



Hawkesbury-Nepean Flood Strategy: Community Resilience Program

Building flood resilient communities in a high-risk valley

Program update: July 2021





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Hawkesbury-Nepean Flood Strategy: Community Resilience Program

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July 2021

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Acknowledgements

The Community Resilience Program has been delivered in collaboration with a wide range of project partners and the participation of many organisations across the valley. Infrastructure NSW acknowledges that this program has been possible through this support and strong partnerships with the NSW State Emergency Service, Resilience NSW, NSW Police Force and local councils.

Photography by Adam Hollingworth

Image: Isolated properties and stranded townships in March 2021 flood

Contents

Overview	3
Highlights at a glance	8
Community Resilience Program projects	10
Broad awareness and preparedness	13
Communities of concern outreach	18
Education and engagement for young people	26
Next steps for the program	29



North Pitt Town impacted by floodwater, March 2021

Overview

A wicked problem

The Hawkesbury-Nepean Valley is the most flood exposed region in NSW if not Australia. It covers around 500 square kilometres in Western Sydney, from Bents Basin near Wallacia to the Brooklyn Bridge. A diverse community of 140,000 live or work in the floodplain, mainly within four local government areas.

The valley has a significant flood risk due to its unique geography, constrained road network, historic development in the floodplain and low community awareness of the flood risk.

Despite a history of devastating floods, there had not been a major flood for over 25 years in 2017.

Just 33% of residents were aware of flood risk, 67% had done nothing to prepare.

Social research (2014)

If the worst flood on record happened today, around 90,000 people would need to evacuate and over 15,000 homes would be impacted. People most at risk are likely to be in geographic flood hot spots and/or have existing vulnerabilities and complex needs that makes evacuation and recovery more challenging.

The Flood Strategy

A high rainfall event in March 2012 led to the first spill of Warragamba Dam in 14 years. While this caused minor flooding in the Hawkesbury-Nepean Valley, it highlighted the significant flood exposure.

This March 2012 event and the Brisbane floods in 2011 led the NSW Government to prioritise investigations into options to mitigate flood risk in the Hawkesbury-Nepean Valley. This was documented in the NSW State Infrastructure Strategy. An independently-chaired Taskforce was set up in 2014 to investigate feasible flood options to reduce overall flood risk in the valley.

The Taskforce's recommendations to NSW Government were adopted in 2016, and resulted in the Hawkesbury-Nepean Valley Flood Risk Management Strategy (the Flood Strategy). The Flood Strategy, released in mid-2017, aims to reduce the risks to life, property and community impacts from regional floods now and into the future.

The Flood Strategy includes an outcome specifically focused on community resilience. Outcome 5 aims to create an "aware, prepared and responsive community" that is "better able to respond to flood risk, reducing risk to life and the impact on the community".

In late 2016 the Hawkesbury-Nepean Valley Flood Risk Management Directorate (the Directorate) was established in Infrastructure NSW to lead delivery of the Flood Strategy.



NSW SES presenting at workshops for family support services and neighbourhood centres in 2019

