



# Flood Recovery Needs Assessment

2022



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Please note that this Needs Assessment does not include details of programs and projects that have been identified in response to the findings of this report.

# Executive Summary

**In the three years that followed the 2019 Black Summer Bushfires, the Nepean Blue Mountains region experienced heavy and persistent rain resulting in more than five flooding and extreme weather events. Compounded by the effects of COVID-19, the Nepean Blue Mountains region and its residents have been left devastated by the physical, social, and psychological destruction.**

The Department of Health and Aged Care (DoHAC) and the NSW Ministry of Health (MoH) have delivered funding packages to Primary Health Networks (PHNs) to support communities through their recovery process, build resilience and commission local mental health services.

In response to receiving these funding packages, the Nepean Blue Mountains Primary Health Network (NBMPHN) conducted extensive stakeholder consultations and background research to identify areas of need and opportunity.

Between 2019 and 2022, approximately 1,500 homes in the Nepean Blue Mountains region, primarily the Hawkesbury Local Government Area (LGA), were damaged by flood waters. Some residents have experienced long periods of displacement from their homes, work, and schools. Separation from family members and regular life has left many residents with increased anxiety levels, heightened by the impacts of COVID-19 and continual bad weather. Residents that have been able to return home, report that the extensive damage to their homes and the debris on their property and surrounding areas are a constant reminder. Widespread damage has left residents with long delays for services such as curbside pickup and trades, resulting in residents undertaking their own repairs. Water damage to homes has caused increased mould growth and subsequently residents are concerned about mould exposure.

The increased need has been felt by local charities, with supplies and donations difficult to obtain for both residents and charities themselves. Residents are reporting difficulty with service navigation and accessing the available support.

Increased anxiety surrounding weather and enduring mental health issues relating to the effects of flooding has seen an increase in the uptake of NBMPHN Psychological Therapy Services (PTS). However anecdotal evidence suggests that this service is still underutilised, and rates of mental health issues are a lot higher as trauma affected individuals don't always identify with having 'traditional' mental health issues, so do not seek out 'traditional' support. The Hawkesbury region has a high number of culturally and linguistically diverse agricultural workers, and current mental health supports are only provided through a translator. Further, teachers are reporting increased mental health issues and absenteeism in students.

The Nepean Blue Mountains region is a geographically diverse area, expanding over 9,000 km and home to 385,944 diverse residents. Inherently, the range of needs are vast. The Flood Recovery Needs Assessment provides a systematic analysis of the health and service needs of our local flood affected population resulting in identified gaps and relative priorities. Key focus areas identified throughout the analysis include:

- Purpose built and community-led mental health supports and recovery events.
- Building capacity in informal community leaders and volunteers.
- Extension for Outreach Wellbeing Practitioners program.
- The need for culturally and linguistically diverse (CALD) mental health practitioners and supports.
- Youth mental health.
- Increased awareness of formal and informal mental health supports available.

# Section 1 – Narrative

## Introduction

The Flood Recovery Needs Assessment encompasses the health and service needs of the Nepean Blue Mountains region in relation to flood recovery. The Needs Assessment has been prepared in response to the funding packages provided to Wentworth Healthcare, provider of the Nepean Blue Mountains Primary Health Network (NBMPHN) from the Commonwealth Department of Health and Aged Care (DoHAC) and NSW Ministry of Health (MoH).

The MoH funding package is intended to support communities through their recovery process and to build resilience, in response to the severe weather and flooding events across southeast Queensland and New South Wales. PHNs are expected to coordinate the mental health response through working with other state, local and non-government agencies to ensure a coordinated and comprehensive effort that meets the needs of the communities they service.

Funding from DoHAC is intended to support PHNs to commission local mental health services to meet the immediate psychological needs of communities, and support communities through the recovery process. Additionally, the funding is intended to support young people through local headspace services.

Funding from MoH and DoHAC was provided to establish a community Wellbeing and Resilience Grants program for Non Government Organisations (NGOs) or other community organisations and to provide service navigation support.

The Needs Assessment consists of two key components – a systematic **analysis** of the health and service needs of our local flood affected population, and an **assessment** of the gaps and relative priorities. This approach will inform the expenditure of this funding package to ensure the funds meet the needs of the flood impacted communities.

## NBMPHN Regional Profile

The Nepean Blue Mountains is a geographically diverse region and expands across 9,179km<sup>2</sup><sup>(1)</sup> covering four LGAs: Blue Mountains, Hawkesbury, Penrith, and Lithgow. The Nepean Blue Mountains has a population of 385,944<sup>(1)</sup> which is expected to increase by 15.9% to 452,747 people in 2041. Of this population, 4.7% are Aboriginal and Torres Strait Islander peoples which is higher than the NSW state average of 3.4%. People aged 65 years and older comprise 15.86% and this is expected to rise to 22.3% by 2041. The NBM region also demonstrates significant cultural diversity, in particular the Penrith LGA. In 2021, 23.3% of people residing in Penrith LGA were born overseas and 17.6% spoke a language other than English at home<sup>(2)</sup>.

Both Hawkesbury and Penrith LGAs straddle the Hawkesbury-Nepean River system. The Hawkesbury-Nepean catchment covers over 2.2 million hectares<sup>(3)</sup> and over 70% of the catchment consists of mountain terrain<sup>(4)</sup>. The river flows from Goulburn to Broken Bay, at a length of approximately 470km, making it the longest coastal catchment in NSW<sup>(4)</sup>.

The risk of flooding in the Hawkesbury – Nepean Valley has been described as the highest single flood exposure in NSW, and possibly Australia<sup>(14)</sup>. The risk of flooding is compounded by several factors including the natural topography of the region, climate change and the increasing population. Additional risk factors include the challenges for evacuation and the low levels of flood awareness in the region<sup>(14)</sup>. Flooding in the region is exacerbated by the ‘bathtub effect’, depicted in Figure 1. Large flows of water converge into the main river system through 5 tributaries. The river system is narrow, constrained by downstream gorges, causing floodwaters to back up across the broad floodplains in the Penrith, Richmond and Windsor regions<sup>(14)</sup>.

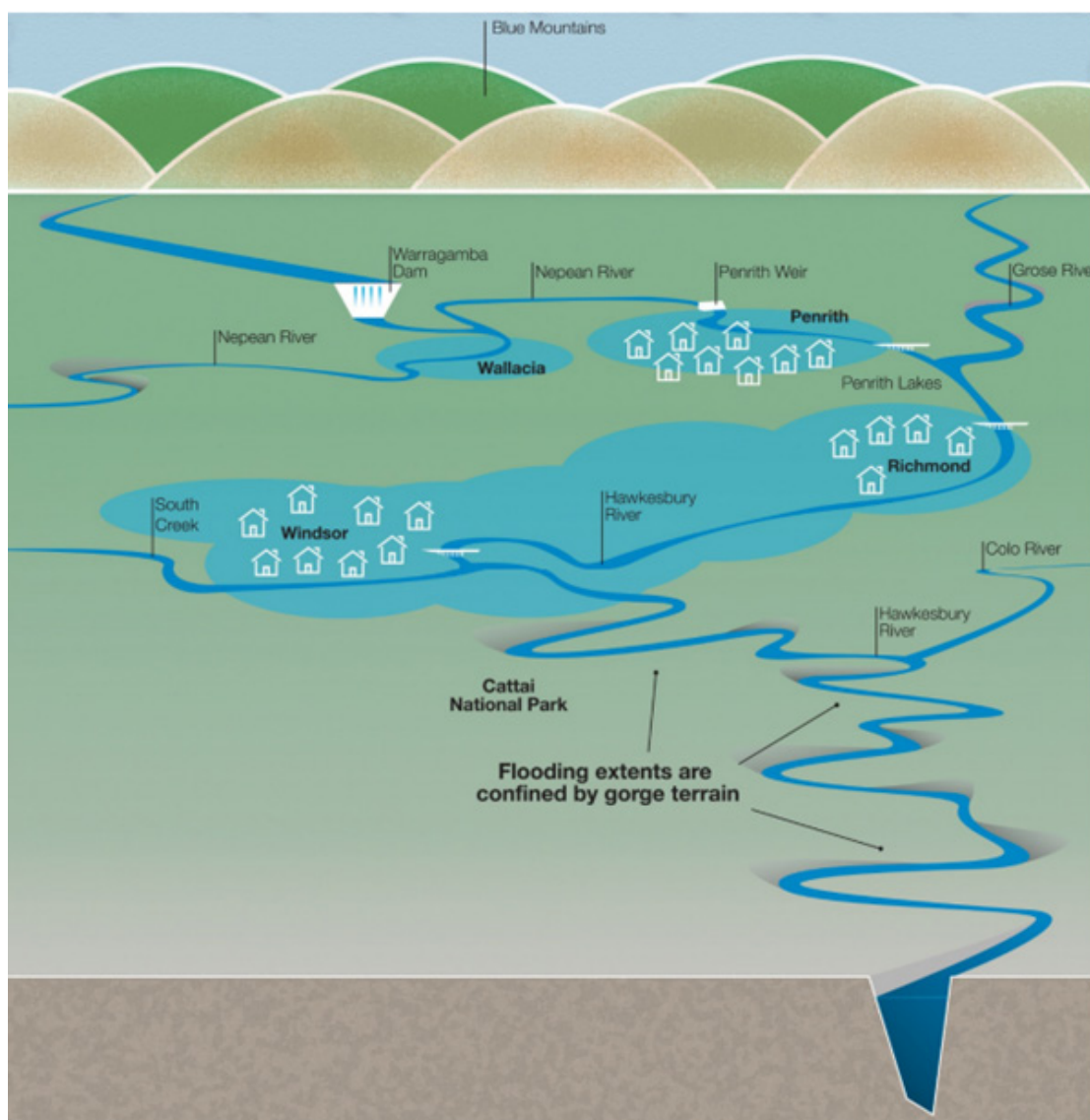


Figure 1<sup>(14)</sup>

The Australian Disaster Resilience Index ranks regions within Australia and their ability to respond and cope throughout and after a disaster:

- **High Disaster Resilience:** communities in areas of high disaster resilience have enhanced capacity to use available resources to cope with adverse events. Factors contributing to high disaster resilience may include employment, education, income, good access to or provision of resources and services and strong community cohesion<sup>(72)</sup>.
- **Moderate Disaster Resilience:** communities in areas of moderate disaster resilience have some capacity to use available resources to cope with adverse events and some capacity to adjust to change through learning, adaptation, and transformation. This is often associated with moderate levels of economic capital, moderate provision of and access to services and moderate community cohesion<sup>(72)</sup>.
- **Low Disaster Resilience:** Communities in areas of low disaster resilience may be limited in their capacity to use available resources to cope with adverse events. Limitations to disaster resilience may be contributed by entrenched social and economic disadvantage, less access to or provision of resources and services and lower community cohesion.



