, because it is the people of the community who will build resilience—and they are the ones who need courage for all the pieces of resilience building.</li> </ul>

## 5. Our recommendations

Only a small proportion of the Mogo community attended the DRA Resilience Workshop however it was clear that from those that did attend, the Mogo Community and its future is in good hands. During the workshop the discussion revolved around flood however there was a limited discussion with regards to fire. No other hazards were discussed. The following recommendations were identified:

1. Eurobodalla Shire Council makes representation to the NSW Flood Warning Consultative Committee (FWCC), Water NSW and the Bureau of Meteorology to have registered flood warning infrastructure installed in the upper parts of Cabbage Tree Creek.
2. Due to the likelihood of flash flooding in Cabbage Tree Creek, Eurobodalla Shire Council look to install two or three digital rain gauges within the upper realms of the Mogo Sub Catchment. This simple but effective flood infrastructure will assist greatly in community messaging and overall situation awareness across the area.
3. Install flood boards on Mogo Creek, Princess Hwy.
4. Eurobodalla Shire Council install locally within Mogo relevant flood totem icons that display:
  - Flood classifications of minor / moderate
  - Major flood levels (if available)
  - Peak levels of historic flood (noting the date of the flood)
  - Levels of local landmarks (such as the town bridges or the local post office steps).
  - Where a flood height relates to a particular level on the gauge, this value should also be clearly highlighted on the totem.
5. Eurobodalla community engages Disaster Relief Australia to conduct future scenario-based modelling exercises (wargaming) to achieve the following:
  - The establishment of a community group with capacity and motivation to drive disaster resilience in an enduring way.
  - Mapping community assets and infrastructure.
  - Relating flood impacts to the flood warning infrastructure and/or known flooding patterns.
  - Aligning community impacts to a flood classification and impacts to actions.
6. Use the outcomes of this scenario modelling and exercises to guide the development of community education and action campaigns.

7. That Eurobodalla Shire Council retains the services of DRA's Resilience Strategy Officers to ensure that outcomes identified in scenariomodelling above are implemented and enhanced over the long term.
8. The Eurobodalla Shire Council uses the Mogo Flood Resilience Assessment data provided in this Case Study to:
  - Undertake remediation of creek silting south of the Princes Highway Bridge.
  - Apply to Resilience NSW for infrastructure upgrades to the Princes Highway Bridge near the Tomakin Road Junction to mitigate the bridge as a choke point,
  - Conduct remediation of the culverts that drain the Mogo Business Centre to Cabbage Tree Creek.
9. The Eurobodalla Shire Council utilises the DRA Resilience Framework to measure the future success of the Mogo Community and the future relationship of DRA.

## 6. Your Feedback and what we learned

### Feedback (Internal only, we will delete this but just to inform us)

#### What do you think we could have improved?

Setting expectations, desired results. The big map really showed us where the problems were. It is such a great tool.

I only wish more of the community was here.

I loved it. Such a great way to show the community where their risks actually are.

When can we do another one. We should do another one for the entire Eurobodalla Shire.

#### What do you think we did well?

The big floor map was amazing

Giving everyone an opportunity to speak

Ideas to work together & always ask for help

The presentation was very professional, and the map was fantastic.

What an awesome day.

#### Did the exercise help you to understand how to build a resilience plan within your community?

I wish more of the community was here to see the real problems as they are laid out.

I think it really assisted the community to get a holistic view of the geographical area and the impact and development of disaster events.

Yes

Yes, some of us have spoken about forming a group

#### Please use this space to offer any further feedback on the event or content. Thank you!

A great day, very educational and enjoyable, a great way of bringing a community together in a purposeful manner.

The day was a great way to interact

The only thing that didn't happen was that we talked about the hub but never concluded with the formation of the group

So now I can't see anything furthermore happening

I think the big map gave some of us steppingstones to continue asking questions on why things are where they are after the fires & floods

## Quotes from the day.

Todd Burns Red Cross Recovery Officer

I came along to learn more about the Big Map Project and I found it a really interesting session and it's a great way of engaging the community in working out their risk and the risk to the community. I really recommend the community get involved and make the most of this opportunity to use the big map. It was a really fun day and a lot of great information came out of it.

Michael Ziggler Local Resident

I thought the DRA presentation was well presented and I hope for the future we can do something beneficial with the information

Linda Wilton Eurobodalla Shire Council

Just been to the Big Map exercise, Fabulous day, it gave me a real wealth of knowledge and unearthed a lot of things we need to think about holistically for a big picture solution and how we go about moving forward with the community. Great input from everyone and a really strong foundation to start with

Frank Ziegler Mogo RFS Captain

I attended the Big Map Exercise in Mogo today. I thought it was brilliant and I think a lot is going to come out of it in the future

## Where to from here?

The ACT Disaster Relief Team will continue to liaise with the community to identify a suitable project that we can help facilitate. Projects that are community led and spearheaded are more beneficial for all involved, engaged communities are more likely to be proactive, more likely to hold open, unemotional and ongoing discussion with key stakeholders about the requirements of their community, are more aware of those around them and the mental health issues within the community and give the community a feeling of ownership about where they live. A project of this nature will assist the whole community prepare for future events. By not only assisting physically but by building stronger community connections in calm times. By integrating the DRA Resilience framework and the measures we have identified as key performance indicators into the communities everyday thinking and decision making process, we assist Communities to be more aware of the risks they face and more self-reliant thus in turn building more resilient communities.