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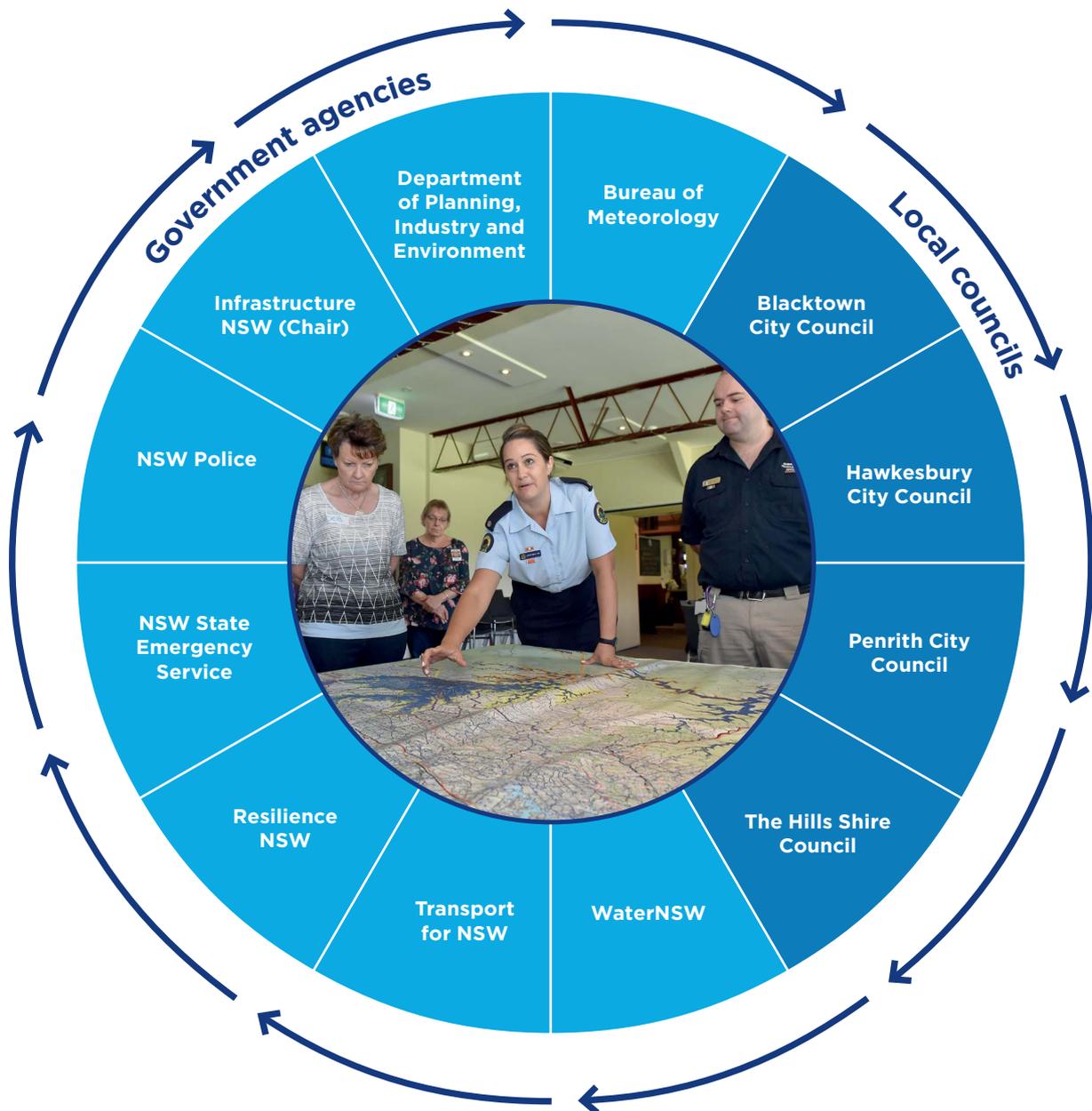
Governance

An inter-agency Flood Strategy Communication and Engagement Working Group (the Working Group) was established by Infrastructure NSW in early 2017 to support delivery of communications and engagement components of the Flood Strategy. This group's role is to plan, deliver, coordinate and report on communication and engagement to support delivery of the Flood Strategy.

Objectives of the Community Resilience Program (the program) overseen by the working group include:

- Improved flood information – increase knowledge, awareness and understanding
- Build community capacity to prepare and respond to floods – improve skills, capacity and capability
- Shared responsibility through partnerships
- Build and grow the knowledge base – using research to ensure activities are effective, cost-efficient and represent best practice.

The Working Group includes 9 government agencies and four councils:



Approach

The program approach recognises that a disaster resilient community works together to understand and manage risks. This reflects the National Strategy for Disaster Resilience's concept of collective responsibility for disaster resilience.

To date, 18 projects have been designed and delivered, grouped into 3 streams:

1. Broad awareness and preparedness activities
2. Outreach for communities of concern
3. Education and engagement for young people and their schools.

These projects are delivered via multiple channels, acknowledging there is no simple solution – both broad communication and deep engagement are required to increase community resilience.

A strong evidence base is central to the program. This includes social research conducted in the valley and consideration of best practice. Projects have been revised and adjusted over time informed by ongoing monitoring and evaluation.

All projects are planned so that local community organisations can continue to build on them and have longer term benefits. They have been designed and delivered collaboratively through partnerships, with a focus on capacity building and embedding work as part of core business.

The projects leverage existing networks and relationships, or help build long-lasting partnerships or networks if none exist. Resources and products have been designed to be re-used and re-purposed.

An all-hazards approach was used where possible involving other emergency services (eg NSW Rural Fire Service).

The work under the Flood Strategy, including the Community Resilience Program, is periodically reviewed through a Monitoring, Evaluation, Reporting and Improvement (MERI) process. Outcomes from the MERI review inform the ongoing work.



Many caravan parks experienced heavily losses in the March 2021 flood

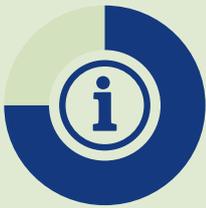


Nepean River in February 2020 flood at Blaxlands Crossing, Wallacia

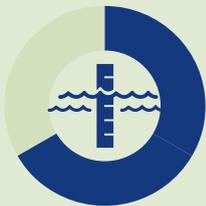
Highlights at a glance

Between 2017 and 2021, the **Community Resilience Program** has brought together 14 community sectors, 38 project partners and 300-plus organisations to deliver the following outcomes.