**The Hawkesbury LGA** has an estimated population of 67,581 people, with a median age of 37, and covers 2,776 square km, with a population density of 24.35 persons per square km<sup>(5)</sup>. According to the 2016 Socio-Economic Indexes for Australia (SEIFA) the Hawkesbury LGA is scored 9 (out of 10) indicating relative advantage<sup>(5)</sup>. 8.7% of the Hawkesbury population is receiving age pension payments, lower than NSW's rate (9.7%) and 2.5% are receiving disability support payments, lower than NSW (2.9%)<sup>(6)</sup>. 5.1% of Hawkesbury residents are receiving Commonwealth rent assistance, lower than NSW (5.5%)<sup>(6)</sup>.

The suburbs in the Richmond – Windsor, Pitt Town – McGrath's Hill, and North Richmond – Kurrajong Heights – Ebenezer area of the Hawkesbury LGA have been assessed by the Australian Disaster Resilience Index as having a moderate capacity for disaster resilience<sup>(72)</sup>, whilst the Bilpin – Colo – St Albans regions have been assessed as having low capacity for disaster resilience<sup>(72)</sup>.

There are 7,115 businesses registered in the Hawkesbury LGA, with 6,967 (97.9%) considered to be small businesses, employing less than 20 people<sup>(6)</sup>. The top employing industries for Hawkesbury LGA are construction, healthcare and retail trade<sup>(6)</sup>. The highest value agricultural commodities are nurseries, cut flowers or cultivated turf (cultivated turf), vegetables (mushrooms), vegetables (other)<sup>(6)</sup>.

The Hawkesbury River flows through suburbs such Londonderry and Pitt Town, and acts as a border between North Richmond and Richmond, and Windsor and Wilberforce. Tributaries flow in through Grose Vale, Upper Colo through to Lower Portland, and Upper Macdonald, St Albans, and Lower Macdonald. Figure 2 depicts the Hawkesbury LGA borders and the Hawkesbury River system and its tributaries (in blue).



Figure 2<sup>(5)</sup>

**The Penrith LGA** has an estimated population of 219,149 people with a median age of 34 and covers a much smaller area than the Hawkesbury LGA, at 404.8 square km, however Penrith LGAs population density is significantly higher with 541.4 persons per square km<sup>(7)</sup>. According to the 2016 SEIFA scores<sup>(8)</sup>, Penrith LGA is scored 7 (out of 10) indicating relative disadvantage. 8% of the population are receiving age pension payments, lower than NSW's rate (9.7%) and 2.9% of the population are receiving disability support payments, matching NSW (2.9%)<sup>(9)</sup>. Additionally, 5.9% of Penrith's population are receiving Commonwealth rent assistance, higher than NSW (5.5%)<sup>(9)</sup>.

There are 14,685 registered businesses in Penrith LGA with 14,310 (97.4%) being classified as small business, employing less than 20 people<sup>(9)</sup>. The top employing industries include construction, healthcare and retail trade<sup>(9)</sup>. The highest value agricultural commodities are livestock products (eggs), livestock slaughtered (poultry) and vegetables (other)<sup>(9)</sup>.

Within the Penrith LGA, areas around Lethbridge Park have been assessed by the Australian Disaster Resilience Index as having a low capacity for disaster resilience<sup>(72)</sup>, whilst the Kingswood – Werrington, Penrith, St Marys and Yarramundi – Londonderry regions has been assessed as having moderate capacity for disaster resilience<sup>(72)</sup>, and the remaining suburbs have been assessed as having a high capacity for disaster resilience<sup>(72)</sup>.

The Nepean River system mostly flows along the Western border of Penrith LGA and runs through high population density areas such as Leonay, Emu Plains, Emu Heights, and Mount Riverview. Figure 3 depicts the Penrith LGA borders and the Nepean River system (in blue).

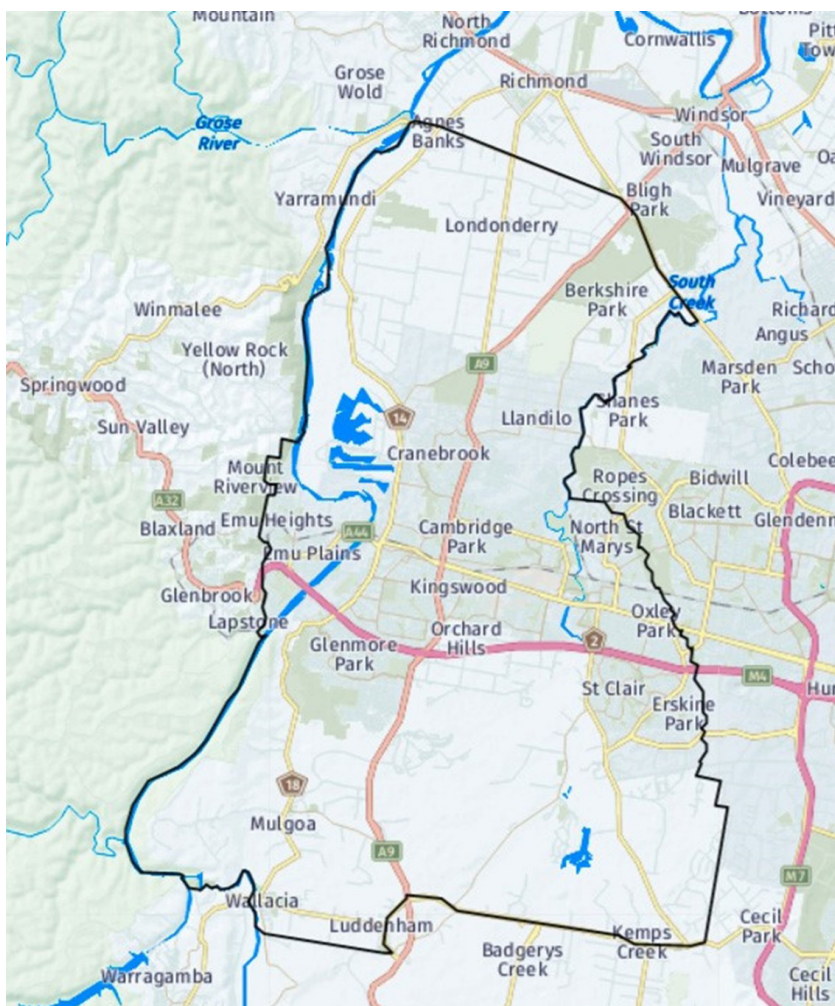


Figure 3<sup>(7)</sup>

**The Lithgow LGA** has an estimated population of 20,854 with a median age of 45, and covers 4,567 square km, with the region's lowest population density at 4.57 people per square km<sup>(10)</sup>. According to the 2016 SEIFA scores, Lithgow LGA is scored 2 (out of 2) indicating considerable disadvantage<sup>(7)</sup>. 15.9% of the population is receiving age pension payments, higher than the NSW rate (9.7%) and 5.5% of residents are receiving disability support payments, much higher than the NSW rate (2.9%)<sup>(11)</sup>. 6.3% of residents receive Commonwealth rent assistance payments, higher than NSW's rate (5.5%)<sup>(11)</sup>.

Lithgow LGA has 1,296 registered businesses, of which 1,272 (98.1%) are considered small businesses, employing less than 20 people<sup>(11)</sup>. The top employing industries are healthcare, retail trade and public administration and safety<sup>(11)</sup>. The highest value agricultural commodities in the region are livestock slaughtered (cattle and calves), livestock products (eggs) and livestock slaughtered (poultry)<sup>(11)</sup>.

The outer Lithgow region of the Lithgow LGA has been assessed by the Australian Disaster Resilience Index as having a moderate capacity for disaster resilience<sup>(72)</sup>, whilst Lithgow city has been assessed as having low capacity for disaster resilience<sup>(72)</sup>.

**The Blue Mountains LGA** has an estimated population of 78,360 with a median age of 44 and covers 1,432 square km with a population density of 54.74 persons per square km<sup>(12)</sup>. According to the 2016 SEIFA scores Blue Mountains LGA scored a 9 (out of 10), indicating relative advantage<sup>(12)</sup>. 12% of Blue Mountains LGA residence receive age pension payments, higher than the NSW rate (9.7%) and 2.8% of residents receive disability support payments, slight lower than the NSW rate (2.9%)<sup>(13)</sup>. 4.8% of residents receive Commonwealth rent assistance, lower than the NSW rate (5.5%)<sup>(13)</sup>.

Blue Mountains LGA has 5,620 registered businesses, 5,542 (98.6%) are classified as small businesses with less than 20 employees<sup>(13)</sup>. The top employee industries are education, health care and public administration and safety<sup>(13)</sup>. The highest value agricultural commodities in the Blue Mountains LGA are undercover nurseries, outdoor nurseries, and orchard fruit (apples)<sup>(13)</sup>.

The Springwood-Winmalee area of the Blue Mountains LGA has been assessed by the Australian Disaster Resilience Index as having a high capacity for disaster resilience<sup>(72)</sup>, whilst the Katoomba-Leura regions has been assessed as having moderate capacity for disaster resilience<sup>(72)</sup>.



# Background

On the back of Black Summer Bushfires, which affected Blue Mountains, Hawkesbury and Lithgow LGAs in December 2019/January 2020, continued and concentrated rain across the Hawkesbury-Nepean catchment resulted in several major floods over the next three years. On top of the COVID-19 pandemic these disaster events had a particularly devastating impact on the Hawkesbury and Penrith LGAs.

The Hawkesbury-Nepean catchment is comprised of several sub-catchments. The largest is the Warragamba sub-catchment, which accounts for 71% of the total catchment to Windsor, followed by the upper Nepean sub-catchment (14%)<sup>(14)</sup>. Despite draining a high rainfall area, the Grose River sub-catchment only counts for 5%, as do the South and Eastern creeks sub-catchments between the junction of the Nepean and Warragamba rivers and Windsor<sup>(14)</sup>.

The Bureau of Meteorology uses three levels to define flooding: minor, moderate or major<sup>(15)</sup>. Each of these classifications is defined by the water level and the impact of the flooding on local communities.

**Minor flooding** is defined as causing inconvenience. Low-lying areas adjacent to water courses are inundated. Minor roads may be closed, and low-lying bridges may be submerged. Backyards, building below floor level, pedestrian and bike paths may be affected. Removal of stock and equipment in rural areas may be necessary<sup>(15)</sup>.

**Moderate flooding** will see the area of flooding to be more extensive. In addition to the above, main traffic routes may be impacted and buildings above floor level may experience flooding. Evacuation of flood affected areas may be necessary and removal of stock will be required<sup>(15)</sup>.

**Major flooding**, in addition to the above, will see extensive rural and/or urban areas are inundated. Many buildings above floor level will be impacted and major rail and traffic routes will be closed. Major flooding will leave properties and towns to be isolated and utility services may be affected. Evacuation of flood affected areas will be likely<sup>(15)</sup>.

## February 2020

In the first moderate flood experienced by the region since the early 1990s, the February 2020 flood was caused by intense rainfall across the Hawkesbury-Nepean catchment<sup>(16)</sup>. Daily rainfall, in excess of 200mm, saw river heights rise rapidly, peaking at 9.3m above sea level at Windsor<sup>(16)</sup> and 11.4m at North Richmond<sup>(17)</sup>. Four days of significant rain, from Thursday 6 to Sunday 9 February led to the Yarramundi, North Richmond, and Windsor bridges, along with several local roads to be submerged and closed<sup>(16)</sup> for approximately 3 days. All ferry services on the Hawkesbury River were suspended.

Flood evacuation orders were issued on Sunday 9 February for low lying areas including Pitt Town Bottoms, Richmond Lowlands, and Gronos Point<sup>(16)</sup>. Whilst mostly agricultural lands, evacuation orders were issued due to concerns around potential isolation and loss of utility services. Damage to property was minimal, however residents of Upper Colo and Colo Heights noted that flooding in the area caused more damage than the recent bushfire<sup>(18)</sup>.

At the beginning of the February 2020 heavy rainfall event, Warragamba Dam was at 43% capacity, however within 3 days, dam levels had risen to 69% and later reaching 80%<sup>(16)</sup>. Warragamba Dam's capacity to capture approximately 750 gigalitres of floodwater significantly lessened the impact of the flooding downstream. Flooding was largely driven by smaller catchments such as the Grose River, South Creek, and the Nepean River<sup>(16)</sup>, which pose significantly less risk to communities. The flood in February 2020 is described as having a 20% (1 in 5) chance per year or being a once in 80-year event<sup>(16)</sup>.

## March 2021

For the second time in as many years, the Hawkesbury-Nepean catchment experienced flooding. Heavy and persistent rainfall, against a backdrop of preceding wet conditions associated with a La Niña which developed in the second half of 2020, left soil saturated and water storage levels near capacity. Despite being a comparable rain event, these factors contributed to flooding being more widespread and severe than the February 2020 floods<sup>(19)</sup>. The Bureau of Meteorology issued the first Flood Watch for the Hawkesbury-Nepean system on Thursday 18 March 2021<sup>(14)</sup>.

Prior to the March 2021 floods, Warragamba Dam was drawn down to 1m below Full Supply Level (FSL), which corresponds to 96.3% capacity. Heavy inflows meant that by 3pm 20 Saturday March the Dam was back to FSL<sup>(14)</sup>.

At Penrith, flood waters reached 9.99m on Sunday 21 March, the highest level since 1925<sup>(14)</sup>. Whilst the water was mostly contained, floodwaters approached riverside homes in Regentville, reached River Road and backwater flooding impacted roads near Peach Tree Creek in Penrith.

At North Richmond, river heights rose quickly on Saturday 20 into Sunday 21 March, peaking at 14.38m on Sunday afternoon<sup>(14)</sup>, almost 3m higher than 2021.

Windsor experienced the first major flood since 1990. Two peaks can be observed at Windsor, the first at 12.66m on Monday 22 March, and then 12.93m on Wednesday 24 March. The major flood level was exceeded for nearly 3 days at Windsor. The last flood of a similar magnitude was over 30 years ago in August 1990. Census data indicate that around one-third of the floodplain population turns over every 5 years. Reports give the impression that many of the impacted homeowners were new residents who were not prepared for flooding of this scale<sup>(14)</sup>.

It is estimated that 40 dwellings, and a further 20 commercial/industrial buildings<sup>(14)</sup> were impacted in Penrith LGA. In the Hawkesbury LGA, 410 dwellings, 480 manufactured homes in caravan parks, and 280 commercial/industrial buildings<sup>(14)</sup> were impacted, amounting to 49.3% of all dwellings/buildings impacted by this flood event. Comparisons to the 2019 bushfires, where 19 homes were lost and a further 13 damaged in the Hawkesbury LGA, shows the magnitude of destruction caused by flooding<sup>(62)</sup>.

The SES reported that they received 677 requests for assistance from Hawkesbury residents, of which 109 were for flood rescue, 125 for evacuation and 103 for resupply<sup>(14)</sup>. Penrith LGA residents lodged 149 requests for assistance, including 5 requests for flood rescue, 5 for evacuation and the remaining classified as miscellaneous<sup>(14)</sup>. 5 evacuation centres were established in response to the flood event, 2 were established in our region. The Richmond Club evacuation centre had 103 registrations and the North Richmond Community Centre had 102 registrations<sup>(14)</sup>.

Major roads and bridges across the Hawkesbury River were flooded for over 6 days<sup>(14)</sup>. The newly built Windsor Bridge, whilst higher than the old Windsor Bridge (7.2m), still experienced flooding due to the sloping deck which aligns with the natural ground level at the Wilberforce end. In addition, flooding at Colo River and a landslide on Bells Line of Road, isolated the North Richmond side of the bridge for a prolonged period. Communities in the Lower Hawkesbury, Colo and Macdonald Valley were isolated for more than a week and experienced power outages and disrupted communications. Megalong Valley also became isolated after a landslip on Megalong Road cut off road access for residents, businesses and tourists<sup>(20)</sup>. Blue Mountains City Council organised for a shuttle to move those who had become stranded after they make their way out on foot<sup>(20)</sup>.

Turf and vegetable farmers were among the most impacted businesses in the region. 17 landholders in the Hawkesbury LGA responded to a survey from Agricultural and Animals Services, and whilst a low representation of regional landholders, it was estimated that these respondents suffered a combined loss of \$7.7million<sup>(14)</sup>, with horticulture sustaining \$7.1million in losses<sup>(14)</sup>. A separate assessment of the damages sustained by local turf farms in the region, estimates a loss of 86 hectares at a value of \$86 million<sup>(14)</sup>.

The National Recovery and Resilience Agency released the following financial figures relating to Relief and Recovery Support payments approved for Nepean Blue Mountains residents for February and March 2021 floods and storms:

LGA	Payment	Applications Approved	Applications Approved \$
<b>Penrith (9)</b>	Australian Government Disaster Recovery Payments (AGDRP)	15,556	\$19,072,800
	Disaster Recovery Allowance (DRA)	21	\$67,112
	Primary Producer Grants	<5	<\$300,000
	Small Business Grants	95	\$1,325,792
<b>Hawkesbury (6)</b>	AGDRP	6401	\$7,542,20
	Concessional loans	<5	\$390,000
	DRA	363	\$1,260,440
	Primary Producer Grants	129	\$8,004,057
	Small Business Grants	329	\$6,108,478
<b>Lithgow (11)</b>	AGDRP	869	\$1,066,400
	DRA	<20	<\$20,000
	Primary Producer Grants	10	\$499,190
	Small Business Grants	9	<\$200,000
<b>Blue Mountains (13)</b>	AGDRP	3,308	\$3,971,400
	DRA	<20	\$62,664
	Primary Producer grants	<5	<\$300,000
	Small Business Grants	41	\$497,815
<b>NBM Region Total<sup>1</sup></b>		<b>27,186</b>	<b>\$43,46,148</b>

## March 2022

In depth analysis of the impacts and costs of all three 2022 floods have not been fully realised.

NSW experienced another heavy rainfall event starting on 22 February<sup>(21)</sup>. On 1 March the Bureau of Meteorology issued a flood watch for the Hawkesbury-Nepean River, and the Colo-Macdonald River. An East Coast Low was predicted to form off the coast and cause heavy to torrential rain impacting the Sydney catchment regions<sup>(22)</sup>. The Bureau of Meteorology also noted that catchments remain wet, with many dams near capacity.

On 2 March, Bligh Park, Agnes Banks, Ebenezer, Windsor, Pitt Town, Richmond Lowlands, Freemans Reach and Oakville received evacuation orders. Followed by parts of North Richmond, Mulgrave and Vineyard on 3 March, and Lower Portland on the 4 March. Yarramundi, North Richmond and Windsor bridges closed. Floodwaters peaked at 13.74m on the 9th of March in Windsor where the bridge was closed for 11 days. Floodwaters peaked at 13.93m in North Richmond, where the bridge was closed for 10 days. It was reported that 627 homes in the Hawkesbury were damaged, 164 of which were uninhabitable, and an additional 8 homes were destroyed<sup>(21)</sup>. As the water subsided all evacuated areas were issued Return with Caution notifications, with the final area allowed to return on 14 March.

<sup>1</sup> Figures are approximate due suppression rules.