Changing community knowledge and behaviours



75% of community have seen flood information - up from 26%



66% of residents now believe they need to be prepared for floods - up from 33%



48% of residents were able to identify three things to do in an evacuation - up from 25%



New flood emergency procedures in place with many community sectors including aged care and schools



Stronger local community networks with new community champions



Broad awareness & preparedness

2000+

people attended community events related to building flood awareness

3 campaign phases over 18 months resulted in:

- **190,771** visits to www.myfloodrisk.nsw.gov.au
- **77,746** views of videos on SES website alone
- **360,000+** views of videos on all digital platforms



Communities of concern outreach

1,123 individuals attended

30 workshops to learn about flood risk and preparedness

Involving

13 community sectors at high-risk

Over **90%** of residential aged care managers attending workshops

Multiple online and print materials targeting groups with high flood risk



Education & engagement for young people

17,263 visits to online education resources in 18 months

82% of **31 at-risk schools in the valley** attended workshops to improve emergency planning

112 primary and secondary school teachers attended professional development for flood educational resources

Community Resilience Program projects

The projects in the Community Resilience Program are listed below.

BROAD AWARENESS AND PREPAREDNESS		
Project title	Description	Infrastructure NSW partners
1867 Flood 150th Anniversary	Events to commemorate the largest flood on record in the valley.	<ul style="list-style-type: none"> • Hawkesbury City Council • NSW SES
Participation in local events	Participation in local events to provide information about flood risk and preparedness.	<ul style="list-style-type: none"> • NSW SES • Local councils • WaterNSW
“Floods. The Risk is Real.” campaign	A social marketing campaign delivered in 3 phases to increase flood awareness and preparedness of floodplain residents.	<ul style="list-style-type: none"> • NSW SES • Resilience NSW • Local councils
Flood-risk mapping tool	An accessible flood tool on the NSW SES website to increase community understanding of flood risk.	<ul style="list-style-type: none"> • NSW SES
Flood awareness resources	Videos, animations, factsheets and other resources about flood risk and the history of flooding in the valley.	<ul style="list-style-type: none"> • NSW SES
Flood warnings project	Research into how flood warnings and supporting information can be improved to increase understanding and response.	<ul style="list-style-type: none"> • Bureau of Meteorology • NSW SES • ABC Radio Sydney • NSW Police

COMMUNITIES OF CONCERN OUTREACH		
Project title	Description	Infrastructure NSW partners
Person-Centred Emergency Planning (PCEP) training for services providing people with care in their own home	Workshops to raise flood risk awareness and preparedness for disability, chronic illness and aged care service providers. Uses University of Sydney’s PCEP Toolkit.	<ul style="list-style-type: none"> • University of Sydney • Resilience NSW • NSW SES • Local councils

COMMUNITIES OF CONCERN OUTREACH		
Project title	Description	Infrastructure NSW partners
Get Ready for Flood: Childcare Services	Workshops to raise flood risk awareness and preparedness for childcare centre managers and staff. Based on established Red Cross program.	<ul style="list-style-type: none"> • Australian Red Cross • NSW SES • NSW Police • NSW RFS • Fire and Rescue NSW • Local councils • NSW Dept of Education
Get Ready for Flood: Residential Aged Care Services	Scenario-based workshops to increase flood awareness and preparedness for managers and other staff in aged care services.	<ul style="list-style-type: none"> • NSW Health • NSW Police • NSW SES • NSW Ambulance
Get Ready for Flood: Social Housing	Established a community resilience network for the social housing sector to increase flood awareness and emergency preparedness. Delivered housing tenant resources, flood awareness and capacity building training for client service officers, and working with community services in high-risk flood areas to trial individual preparedness plans for clients with complex needs.	<ul style="list-style-type: none"> • Inner Sydney Voice • Link Wentworth Community Housing • NSW SES • Department of Communities and Justice – Housing • Other community housing providers • NSW Health • Local councils • University of Sydney • Resilience NSW
Get Ready for Flood: Culturally and Linguistically Diverse (CALD) communities	Workshops to increase flood awareness and preparedness capacity for service providers working with CALD communities. Uses adapted PCEP toolkit.	<ul style="list-style-type: none"> • University of Sydney • Settlement Services International • NSW SES
Get Ready for Flood: Caravan Parks	Developed new emergency plan template and workbook to help caravan park managers prepare for and respond to future floods. Trialed in a pilot with 4 parks prior to wider implementation.	<ul style="list-style-type: none"> • Local councils • NSW SES including local units
An Animal Ready Community in the Hawkesbury-Nepean Valley	Resources to help animal owners prepare for emergencies including a best-practice guide for animal owners to prepare for emergencies and a suite of best-practice videos. Also delivered a safety open day for horse owners across the valley.	<ul style="list-style-type: none"> • NSW SES • Greater Sydney Local Land Services • Department of Primary Industries • Bushfire and Natural Hazards CRC • Hawkesbury City Council • Agnes Banks Equine Clinic

COMMUNITIES OF CONCERN OUTREACH		
Project title	Description	Infrastructure NSW partners
Get Ready Family support services and neighbourhood centres project	Workshops for family-support services and neighbourhood centres in the valley. Aimed to build their capacity to increase flood resilience of individuals and families who use these services.	<ul style="list-style-type: none"> • Fams • NSW SES • Local Community Services Association • Local councils
Recovery training for local leaders	Two-day training program by Anne Leadbeater for council staff and representatives from local community services.	<ul style="list-style-type: none"> • Resilience NSW
Flooding and vulnerability planning for Hawkesbury	Activities to help progress work that focuses on communities that are most vulnerable to floods within the Hawkesbury.	<ul style="list-style-type: none"> • NSW SES • Hawkesbury City Council • Transport for NSW • NSW Police • Peppercorn Services • Link Wentworth Community Housing • Bligh Park Community Services

EDUCATION AND ENGAGEMENT FOR YOUNG PEOPLE		
Project title	Description	Infrastructure NSW partners
High School resource: Water in the Valley (Geography curriculum)	<p>Digital school resource about Flooding in the Hawkesbury-Nepean Valley for Stage 4 NSW Geography Syllabus topic 'Water in the World'.</p> <p>Piloted in high schools and launched with accredited professional development for teachers.</p> <p>Available on NSW SES website.</p>	<ul style="list-style-type: none"> • Western Sydney University • NSW SES • Dept. of Education • Geography Teachers Association • Western Sydney Social Science Teachers Association • ESRI Australia • Bureau of Meteorology
Primary School resource: Water in the Valley	<p>Digital school resource about flooding in the valley for primary school teachers and students.</p> <p>Available on NSW SES website.</p> <p>Launched with accredited webinar for teachers.</p>	<ul style="list-style-type: none"> • Western Sydney University • NSW SES • Dept. of Education
School Emergency Management Planning	<p>Expert briefings and workshops to raise awareness and preparedness of school leaders from schools at risk of flooding in the valley.</p> <p>Aims to encourage these schools to review their emergency plans to better incorporate flood.</p>	<ul style="list-style-type: none"> • Dept. of Education • NSW SES • Catholic Schools NSW • Catholic Education Diocese of Parramatta • Association of Independent Schools of NSW • NSW Police • NSW Rural Fire Service • Resilience NSW

Broad awareness and preparedness

A key challenge for the program was to increase the community's flood awareness and preparedness despite the fact there hadn't been a major flood for over 25 years*. This has been delivered through a combination of accessible flood information, an advertising and social media campaign, and local engagement.

Floods. The Risk is Real.

The 'Floods. The Risk is Real.' campaign has been delivered by Infrastructure NSW, NSW SES and Resilience NSW. It was developed in consultation with the Flood Strategy Communication and Engagement Working Group and with advice from the Behavioural Insights Unit in the NSW Department of Customer Service and other emergency services.

* Note: There were floods following the program delivery in February 2020 and March 2021

The social marketing campaign aimed to increase flood awareness and preparedness of residents in the valley. It was designed to draw attention to the potential depth and extent of flooding, and to distinguish between the river during 'normal times' and the river in times of flood. It was also designed to be able to be re-purposed for other flood-prone areas in NSW.

The campaign had 2 key actions:

- find out your flood risk through a new flood awareness mapping tool
- prepare for future floods by having a conversation with your family and friends about your plan for flood.



Billboards with targeted local messages were used as part of the campaign

WALLACIA FLOODPLAIN. KNOW YOUR FLOOD RISK.

MAP KEY: DEPTH OF FLOODING

- 0 - 0.2m
- 0.3 - 0.5m
- 0.6 - 1.2m
- 1.3 - 2m
- 2 - 4m
- >4m

YOUR LOCAL AREA: IN THE FLOOD ZONE.

Wallacia was originally called Riverview, as it sits alongside the Nepean River, with the swimming hole of Beres Basin to the south. A naturally occurring floodplain, the area is prone to flooding. The Wallacia floodplain has the potential for the deepest levels of flooding in the valley.

In a moderate flood, Silverdale Road would be cut at Blarneys Crossing. In a larger flood, the Park Road evacuation route from Wallacia to the east would be cut. And in the worst floods, all major evacuation routes out of the area would be cut and the village of Wallacia would be inundated.

PROBABLE MAXIMUM FLOOD LEVEL (PMFL)
In the generally rare event of a flooding at Wallacia, the PMFL is 39.5m. It is a focus for the floodplain coming from the Warragamba Dam and Nepean River catchment and has the potential to impact on the entire community of Wallacia and the surrounding area. The predicted height is based on flood modelling.

100 YEAR CHANCE PER YEAR FLOOD LEVEL
The highest flood at Wallacia since European settlement. The flood peak at Wallacia was also recorded in the 181 Flood. It is estimated to be between 1 in 100 and 1 in 500 chance per year flood in this area.

100 YEAR FLOOD PEAK LEVEL
The highest flood at Wallacia since European settlement. The flood peak at Wallacia was also recorded in the 181 Flood. It is estimated to be between 1 in 100 and 1 in 500 chance per year flood in this area.