<sup>2</sup> Figures are approximate due to suppression rules.



From November 2021 to February 2022, 148 residents and businesses have registered for flood related enquiries or to receive updates, of these approximately 10% have been referred to Legal Aid for reject claims and insurance issues<sup>(23)</sup>.

The National Recovery and Resilience Agency released the following financial figures relating to Relief and Recovery Support payments approved for NBM residents for February and March 2022 severe weather and flooding:

LGA	Payment	Applications Approved	Applications Received	Approval Rate <sup>2</sup>	Applications Approved \$
<b>Penrith (9)</b>	AGDRP	49,410	58,483	84.49%	\$56,826,200
	DRA	642	1005	63.88%	N/A
	Primary Producer Grants	10	46	21.74%	<\$300,000
	Small Business Grants	116	747	15.53%	\$1,662,748
<b>Hawkesbury (6)</b>	AGDRP	16,639	21,442	77.60%	\$18,943,800
	DRA	1,601	2,066	77.49%	N/A
	Primary Producer Grants	99	158	62.66%	\$4,776,007
	Small Business Grants	326	736	44.29%	\$4,929,308
<b>Lithgow (11)</b>	AGDRP	1,095	1,456	75.21%	\$1,295,600
	DRA	<20	25	80.00%	N/A
	Primary Producer Grants	<5	10	50.00%	N/A
	Small Business Grants	<5	39	12.82%	<\$200,000
<b>Blue Mountains (13)</b>	AGDRP	11,346	14,529	78.09%	\$12,948,400
	DRA	163	230	78.87%	N/A
	Primary Producer grants	0	0	0%	\$0
	Small Business Grants	30	118	25.42%	\$335,084
<b>NBM Region Total<sup>3</sup></b>		<b>81,507</b>	<b>101,090</b>	<b>80.63%</b>	<b>\$102,217,147</b>

## April 2022

Three weeks after the residents were able to return to their flood impacted residences, the Bureau of Meteorology issue a Flood Watch on 5 April reporting that heavy rain was expected to develop 6-7 April<sup>(24)</sup>. Renewed flooding saw floodwaters in Windsor peak at 9.07m, on 9 April where the bridge was closed for 30 hours. Floodwaters in North Richmond reached 10.13m on 9 April, and the bridge was closed for 2.5 days. For the duration of the flooding Yarramundi bridge was closed and reopened on 11 April<sup>(73)</sup>.

Portland SES Unit completed 47.5 hours of tasks in the past three months including fallen trees and flooded roads in Glen Davis, Upper Turon, Megalong Valley, Hartley, and Wallerawang. Additionally, Portland SES completed supply drops to Wallerawang<sup>(23)</sup>.

<sup>3</sup> Figures are approximate due to suppression rules.

## July 2022

On 2 July, the SES bulletin, reported that a surface trough and developing East Coast Low was producing heavy rainfall over the Hawkesbury-Nepean Valley and would continue into the coming week<sup>(25)</sup>. The SES also reported that high dam levels and significant rain could produce flooding along the Nepean and Hawkesbury rivers. Over the next 24 hours flood waters rose rapidly. On 3 July the Windsor, North Richmond and Yarramundi bridges were inundated and subsequently closed. Evacuation orders were issued for South Windsor, McGraths Hill and Freemans reach on 3 July, followed by low lying areas of Wilberforce, including the Caravan Park on 4 July, Central, Lower and Upper Macdonald, St Albans on 5 July.

Flood waters peaked at 13.9m<sup>(26)</sup> in Windsor on 5 July, in the highest recording since 1978<sup>(27)</sup>. North Richmond peaked at 14.19m on 5 July, 0.19m lower than the March 2021 floods. Residents of Yarramundi, Colo and Windsor were advised to return with caution on the 8 July, followed by Agnes Banks and Wilberforce on the 9 July and Macdonald Valley on the 10 July.

The National Recovery and Resilience Agency released the following financial figures relating to Relief and Recovery Support payments approved for NBM residents for severe weather and flooding 27 June onward:

LGA	Payment	Applications Approved	Applications Received	Approval Rate <sup>4</sup>	Applications Approved \$
<b>Penrith (9)</b>	AGDRP	41,777	66,776	62.56%	\$48,446,400
	DRA	269	1,367	19.68%	\$200,352
<b>Hawkesbury (6)</b>	AGDRP	14,937	26,760	55.82%	\$17,089,400
	DRA	821	3,511	23.38%	\$530,563
<b>Lithgow (11)</b>	AGDRP	2,252	3,889	57.91%	\$2,639,000
	DRA	<20	57	35.09%	<\$20,000
<b>Blue Mountains (13)</b>	AGDRP	7,559	11,438	66.09%	\$8,597,800
	DRA	41	217	18.89%	\$28,303
<b>NBM Region Total<sup>5</sup></b>		<b>67,676</b>	<b>114,015</b>	<b>59.36%</b>	<b>\$77,551,818</b>

## October 2022

In August 2022, the SES issued a statement warning communities in NSW to be prepared for heightened risks of severe weather and above average rainfall throughout September and November<sup>(28)</sup> with flooding in the Hawkesbury-Nepean region to be expected during October. Initial flood warnings were issued by The Bureau of Meteorology on 4 October<sup>(29)</sup>. Macdonald Valley was advised to prepare to isolate on 8 October, followed by Gronos Point and Upper Colo on the 9 October. Pitt Town Bottoms and low-lying areas of Agnes Banks were advised to prepare to evacuation 9 October. However, most of these warnings were scaled back to a reduced threat – return with caution on the 10 October.

Expected flooding did not come to fruition with only Yarramundi bridge closing for 1.5 days, peaking at 8.35m. North Richmond peaked on the 9 October at 8.1m coming almost in line with the deck height at North Richmond bridge, but no closure was experienced, despite the July closure once floodwaters reached 8.14m. Windsor peaked at 7.38m on 9 October.

<sup>4</sup> Figures are approximate due to suppression rules.

<sup>5</sup> Figures are approximate due to suppression rules.

<sup>6</sup> Total applications received for 2021 AGDRP and DRA is not known.

<sup>7</sup> DRA total \$ not available for February-March 2022

Total of the investment by The National Recovery and Resilience Agency relating to Australian Government Disaster Recovery Payments (AGDRP) and Disaster Recovery Allowance (DRA) from February 2021, as at 2 August 2022:

LGA	Population	Total Applications Approved	Total Applications Received <sup>6</sup>	Total Applications Approved \$ <sup>7</sup>	% Total Population with Approved Application	Average \$ per Approved Applicant
<b>Penrith (9)</b>	219,149	92,098	143,208	\$124,612,864	42%	\$1,353.00
<b>Hawkesbury (6)</b>	67,581	40,762	60,543	\$37,824,203	60%	\$927.90
<b>Lithgow (11)</b>	20,854	4,276	6,316	\$5,041,000	20.5%	\$1,178.90
<b>Blue Mountains (13)</b>	78,360	22,437	29,742	\$25,608,567	28.6%	\$1,141.35
<b>NBM Region Total<sup>8</sup></b>	<b>385,944</b>	<b>159,573</b>	<b>239,809</b>	<b>\$193,086,634</b>	<b>41.4%</b>	<b>\$1,210.00</b>

Total of the investment by The National Recovery and Resilience Agency relating to Primary Producer Grants and Small Business Grants from February 2022, as at 2 August 2022:

LGA	Population	Total Applications Approved	Total Applications Received <sup>9</sup>	Total Applications Approved \$ <sup>10</sup>	% Total Population with Approved Application	Average \$ per Approved Applicant
<b>Penrith (9)</b>	14,685	226	893	\$3,588,540	1.50%	\$15,878.50
<b>Hawkesbury (6)</b>	7,115	883	1,352	\$23,817,850	12.41%	\$26,973.78
<b>Lithgow (11)</b>	1,296	24	68	N/A	1.85%	N/A
<b>Blue Mountains (13)</b>	5,620	76	164	\$1,132,899	1.35%	\$14,906.57
<b>NBM Region Total<sup>13</sup></b>	<b>28,716</b>	<b>1,209</b>	<b>3,686</b>	<b>\$28,541,766</b>	<b>4.21%</b>	<b>\$23,607.75</b>

LGA	Total Relief and Recovery Support Payments \$ Issued from February 2021
<b>Penrith (9)</b>	\$128,201,404
<b>Hawkesbury (6)</b>	\$61,642,053
<b>Lithgow (11)</b>	>\$5,041,000
<b>Blue Mountains (13)</b>	\$26,741,466
<b>NBM Region Total<sup>8</sup></b>	<b>&gt;\$221,624,923</b>

8 Figures are approximate due to suppression rules.

9 Total applications received for 2021 AGDRP and DRA is not known.

10 DRA total \$ not available for February-March 2022

11 Unable to calculate total amount approved due to suppressed rules.

12 Unable to calculate total amount approved due to suppressed rules.

13 Figures are approximate due to suppression rules.



# Summary of the process

The health and service needs analysis component of this needs assessment involved two key processes:

## Data collection and analysis

A wide variety of literature was analysed for the Flood Recovery Needs Assessment including:

- Mental Health Reports
- SES Bulletins
- Infrastructure NSW Reports
- Parliamentary Reports
- News Articles
- Research Reports

## Consultations with key stakeholders

The NBMPHN Community Recovery team relies on several important Recovery Service and Support stakeholders for 'on the ground' feedback on the impact of the recent floods. The following stakeholders have provided invaluable input into Wentworth Healthcare flood recovery activities:

- Disaster Recovery on Wheels Meetings
- Nepean Blue Mountains Local Health District Disaster Mental Health Clinicians
- Peppercorn Recovery Support Service
- Hawkesbury City Council Recovery Team
- Penrith City Council Recovery Staff
- Gateway Family Services Wellbeing Practitioners
- Red Cross Recovery Support Staff

Community and stakeholder consultations were conducted from April 2022 to March 2023. Consultations were held with stakeholders, who were already working in disaster recovery and with whom the Community Recovery team have pre-existing relationships with through drought and bushfire recovery work in the Hawkesbury LGA, and new relationships were formed within the Penrith LGA. More than 50 informal and formal consultations were carried out with:

- Disaster Recovery on Wheels
- Gateway Family Services – Step by Step Wellbeing Workers
- Community Recovery Workers – Hawkesbury City Council
- Community Development Workers – Lithgow City Council
- Sustainability Team – Penrith City Council
- NBMLHD Mental Health Disaster Recovery Clinician and School Link Coordinator
- Lifeline Central West – CEO
- Community Development Worker – Habitat for Humanity
- Senior Psychologists and School Counsellors
- Year Advisor – Hawkesbury High School
- Wellbeing Coordinator – Colo High School
- SES Controller and NSW Community Engagement Officer
- Wilberforce OOSH Director

- Nepean Multicultural Association Manager and Arts Health Coordinator
- Peppercorn Services Manager, Recovery Services, and Case Workers
- Winmalee Community Centre Manager – Emergency Relief Support for region
- Hawkesbury Ministers Association Minister – Kurrajong Baptist Church and Mountain of Joy
- Merana Aboriginal Community Association for the Hawkesbury Manager
- Directly impacted residents
- Community Wellbeing and Resilience grant applicants.