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visit www.myfloodrisk.nsw.gov.au

Five localised direct mail brochures were sent to residents to residents in suburbs with a high flood risk in 2020

The campaign ran 3 times between September 2019 and February 2021, with a total of 23 weeks. It has included:

- digital advertising including Facebook and banners on digital networks
- local paper advertising
- outdoor advertising including large format billboards, train station advertising and mobile billboards
- radio advertising
- direct mail
- a landing page on the NSW SES website: www.myfloodrisk.nsw.gov.au
- supporting NSW SES Facebook posts.

Radio and Facebook ads were provided in key languages including simplified Chinese, Tagalog and Arabic.

A campaign evaluation after the first 11 weeks highlighted there had been:

- **52,695** unique visits to the website (target was 7,850 unique visits)
- **49,413** searches on the mapping tool
- **42,139** views of videos on the campaign landing page (target 5,000).

Even though the campaign coincided with bushfires, it still increased awareness of the high flood risk and drove more people than expected to find out their flood risk and take actions such as having a conversation about preparing for floods.

Over a third (38%) of residents over 18 years old saw the campaign, and:

- **30%** said they were aware of the high flood risk in the valley (baseline 18%)
- **71%** indicated they had undertaken a flood preparedness action after seeing the campaign
- **27%** indicated they had spoken with their family about flooding after seeing the campaign (target 8%)
- **55%** said they intended to discuss their plan for flood with their family.

In other metrics people said the campaign told them something important (80%), made them think about flooding in their area (80%) or suburb (71%), was trustworthy (66%) and interesting (63%). Almost half said they would like to see the advertising again, which suggests the opportunity to run it again in the future.

The campaign is now being adapted by NSW SES for other high-risk flood areas across NSW.

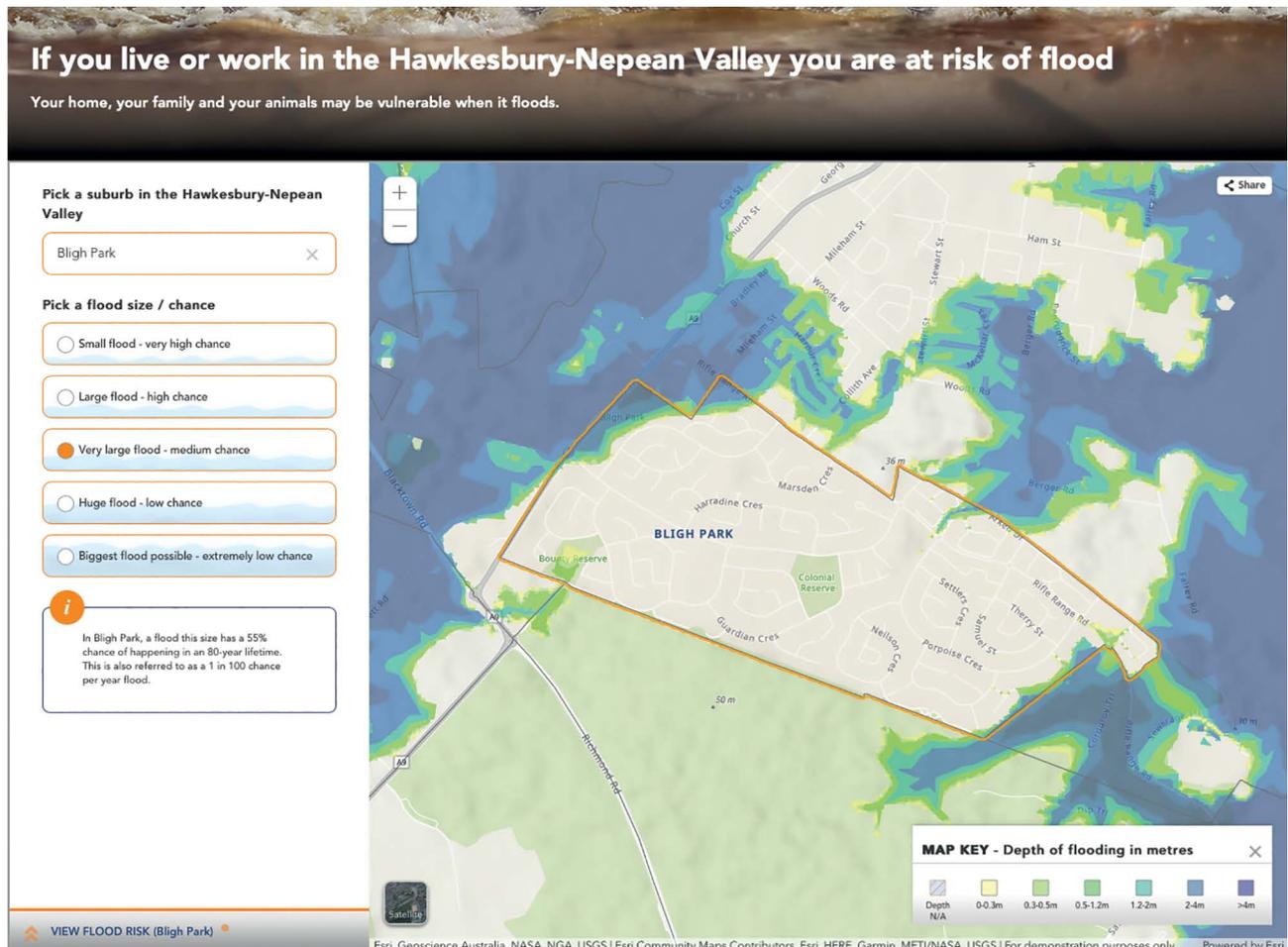
Flood-risk mapping tool

A new flood risk mapping tool was developed by Infrastructure NSW and NSW SES to increase access to the new data and maps from the Hawkesbury-Nepean Valley Regional Flood Study 2019. The tool provides accessible and simplified GIS flood mapping across four local government areas. It was the first flood mapping tool to do this in Australia: www.myfloodrisk.nsw.gov.au

People can enter their suburb into the search field and quickly find their flood map and risk information. It shows 5 different types of floods based on their likelihood and features flood depth and flood extent information.

The tool is the first of its kind in Australia integrating multiple local government areas

The tool leveraged learnings from other similar tools, in particular Brisbane City Council's flood awareness map. The tool was upgraded in 2020 to improve the mobile and desktop interface following feedback from usability testing.



The flood-risk mapping tool on the NSW SES website



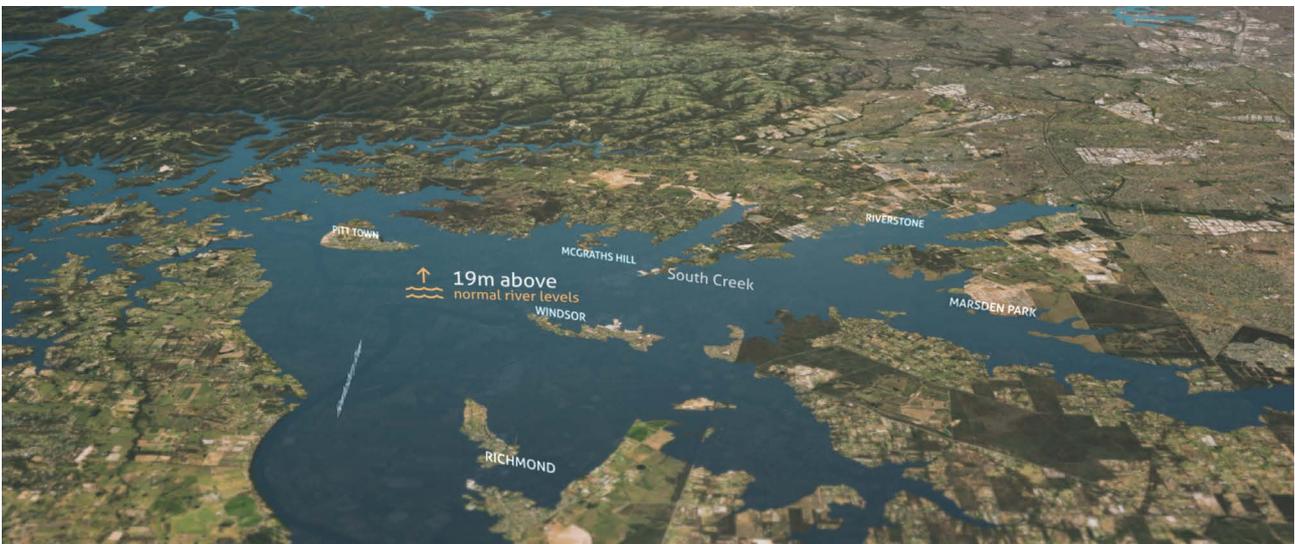
Image from one of three 'local story' animations showing flood impacts at well-known local landmarks

Flood awareness resources

Flood information is traditionally very technical and complicated. This can make it difficult to explain flood risk.

A suite of resources was developed to help communicate flood risk and the valley's history of flooding. These included storytelling videos and animations which have proven very popular across all digital platforms receiving more than **360,000** views over 18 months.

Factsheets and simple graphics were also developed about flood concepts and historic floods, several of which have been translated into key community languages within the valley. Videos and collateral continue to be developed, including material tailored for specific locations.



An animation explaining the 'bathtub effect' is one of several videos receiving a total of more than 360,000 views



Infrastructure NSW flood expert leads a flood tour through the streets of Windsor in June 2017

Local events with councils

One of the program's first activities was a program of events to mark 150 years since the valley's largest flood on record. NSW SES and Infrastructure NSW worked collaboratively with Hawkesbury City Council who hosted the events from 23 to 25 June 2017.

Over 400 people attended the 3-day program which included:

- flood history talks and walks
- an evening event in Thompson Square with food trucks and entertainment
- curated tours and a flood boat display for the 'FLOOD' exhibition at the Hawkesbury Regional Museum
- an 'Afternoon in the Garden' with the Country Women's Association
- demonstration of mixed reality goggles showing 1867 flood levels
- an inter-denominational church service at St Matthews Church, Windsor.