The **Assessment** component of the needs assessment has synthesised the main themes, identified consistently throughout the analysis process, and triangulated these with available evidence to identify key opportunities, priorities, and options for the Flood Recover Needs Assessment.

## Summary of key issues

Extensive stakeholder consultations and background research has identified that there are several reoccurring themes for residents of flood affected areas. Issues can be divided into three overarching themes, each underpinned by social determinants of health, that require addressing in order to improve overall health outcomes and reduction of potential health inequities.

- 1. Physical:** the impact floods have had on local infrastructure, access to health services, housing, and basic amenities; and how this impacts residents and flood affected residents' wellbeing.
- 2. Social:** how external factors and community response, both inclusive and discriminatory, are impacting residents and flood affected residents' wellbeing and recovery process.
- 3. Psychological:** the impact floods have on residents' psychological state and the consequential impacts on job security and education.

### Physical

The effects of the floods are situated amid a pandemic within communities that are at the limits of their capacity and having recently experienced bushfires and droughts, has reduced the community's resilience to respond and recover from this flood event. The COVID-19 pandemic has caused an economic downturn, job loss, learning disruptions, health and mental health issues, supply chain shortages for building supplies, and a rising cost of living that is making it more difficult for people to recover from the recent floods<sup>(71)</sup>.

In 2021 just under 900 homes were damaged by flood waters, followed by approximately 627 in the March 2022 floods<sup>(21)</sup>. Residents were forced to relocate to temporary accommodation, in some cases this was for long periods of time. Coupled with the fact that residents were separated from family members, their usual schools and disruptions to their work, anxiety and distress levels increased. Further compounding this is the current housing market, and rental price gouging creating difficulties in finding suitable accommodation<sup>(33)</sup>. Studies conducted after the Northern River floods in 2017 found that residents who were unable to return to their homes after six months are twice as likely to experience prolonged symptoms of PTSD, anxiety, and depression, compared to resident who were briefly displaced<sup>(30)</sup>.

Residents in areas such as Lower Macdonald and St Albans who were able to stay or did not leave in time, found themselves isolated, with periods without access to food, essential medicine, or clean water. The SES reported that they received over 100 calls for assistance with resupply. Residents are relying on bottled water for cooking and brushing their teeth due to water tanks being contaminated by flood water, with some residents reporting that they are showering in contaminated water. In the Lithgow LGA, heavy rain caused a land slip on Wolgan Road at Wolgan Gap, isolating approximately 100 residents<sup>(31)</sup> for several weeks. One family reached out to a local City Council for assistance citing financial stress due to the inability to attend work and their children were unable to attend school<sup>(31)</sup>. Access to the region was secured after a week of isolation, via a National Parks fire trail, however this was suspended due to further flooding in the region<sup>(32)</sup> reisolating residents. Lithgow City Council heard that isolated residents were experiencing great distress<sup>(31)</sup>.

Residents in Macdonald Valley reliant on tank water have been impacted by the damage to Settlers Road and the Thomas James Bridge. The extent of the damage has meant water carters are unable to access properties that have been cut off<sup>(33)</sup>. Due to heritage protection, age and location repairs to the Thomas James bridge are not expected to be completed until late 2023 leaving residents relying on short term solutions<sup>(33)</sup>.

For residents able to return home, the extensive damage and debris is a constant reminder. Lengthy waits for kerbside collection are a constant reminder. Residents are reporting fatigue and physical exertion from completing repairs themselves, as wait times for trades persons are extensive. Residents are also reporting increased mould growth and concerns around increased or constant exposure<sup>(33)</sup>.

## Social

According to Resilient Lismore, the *'best recovery is community-led recovery and is based on trust and relationships within the community'* however some flood affected residents of the Hawkesbury have found that the community response after a flood can hinder their recovery process<sup>(21)</sup>.

Through stakeholder consultations, it was reported that some residents believe that the extensive and continued floods in the region are a result of cloud seeding<sup>(33)</sup> which highlights the explanations people seek to make sense of the unprecedented cumulative disasters they have experienced. A more obvious and prevalent divide in the community is in response to the NSW Government flood mitigation plan to raise the Warragamba Dam wall<sup>(34)</sup>. While some residents are in favour of the plan, and the promise that it will reduce flooding in the region, others are concerned about the structural integrity, and the environmental consequences<sup>(34)</sup>. Concerns have also been raised regarding the protection of Aboriginal cultural heritage sites in areas that may be impacted by the construction of a higher dam wall<sup>(76)</sup>. The Aboriginal cultural heritage assessment reported a total of 43 Aboriginal sites had been identified in the upstream region, and of these 28 could experience increased flooding and total loss of value<sup>(77)</sup>. Downstream, along the Hawkesbury-Nepean River, a total of 888 sites were identified<sup>(77)</sup>. The report indicates that raising the dam wall would potentially reduce the flood depths and damage in the region, to further assist in preserving these sites<sup>(77)</sup>.

Residents that are reliant on support from charities have described the long wait times for support from local charities as they are overburdened with the number of enquiries<sup>(35)</sup>. Local charities have reported that supplies and donations are difficult to come by and have had to reduce their services only to Hawkesbury LGA<sup>(36)</sup>. Outlying communities are reluctant to provide support and donations as residents in flood areas *"should know better"*<sup>(33)</sup>.

Vulnerable residents and residents in 'tricky situations' have reported difficulty with navigating support services. One resident, a single mum with children, remarked that it is difficult to physically attend a recovery centre to seek the assistance they require. Residents have also reported difficulty in navigating the number of forms and which services they need to talk to for different areas of support<sup>(33)</sup>.

The Royal Australian and New Zealand College of Psychiatrists have reported that people exposed to multiple disasters will experience cumulative stress, and this will impact their sense of injustice or abandonment when services are unable to respond to their immediate needs<sup>(21)</sup>. This eventually will erode a communities social and economic resources, perpetuating the cycle of abandonment<sup>(21)</sup>.

As at December 2022, over 3,000 people have subscribed<sup>(37)</sup> to Hawkesbury City Council's monthly Emergency and Recovery Information email update. In Lithgow LGA, between November 2021 and April 2022, 148 residents and businesses have registered for flood related enquiries or to receive updates from Lithgow City Council<sup>(38)</sup>.

## Psychological

Stakeholder conversations revealed that some residents, unable to bear the emotional and physical cost of repairing their flood affected home, have abandoned them entirely, with two families relocating to another state<sup>(35)</sup>. Reports from stakeholders indicate that flood impacted residents are accepting offers of mental health support at the first conversation, rather than saving face as they had during previous encounters<sup>(39)</sup>.



Research conducted following the 2010-11 Queensland flooding and 2009 Victorian bushfires, noted an increase in substance abuse in communities impacted by disasters<sup>(60)</sup>. It is reported that groups directly impacted by the flooding in Queensland were 5.2 times more likely to increase their alcohol use<sup>(60)</sup> whilst residents in the high impact area following the Victorian bushfires reported an increase of 2.5% in heavy drinking<sup>(60)</sup>. This trend was seen in the NBM region following the 2019 bushfires, with workers reporting a rise in alcohol use<sup>(62)</sup>.

Consultation with an Aboriginal support worker has identified there has been an increase in drug use and abuse in Indigenous residents, in particular antidepressants, as a coping mechanism<sup>(78)</sup>. Additionally, alcohol use as a coping mechanism has also increased due to ease of access<sup>(78)</sup>. Some Indigenous residents are intentionally isolating themselves from their community in order to cope<sup>(78)</sup>.

Reports of increased anxiety in both adults and children around weather and the threat of more flooding, are backed by the 347% increase in NBMPHN's PTS services uptake<sup>(40)</sup>. While a 347% increase might seem extreme, the reality is that uptake is still very limited, and PTS is an under-utilised service. Teachers and school counsellors have reported increased absenteeism for students and increased disengagement from classes. School counsellors have noted that dealing with suicidality is their '*bread and butter*'<sup>(41)</sup>. In an effort to address the youth mental health issues arising, headspace was recently awarded funding, but analytics from this response will not be available until early 2023. A former Wellbeing Practitioner Manager from Gateway Family Services reported that the mental health needs in our area have not diminished, in fact it is only increasing<sup>(42)</sup>. Residents impacted by the bushfires are still seeking support and the recent flood has only seen an increase in demand. Further to increased support, it was highlighted that there is a growing need for group-based programs, including specialised programs to assist students to navigate grief, change and loss experienced because of recent disasters. The Wellbeing Practitioner Program's school-based program had a waiting list of local schools eager to have the program implemented when the program was finalised in November 2022<sup>(43)</sup>.

UNICEF's recent report into 2022 Flood Response and Recover Children's Needs Assessment acknowledged that long-term mental health and psycho-social support that is specific to the potential trauma and anxiety experienced during disasters is required<sup>(70)</sup>. Ensuring support is accessible to children, educators, parents, and caregivers is critical to support their recovery and build resilience following a disaster, especially those in remote areas<sup>(70)</sup>. Delivery of these support services through schools is an effective and feasible option<sup>(70)</sup>.