The team also participated in Youth Week, Hawkesbury Show, HawkesburyFest, Warragamba DamFest and local markets.

Flood warnings project

This project aims to increase understanding about how people in the valley access and understand flood warnings, and identify opportunities to improve this through messaging and supporting information/visuals.

The project includes qualitative and quantitative research. It is positioned within the context of the national warnings work as well as work underway at a state level. This is a partnership between Infrastructure NSW, NSW SES, the Bureau of Meteorology and the ABC.

Communities of concern outreach

Communities that are most vulnerable to floods are a priority focus for the Community Resilience Program. The experience of major natural disasters shows that these communities are more likely to face challenges in preparing for natural disasters, barriers with evacuation and to struggle with recovery.

Identifying and developing projects

The start of this process involved work to better understand communities that may be more at risk of flood through analysis of social research, Census 2016 data, GIS information including flood mapping, and council community profiles. Potential communities were then reviewed and validated with key partners in the delivery of this stream including Resilience NSW, NSW SES and NSW Police (Regional Emergency Management Officer or REMO) and local councils.

The communities were grouped into people who had a higher flood risk due to:

- geographic location (ie in a geographic flood hotspot)
- existing social vulnerabilities and complex needs (eg older people with low mobility, people living with a disability, single parents with dependents, people without access to a vehicle).

Existing networks and potential project partners were contacted to seek their advice and interest. The potential projects were further refined as more partners, existing networks and project opportunities were identified and explored. This was a very iterative and highly collaborative process to make sure the right priority focus, partners and projects were in place.

In some cases, projects done successfully elsewhere were adapted for the valley. This included projects delivered through Community Resilience Innovation Program funding (State and Commonwealth) and projects by the Australian Red Cross. In other cases, new approaches were developed.

Disability, chronic illness and aged care service providers who support people in their own homes

Infrastructure NSW partnered with the University of Sydney, Resilience NSW, NSW SES and local councils to deliver workshops in 2018 and 2019 for services supporting people with a disability, chronic illness and/or who are elderly in their own home.

These workshops delivered flood awareness training and emergency preparedness resources to service providers to help them build the resilience of their clients. Workshops were based around the University of Sydney's Person-Centred Emergency Preparedness (PCEP) Toolkit launched in September 2018.

A total of 115 community and disability service providers attended 5 workshops and follow-up events in Penrith, Richmond and Blacktown. Attendees (including team leaders, managers and whole organisations) discussed the best ways to help their clients be more resilient to flood with NSW SES and other emergency experts.

These workshops led to a number of PCEP community engagement activities and 1 cross-sector planning session. This project also reached 44 individuals living in social housing, including some with a disability.



Childcare workers attended workshops in Penrith and Windsor in 2019

Childcare services

'Beyond the Emergency Assembly Point' is an established program by the Australian Red Cross that aims to better prepare childcare services and their clients for emergencies.

Three workshops were held in Penrith and Windsor in 2019 with support from local councils and emergency services including NSW SES, NSW RFS, NSW Police and Fire and Rescue. The workshops covered all local hazards with a focus on flooding in the region.

In total 85 childcare service providers attended these workshops, including long daycare, after school care, family daycare services drawn from private, community run and council owned services.

Feedback from participants was positive, including:

- "The emergency services gave accurate and in-depth information about what their roles are and what we do in real-life situation"
- "Really interesting. I was somewhat naïve to the impact or likelihood of emergency directly surrounding our services".



The Horse Care and Safety day in July 2019 attracted over 100 participants

Hawkesbury-Nepean Animal Ready Community

Experience in recent disasters shows that some people may delay or not evacuate due to concerns about their animals. There is a high number of large animal and pet owners in the valley, so it is essential their owners are prepared for disaster. In particular, there are estimates of over 10,000 horses in the Hawkesbury-Nepean region.

This project kicked off with the establishment of an Animal Ready Community Hawkesbury-Nepean Working Group. Its members include experts and key stakeholders in this field:

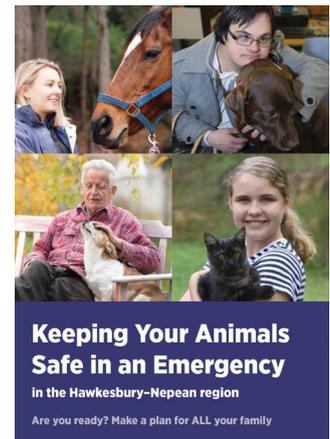
- Agnes Banks Equine Clinic
- Bushfire and Natural Hazards CRC
- Department of Primary Industries
- Greater Sydney Local Land Services
- Hawkesbury City Council
- Infrastructure NSW
- NSW RFS
- NSW SES.

The group developed a “Keeping your Animals Safe in an Emergency in the Hawkesbury-Nepean region” booklet with information about

how animal owners can prepare for a future flood. It was based on successful work done in the Blue Mountains following bushfires.