# Section 2 – Outcomes of the health needs analysis

## Flood Recovery Affected Communities

Identified Need	Key Issue	Description of Evidence
<b>Available mental health supports do not address the needs of disaster affected communities.</b>	<p>Trauma affected individuals don't always identify with those requiring "mental health" assistance.</p> <p>Individuals don't understand what type of support would be useful so advertisements can be ignored.</p>	<p>Anecdotal Feedback – Red Cross Recovery staff, Disaster MH NBMLHD Clinician, HCC Recovery Staff, Peppercorn Recovery staff<sup>(33)</sup>.</p> <p><i>"More long-term mental health and psycho-social support that is specific to the potential trauma and anxiety experienced during disasters is required"<sup>(70)</sup>.</i></p> <p><i>"Among those who have experienced at least one climate-fuelled disaster since 2019, more than a third (37%) said there was too little mental health support available for people in the community after the disaster... People living in provincial and rural areas are more likely to say there is too little mental health support following a disaster (41%)<sup>(71)</sup>."</i></p>
<b>Traditional mental health services are not accessed to support the needs of flood affected individuals.</b>	<p>Trauma affected individuals need different types of support to traditional mental health service offerings.</p> <p>Traditional mental health Services geared towards conventional psychological and clinical supports.</p>	<p>Psychological Therapy Services are not getting the up take expected. Data extracted from the NBMPHN mental health systems (MDS and rediCASE) indicated that from January 2021 – December 2022, 65 residents received flood related mental health support<sup>(40, 44)</sup>.</p> <p>Outreach Wellbeing Practitioners provide an alternative mental health support that fits more with the needs of the residents. Feedback indicates that flood affected residents are hesitant to see a mental health professional as they don't identify with having a mental health condition, and a large proportion of the affected population would not have previous association with the mental health system. Australians who had experienced a mental health problem after a disaster were most likely to turn to their GP for help<sup>(71)</sup>. Long wait times, cost and access to see a mental health professional are a significant deterrent, when affected residents have other priorities in getting 'back to normal'<sup>(71)</sup>.</p> <p>Traditional mental health professionals are not trained nor have experience of working with trauma affected individuals who have been through cumulative disasters as compared to living with mental health issues and diagnoses from other causes<sup>(45)</sup>.</p>

Identified Need	Key Issue	Description of Evidence
<p><b>Opportunities for social networking and collaboration that provide soft entry mental health</b></p>	<p>Individuals and communities respond differently to disaster and need resources to express in community led initiatives.</p>	<p>In 2019/2020 Wellbeing Grants to Support Farming Communities (Drought Mental Health funded) provided \$1.2 M to 37 large scale (up to \$50K) projects<sup>(46)</sup>. In 2021/2022, Wentworth Healthcare awarded 79 Community Wellbeing grants investing nearly \$350,000 across \$1K and \$10K grant programs utilising bushfire mental health funding<sup>(46)</sup>.</p> <p>In 2022, Wentworth Healthcare have awarded 45 grants totalling more than \$250,000 for Community Wellbeing and Resilience<sup>(47)</sup> funded by both DoHAC and MoH utilising flood recovery mental health funding. These grants allow residents to choose their own way to respond to the losses, anxiety, and distress they have experienced, as well as actively participate in their recovery. With several rounds focused on different amounts of up to \$5,000 and up to \$10,000 the grants program acknowledge that some communities may not be ready to organise events or programs that are large or labour intensive.</p> <p>Activities for all grants focus on social cohesion and connectedness, support mental health healing, and build on existing community resilience by encouraging post-trauma growth. Smaller more localised opportunities for coming together allow for trauma affected individuals to reconnect with others in the community and allow soft entry mental health supports to be provided as options.</p> <p>Specific Aboriginal programs are not able to be provided long term as funding is only provided for short periods and current men's and women's groups are run on donations<sup>(78)</sup>. Aboriginal Community Association does not want to see the programs stop and start up again when funding is available. Many grant programs are not for established or existing programs<sup>(78)</sup>. Inconsistency of services leads to disengagement, which is preventable<sup>(78)</sup>.</p> <p>Informal programs like Aboriginal men's and women's group and walking groups, provide opportunities to reduce isolation<sup>(78)</sup>. Consultation with an Aboriginal support worker has identified that residents have intentionally isolated themselves from their community as a coping mechanism<sup>(78)</sup>.</p>
<p><b>Lack of culturally appropriate mental health supports</b></p>	<p>Mental health assistance provided through a translator not ideal.</p> <p>Insular community with cultural stigma.</p>	<p>Specific culturally appropriate bilingual CALD mental health supports have been requested for Chinese market gardeners<sup>(39)</sup>.</p> <p><i>"The floods, like other disasters and crises, have impacted those children and families with pre-existing systemic and structural disadvantages the hardest, including CALD and ATSI families and those with a lower socio-economic status"</i><sup>(70)</sup>.</p> <p>Consultation identified that the Indigenous population is unlikely to use existing recovery support services<sup>(79)</sup>. Penrith Head to Health centre has identified there is an Aboriginal peer support available to do outreach at the Hawkesbury Pop Up. Potential for engagement to improve if services were available at the Aboriginal community association centre<sup>(78)</sup>.</p>
<p><b>Lack of access to fresh water</b></p>	<p>Residents with tank water no longer have access to fresh water.</p>	<p>People with tank water are affected by damage on Settlers Road and Thomas James Bridge in Macdonald Valley as water carters are unable to access properties. Water containers are being put in communal areas with smaller water tanks and containers provided for them to access water supply. This is a continual top up process. Repairs to the Thomas James bridge are complicated due to heritage protection, its age and isolated location, repairs are not expected to be completed until late 2023<sup>(48)</sup>.</p> <p>Those with tank water that has been in flood affected areas have to get their tanks cleaned as water borne bacteria, mud and slime can affected the quality of their drinking water. Residents have reported that they are relying on bottled water to cook with and to brush their teeth but are having to shower in contaminated water<sup>(48)</sup>.</p>

Identified Need	Key Issue	Description of Evidence
<b>Treatment for physical wounds</b>	Physical sores developing on legs due to exposure to contaminated water.	Leg wounds from prolonged contaminated water exposure <sup>(49)</sup> .
<b>Increased fatigue of residents and service providers</b>	<p>Residents and service providers are experiencing increased fatigue.</p> <p>Many flood-affected communities reported they have 'crisis fatigue'<sup>(70)</sup>.</p>	<p>All recovery support services are reporting various types of "flood trauma fatigue". Comments of "I'm done, I can't do this again", "I'm broken", "I can't take anymore"<sup>(33)</sup> are very common.</p> <p>Cumulative fatigue from series of disasters. "I'm too traumatised trying to deal with what's happening in my own backyard to be thinking big picture community stuff at the moment, but I don't want our community to miss out on these grants"<sup>(50)</sup>.</p> <p>People not wanting to fix up houses due to mental exhaustion. "Just give me a mattress and a microwave, I don't need anything else"<sup>(35)</sup>.</p> <p>Physical exertion and exhaustion from moving rubbish and waste, clearing houses and properties.</p> <p>Numerous families walking out and just leaving the houses to live somewhere else (2 moved to Melbourne), not deciding as to what to do with the house as it is too much<sup>(51)</sup>.</p> <p>Grief and "tiredness of continually being asked 'how are you going?' by people being polite but not genuinely interested"<sup>(33)</sup>.</p> <p>Dealing with other community members can be further draining "he wants support but is tired of pat answers and the curiosity of well-meaning neighbours"<sup>(33)</sup>.</p> <p>Now "residents that housed everyone else during the floods and had to deal with the chaos of people's pets, and personalities and cooking for everyone, storing food" are emerging. "Even though they are not directly flood impacted they are only just now coming up for air"<sup>(33)</sup>.</p>
<b>Impacted residents feel they don't have a right to ask for assistance and help</b>	Residents minimising the extent of their own loss and the impact it has had by comparing their situation to others less fortunate.	<p>"We're the lucky people, we have another house. You imagine the families that that's it. [...] They're standing somewhere with nothing. I can't imagine it. We're lucky people. I heard that six months after the last flood there was a family still living in a tent"<sup>(50)</sup>.</p> <p>"I didn't lose my home, so I shouldn't have to deal with these feelings or put my hand up for help, because there are people over there who have lost everything. Even though I'm struggling and it's ripping me apart, I'm not in their shoes, so I can't really put my hand up"<sup>(50)</sup>.</p>
<b>Increased mould exposure</b>	Floodwaters and humid weather have increased the growth of mould and exposure.	<p>Effects from the massive increase in mould appearing in houses (including those not flood affected).</p> <p>"Mould growing so badly on walls up to the ceiling that it needs to be cleaned once a week and sometimes in houses that weren't inundated but were only flooded to footings. Need commercial cleaning"<sup>(33)</sup>.</p> <p>The World Health Organisation (WHO) Housing and Health Guidelines advise that no level of mould exposure can be considered safe for health<sup>(52)</sup>. Dampness and mould related problems should be prevented where possible and corrected as soon as possible to avoid potentially harmful exposure<sup>(52)</sup>.</p> <p>NSW Health states that possible health problems that could arise from mould exposure range from a runny/blocked nose, eye and skin irritation or increased risk of asthma attacked for people with asthma<sup>(53)</sup>. NSW Health also notes that in rare occasions people may develop hypersensitivity pneumonitis<sup>(53)</sup>.</p>



Identified Need	Key Issue	Description of Evidence
<b>Financial Strain</b>	Impact of flood on financial resources.	<p>Financial constraints from work disruption placing increased pressure of households. <i>"We have had to replace out of school sport for a lot of students as their parents can't afford the fees. We want to have a subsidised wellbeing event, but kids can't even afford a \$5 lunch even if the school pays the rest"</i><sup>(41)</sup>.</p> <p>Distress and grief about loss of domestic and working animals taken by flood waters<sup>(37)</sup> or access cut off from food.</p> <p>Disruptions and absences to attendance at work and recreation. Delays in insurance claim inspections and payments. Residents cut off from work for periods of time due to road degradation or closure<sup>(33)</sup>.</p> <p>The <i>Building a More Resilient Australia</i> report, noted that following the 2021 floods in the region, many residents chose not to take out flood cover or not to insure their homes at all, given flood insurance can cost up to \$30,000 per annum<sup>(54, 55)</sup>. Research by the Climate Council, notes that by 2030 1 in every 19 property owners will face unaffordable insurance premiums<sup>(56)</sup></p>
<b>Support for increased anxiety and mental health issues arising from flood impacts</b>	Increased anxiety and mental health issues.	<p>When asked would they like mental health support many more people agreeing at first conversation rather than pretending or believing they were ok as they had in the past. Having to go on wait lists for outreach mental health services further adds to their distress<sup>(33)</sup>.</p> <p>Increased levels of distress in children and adults when rain predicted or started. Stress levels increase as flood waters rising as people anticipate whether it will be as high as the last time.</p> <p>Mental health is often overlooked and not prioritised when physical impacts of navigating temporary housing away from work, school, and recreational pursuits; clearing flood debris and affected housing materials, renovating, purchasing new furniture and equipment, and moving back into their dwelling; continuing employment and family stability take priority<sup>(33)</sup>.</p> <p>Data extracted from the NBMPHN mental health systems (MDS and rediCASE) indicated that from January 2021 – December 2022, 65 residents received flood related mental health support<sup>(40, 44)</sup></p> <p>More than half (51%) of Australians who experienced climate-fuelled disasters since 2019 reported that their mental health has been somewhat impacted, with 22% of respondents reported a "major impact" upon their mental health, while 65% reported a "moderate or minor" impact<sup>(71)</sup>. Among those who have experienced at least one climate-fuelled disaster since 2019, more than a third (37%) said there was too little mental health support available for people in the community after the disaster<sup>(71)</sup>.</p>

Identified Need	Key Issue	Description of Evidence
<p><b>Increased child mental health issues and suicidality</b></p>	<p>Cumulative disasters triggering higher anxiety and depression rates in young people.</p> <p>Disengagement and inconsistency in school attendance.</p> <p>Different age groups have different needs.</p> <p>“The increased absenteeism and isolation have had social development impacts and learning disruptions<sup>(70)</sup>.”</p>	<p>Increased inability of students to concentrate and focus on tasks<sup>(41; 70)</sup>.</p> <p>Increased absenteeism at local schools (on the back of COVID lockdowns) and increased anxiety about being back at school. <i>“My son has a stomach complaint from anxiety and just can’t even get to school, we are getting teachers to provide work for him to do at home”<sup>(57)</sup>.</i></p> <p>Students showing increased disconnection and disengagement from classes<sup>(41;70)</sup>.</p> <p>School Counsellors reporting that suicidal ideation is very high <i>“it’s our bread and butter”<sup>(41)</sup>.</i></p> <p>Children now report disliking the sound of rain where previously they loved it and express an unwillingness to be separated from parents when it is raining<sup>(71)</sup>.</p> <p>headspace Lithgow received specific funding to support youth mental health in response to the 2022 flooding, however data on up-take won’t be available until Q2 2023.</p> <p>Demand for former Wellbeing Practitioner support (Gateway Family Services – Bushfire Funded until 30 November 2022)<sup>(42)</sup>.</p> <p>Anecdotal Feedback – School psychologists, school counsellors, schoolteachers, Red Cross Recovery Workers, HCC Recovery Staff<sup>(33, 41, 49)</sup>.</p> <p>Even prior to natural disaster exacerbating the problem, NBMPHN 2022 Needs Assessment identified that the apparent increase in mental illness amongst children and adolescents over recent decades has not been met in the NBM region by increasing the range and number of services targeting this population. It also noted there was a lack of mental health services in the Upper Mountains and Hawkesbury, lack of outreach services across all 4 LGAs and a lack of headspace services in the Hawkesbury although funding for this service has now been provided and the service is in the process of being commissioned<sup>(58)</sup>.</p> <p><i>“Children will continue to feel the impact over the coming months and years... The belief that children are a homogenous group that extreme events impact on equally is a myth. This myth ignores the variability among children, race, gender, and class inequalities as well as age and developmental processes and differing levels of cognitive and physical ability. Every child is unique, with personal, family, and structural factors that shape and influence their resources and resilience, as well as their family’s ability to respond and adapt to emergencies and crisis<sup>(70)</sup>”.</i></p>

Identified Need	Key Issue	Description of Evidence
<p><b>Living situations impacted by flood and increased risk of isolation and/or homelessness</b></p>	<p>Residents are living in temporary accommodation away from family, schools, and work.</p> <p>Prolonged displacement doubles the likelihood of continued PTSD, anxiety, and depression.</p> <p>Increased risk of homeless for vulnerable population.</p>	<p>Residents cut off from power and/or running water for lengthy periods of time. Running on generators which increased costs of household due to fuel expenses. Residents living in temporary accommodation for lengthy periods of time sometimes away from their home (other LGAs) and therefore separated from convenient access to their school, out of school hours care, work, and community support<sup>(33)</sup>.</p> <p>Following studies on residents impacted by the Northern Rivers flooding in 2017, Dr Longman noted that residents who have not been able to return home after six months, have double the probability of continued symptoms of post-traumatic stress, anxiety, and depression, compared to those who with only a brief displacement<sup>(30)</sup>.</p> <p>Increased levels of homelessness<sup>(51)</sup>. Residents of caravan and ski parks along the Hawkesbury River are being left without long term housing options due to limited social housing in the area<sup>(59)</sup>. Residents were assisted during the floods by homelessness services and the Department of Communities and Justice but there was no planned response and was described as a rapid scramble to find accommodation, food, and other supports<sup>(59)</sup>.</p>
<p><b>Increased use of drugs and alcohol</b></p>	<p>Increased use of drugs and alcohol used to numb effects of cumulative disasters.</p>	<p>Research conducted following the 2010-11 Queensland flooding and 2009 Victorian bushfires, noted an increase in substance abuse in communities impacted by disasters<sup>(60)</sup>. It is reported that groups directly impacted by the flooding in Queensland were 5.2 times more likely to increase their alcohol use<sup>(60)</sup>. Residents in the high impact areas following the Victorian bushfires, reported an increase of 2.5% in heavy drinking<sup>(60)</sup>. This trend was mirrored in the NBM region following the 2019 bushfires, with workers reporting a rise in alcohol use<sup>(62)</sup>.</p> <p>Consultation with an Aboriginal support worker reported an increase in drug and alcohol use, as a coping mechanism for some residents<sup>(76)</sup>. Notably, there has been a bigger reliance and misuse of antidepressants.<sup>(78)</sup></p>

# Section 3 – Outcomes of the service needs analysis

Flood Recovery Affected Communities		
Identified Need	Key Issue	Description of Evidence
<p><b>General individual outreach wellbeing support</b></p>	<p>Informal setting counselling for trauma affected (not necessarily ill mental health) people preferred.</p> <p>Rural and sometimes remote location of (percentage) flood affected residents.</p> <p>Residents dealing with multiple health and psychosocial issues (financial, relationship, family) in addition to flood recovery efforts.</p> <p>Cumulative impact of multiple disasters.</p>	<p>Demand for former Wellbeing Practitioner support (Gateway Family Services – Bushfire Funded until 30 November 2022). The current Wellbeing Practitioners have developed relationships with residents that are hard to come by and continuing the service is vital<sup>(39)</sup>.</p> <p>Anecdotal Feedback - Disaster MH NBMLHD Clinician, RAMHP Coordinator, HCC Recovery Staff, Peppercorn Recovery staff<sup>(60)</sup>.</p> <p><i>“Time- rich and time considered recovery processes and services are necessary to avoid re-traumatisation. If the timing of these processes is controlled by residents and, if support services were able to step and help when the resident was not able to, the risk for additional stress could be minimised”<sup>(50)</sup>.</i></p> <p>A Recent Climate Council Beyond National Study into the impact of Climate fuelled disasters on the Mental health of Australians noted “More than half (51%) of Australians who experienced climate-fuelled disasters since 2019 say their mental health has been somewhat impacted... 22% of respondents reported a “major impact” upon their mental health, while 65% reported a “moderate or minor” impact... One in four (25%) said their experience of the disaster had exacerbated an existing mental health problem<sup>(71)</sup>.”</p>
<p><b>Opportunities for affected residents to connect with services and other residents</b></p>	<p>Fatigued community from cumulative disasters having little emotional capacity to organise small-scale community connection activities and events.</p> <p>Individuals disengaging and not attending when organised especially if far away from where they live.</p>	<p>Lower rate of community led Community Resilience and Wellbeing Grants applied for after floods despite anecdotal interest<sup>(51)</sup>.</p> <p>High utilisation of Disaster Recovery Community Development Worker by emerging, developing, and established community groups and organisations<sup>(61)</sup>.</p> <p>Community led recovery can be a pathway to wellness following a disaster<sup>(21, 62)</sup>.</p> <p>Community groups showing interest in the provision of holistic organisation of community connection events if logistics are fully provided by a service coordinating venue, catering, promo/invitations, entertainment for specific groups and organisations within the Penrith/Hawkesbury LGA to utilise. Being too fatigued to do themselves<sup>(51)</sup>.</p> <p>Hawkesbury City Council and Penrith City Councils reporting fantastic attendance at “Pop Up recovery events” tailored for localised flood impacted areas<sup>(33)</sup>.</p>



Identified Need	Key Issue	Description of Evidence
<p><b>Reduced capacity of informal community leaders and volunteers</b></p>	<p>Same emotional and mentally fatigued community members providing emotional support to trauma affected community members.</p> <p>Recognise that different communities recover at different rates and in different ways.</p>	<p>High utilisation of Disaster Community Development Worker by emerging, developing, and established community groups and organisations<sup>(61)</sup>.</p> <p>Supporters at their capacity, <i>"I would love to do something, but we can't take anything else on"</i><sup>(51)</sup>.</p> <p>This capacity building of human assets in localised areas has meant some communities are more resilient going into future disasters.</p> <p>Take up rate and demand for mental health training including Accidental Counsellor and MHFA Workshops – 75 workshops providing training to over 1010 participants (up to February 2023)<sup>(63;74;75)</sup>.</p> <p><i>"While it is necessary for residents to continually cultivate self-sufficiency when living in disaster prone areas, more conversations need to be had in the disaster sector around supporting the range of capacities and differences located within a community"</i><sup>(50)</sup>.</p> <p><i>"Support services should respond to individual and community diversity. The experience of disaster is shaped by factors such as age, gender, language spoken, economic positioning, impact of disaster, geography location, the extent of the resident's own support network, and their individual personalities"</i><sup>(50)</sup>.</p>
<p><b>Residents available to volunteer but without resources to establish or invigorate community groups to provide support to other residents</b></p>	<p>Worker guidance to assist residents to formalise community associations and skill local residents to be available to support their communities.</p>	<p>The Disaster Community Development Workers funded for Blue Mountains, Hawkesbury and Lithgow LGAs have provided significant assistance to groups to formalise, plan projects, apply for grant funding and coordinate project implementation<sup>(64)</sup>.</p> <p>New groups are emerging in flood impacted areas wanting to formalise and respond to community need<sup>(60)</sup>.</p>
<p><b>Skilled mental health trained community members</b></p>	<p>Residents in situations of supporting others without adequate resourcing or training.</p> <p>Workers in traditional roles being placed in recovery support.</p>	<p>During the bushfire consultation process, numerous stakeholders provided feedback on need for more local people having necessary skills to respond to people in distress<sup>(62)</sup>.</p> <p>A Hawkesbury youth worker interagency coordinator reported community workers normally planning recreational activities for youth were seeing an increase in homelessness, severe mental distress and other higher needs than previously seen. Workers welcomed additional mental health training and psychologist group supervision for their interagency<sup>(65)</sup>.</p> <p>Mental Health First Aid (MHFA) Workshops and Accidental Counsellor Workshop demands has been immense over last two years and continue to increase. A total of 71 workshops providing training to over 930 participants (up to November 2022) in the region have already been delivered and more are being booked every month<sup>(63;74;75)</sup>.</p>

Identified Need	Key Issue	Description of Evidence
<p><b>Charity services experience high demand post flood</b></p>	<p>Charities experience high demand for goods and services in the post flood period and are unable to keep up.</p>	<p>Flood affected residents are having to wait for donated goods as high demand and some services promising same goods to duplicate people<sup>(35)</sup>. Hawkesbury Helping Hands reported that hundreds of people continued to queue for help two months after the first flood hit in March 2022, noting that the recovery process is very slow<sup>(35)</sup>.</p> <p>Unfunded charities having to close off their support to people out of the area due to high demand within the LGA<sup>(35)</sup>.</p> <p>Apathy to donating from outside the community as people deem that flood affected should be aware of risks. Some disdain as their plight due to the opinion they should move or get themselves out of the flood path. <i>"They should know by now"</i><sup>(35)</sup>.</p> <p>Foodbank NSW &amp; ACT (FBNA) reported 50,000 meals of pantry staples and 4 tonnes of fresh produce provided to the Hawkesbury/Nepean area for flood relief in 2022. This is part of 900,000 meals to flood affected communities across the state<sup>(35)</sup>.</p>
<p><b>Delayed or inadequate services</b></p>	<p>Access to services such as council clean up are delayed due to the high volume.</p> <p>Access to trade services is delayed, inadequate and costly.</p>	<p>Affected residents looking at the damage caused within their houses and properties and piles of rubbish waiting for removal on roads, a constant reminder of the disaster.</p> <p>Lengthy wait times for annually booked kerbside pickups due to high demand affecting whole district including those not flood impacted.</p> <p>Issues with having to wait for tradies as they are either too busy or don't want to travel the distances to work on the properties.</p> <p>Residents overwhelmed with the number of repairs and having trouble getting tradespeople to come and fix them.</p> <p>Angst at Council for not fixing roads and potholes quick enough, for having to impose appointment times on waste management facility drop offs due to high demand of usage.</p> <p>People exposed to multiple disasters can experience accumulative stress and may perceive a sense of injustice or abandonment when services are unable to respond to their immediate needs. Over time, these events can erode community economic and social resources which are important for maintaining mental health and wellbeing. This, in turn, can increase disadvantage and precipitate a decline in social support, both of which are associated with an increase in mental health problems<sup>(21)</sup>.</p> <p>In June 2022, the Chair of the NSW Upper House inquiry committee noted that if Sydney's east or Sydney's north shore experienced erosion of the same scale of destruction as the Hawkesbury region has experienced then <i>"state government would have stepped in and provided assistance by now"</i><sup>(66)</sup>.</p>

Identified Need	Key Issue	Description of Evidence
<b>Disrupted access to services</b>	Damage to infrastructure poses a disruption to Hawkesbury residents	<p>Disruptions to travel for most of the Hawkesbury residents during bridge closures. More severe cases of disruption including the population of Upper Colo where the Upper Colo Bridge was damaged beyond repair and washed away in March 2021 and has still not been replaced (at writing) leaving residents in that area to have to travel an additional 45 minutes each way to any journey (already an hour journey to nearest town).</p> <p>Repairs to the Thomas James bridge at Lower Macdonald are complicated due to heritage protection, age and isolated location, repairs are not expected to be completed until late 2023<sup>(48)</sup>. Residents are concerned that this timeframe is risking lives, in the case of a medical emergency or car accident<sup>(48)</sup>. In December 2022 residents in Macdonald Valley were told that Settlers Road will likely take another 12 months before unrestricted access can be restored. If temporary access is not able to be arranged while the repairs are completed the access will be closed and this adds 80km to a normally 5-minute journey. There are concerns for the residents financial and psychological needs and the support that can be provided to this community<sup>(33)</sup>.</p> <p>Roads damaged to point of closure until fixed (sometimes taking months) or traffic impeded by one way or slower speed limits due to major potholing and road degradation<sup>(67)</sup>. Hawkesbury City Council is expecting a \$190 million repair bill for roads that have been damaged by flooding over the last two years<sup>(68)</sup>. The repair of Cornwallis Road, in Richmond Lowlands is expected to cost \$45 million<sup>(68)</sup>. The Hawkesbury City Council has reported that since mid-July over 7,000 potholes have been filled but they have been unable to keep up with the demand due to continued wet weather<sup>(68)</sup>.</p>
<b>Service navigation</b>	Recovery services are difficult to navigate and add unnecessary stressors.	<p>Many instances of people with “tricky circumstances”, such as a single mother with 3+ children, making it difficult with the number of different services they must talk to and the number of forms they need to fill out<sup>(33)</sup>.</p> <p>Distressed and traumatised people attending Recovery Centres not knowing who they need to speak to and the number of different services they need to access<sup>(33)</sup>.</p>
<b>Lack of awareness of alternate methods to counselling or clinical psychological sessions for recovery support</b>	<p>Impacted residents often don't acknowledge need for mental health support.</p> <p>Many individuals prefer creative pursuits involving artistic expression to process emotions and feelings.</p> <p>Empowering residents to recover in their own ways.</p>	<p>Community Support Officers and other formal supports are to be empowering and can include “<i>innovative, creative, post disaster supports tailored to specific needs, particularly those outside the box</i>”<sup>(50)</sup>.</p> <p>The most prevalent common reoccurring emotions for residents experiencing disaster are “<i>anger, (feeling) forgotten and traumatised</i>”<sup>(50)</sup>.</p> <p>Art Therapy courses with wellbeing component through Nepean Multicultural Access have been successful for multicultural groups with NBMLHD Multicultural Unit assistance<sup>(69)</sup>.</p> <p>Demand for Outreach Wellbeing Practitioners is still high<sup>(33)</sup>.</p>
<b>Lack of culturally appropriate services in Hawkesbury LGA</b>	Minimal Aboriginal specific drug and alcohol services available in the Hawkesbury region.	There is a lack of Aboriginal specific drug and alcohol services available in the Hawkesbury region, with Mount Druitt being the closest Aboriginal drug and alcohol service <sup>(76)</sup> . New service will be introduced in Windsor which will provide 0.6 FTE Aboriginal worker <sup>(79)</sup> .

# Glossary

Word	Definition
CALD	Culturally and linguistically diverse refers to the many Australian communities that originally came from different countries and therefore have cultures and languages that are different to those of Australians born here generation after generation.
Catchment	A catchment is an area of land where water collects when it rains, often surrounded by hills. As the water flows over the landscape, it finds its way into streams and down into the soil, eventually feeding the river.
DROW	Disaster Recovery on Wheels Group – also known throughout 2020 – 2022 as other variations including BROW (Bushfire Recovery on Wheels), ROW (Recovery on Wheels) and FROW (Flood Recovery on Wheels). A fortnightly collaboration meeting with all the outreach services working in disaster impacted areas to share on the ground feedback with other services, coordinate events and activities and reduce duplication of services, create efficiencies, and reduce negative impacts of multiple service support to trauma affected residents.
East Coast Low	East Coast Lows are intense low-pressure weather systems that occur off the east coast of Australia. They bring rainfall to the east coast and tablelands. They can also bring damaging storms and cause coastal erosion and flooding.
Full Supply Level	The normal maximum operating water level of a water storage when not affected by floods. This water level corresponds to 100% capacity.
Hypersensitivity pneumonitis	A severe mould infection in the lungs, caused by frequent and long-term exposure to mould.
MHFA	Mental Health First Aid – 2-day skills based, early-intervention training through Accredited Workshops.
RR+P	Blue Mountains Recovery, Resilience and Preparedness Committee – established in Early 2020 by Mountain Centre Resource Network (MCRN) and Blue Mountains City Council (BMCC) in response to the 2019/2020 Bushfires. A monthly and then 6 weekly collaboration between Community Service organisations, government, and non-government organisations to organise and coordinate activities across the Blue Mountains for local residents affected.
Tributary	A tributary is a stream or river that flows into a larger stream or river. A tributary does not flow directly into the sea or ocean.



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