The booklet was distributed at community events such as the Hawkesbury Show and by Working Group partners at their events. It was also distributed to veterinary practices and animal supply stores in the valley. In 2020 the booklet was updated and is available online at: www.ses.nsw.gov.au/hawkesbury-nepean-floods

This project also delivered a Horse Care and Safety Open Day that focused on helping owners keep their horses safe during natural disasters such as floods. Over 100 horse owners from across the valley headed to the Richmond TAFE Equine Unit on 14 July 2019 to take part in the day. It featured masterclasses with a champion rider and coach, a film and TV horse trainer, and ‘horse rescue’ demonstrations from NSW SES.



Best practice guidelines on keeping animals safe during emergencies were distributed at events and to local veterinary practices

Post-event survey feedback included:

- **88%** said the event encouraged them to make or improve their plans for their horses/animals
- **91%** said it had given them ideas of how to better protect their horses and animals in an emergency
- **82%** said it had helped them to better understand their flood, bushfire or other risks better
- **79%** said they would definitely like to attend a similar event in the future.

This project is currently developing a series of online videos to further educate animal owners about flood risk, preparedness and evacuation.

The first videos released focus on horses in flood emergencies, includes first person narration of what happens when individual animal owners have not prepared ahead of an emergency and the different outcomes for animal safety achieved from having a plan.

Social housing

People in social housing are considered a key community of concern due to a high concentration of social and physical vulnerability and other complex needs. There are approximately 1,600 social housing properties at risk of flooding in the valley.

This project involves a partnership between Infrastructure NSW, Inner Sydney Voice and Link Wentworth Community Housing to build the capacity of social housing tenants to deal with natural disasters, particularly flood.

It began with establishment of a Housing Sector Resilience Network (Resilience Network) in May 2019 which has explored the risks social housing tenants face, and developed skills within the sector to help support these tenants. This network includes community housing providers, housing advocacy groups, emergency services and tenant representatives.

Capacity-building flood awareness and preparedness training has been delivered to key frontline staff at Link Wentworth Community Housing, other housing providers and community workers and volunteers in the floodplain.

Current work is underway to distribute a kit of flood awareness and preparedness resources to all social housing tenants in the floodplain.



Workshop with social housing residents held in Bligh Park in 2019

Work is also underway to support housing providers to build flood preparedness into business as usual. This will include ensuring all new social housing tenants are provided with flood preparedness resources when they sign a lease as well as activities to encourage tenants to develop a flood preparedness plan for their own household.

This project has also led to work with Peppercorn Services and the University of Sydney focussing on communities with higher needs in the Hawkesbury area. Peppercorn Services is a community service provider working with social housing tenants and vulnerable clients. This partnership is piloting community workers supporting individuals with complex and high needs to develop their own individual emergency preparedness plan.



Workshop participants from the Indian community at Mt Druitt in 2019



Workshop for the Chinese community held at Rouse Hill in December 2019

Culturally and linguistically diverse communities

Consultation with local emergency services and local councils identified that parts of the Penrith, Blacktown and the Hills local government areas have a large and growing culturally and linguistically diverse (CALD) population.

It also identified that many CALD households may have a number of generations in 1 home and some of the older generation speak little to no English. The older generation often have caring responsibilities for younger generations and limited or no access to transport – which creates additional vulnerability.

A partnership with the Centre for Disability Research and Policy at the University of Sydney and Settlement Services International delivered 6 workshops between October 2019 and March 2020 to build the resilience of CALD communities in the valley, particularly those living with or caring for someone with a disability.

The workshops were attended by over 145 CALD community members from key language groups in the valley including Hindi, Urdu, Punjabi and Mandarin speakers. Attendees were provided with local flood information from NSW SES and tailored emergency preparation activities using an adapted version of the PCEP Toolkit by the

University of Sydney.

Feedback from attendees was that these workshops provided new skills to prepare for emergencies and valuable networking for individuals and their families.

This project developed 2 video training resources for CALD service providers about having person-centred emergency preparedness conversations with their clients. These are available at: collaborating4inclusion.org

Hawkesbury-Nepean Valley flood awareness and preparedness factsheets have recently been translated into 7 key community languages, and are available on the NSW SES website.

Work is now underway to identify the leading CALD services in the floodplain to help promote and distribute these resources to those community language groups and cultural/community leaders.

This work has prompted a review of the NSW SES website to improve online engagement with CALD communities at risk of flooding. This includes looking at pathways to this information and creation of additional resources.



Participants at a residential aged care workshop engaging with maps showing the worst flood on record

Residential aged care

Two full-day workshops were delivered in March and September 2019 to managers and key staff at residential aged care services in the valley. They were designed to improve the local flood-risk knowledge of these services and support their capacity to plan and prepare for natural disasters, particularly flood. The workshops were delivered in partnership with the Nepean Blue Mountains District Health Service, NSW SES and NSW Police.

A scenario-based exercise was used so residential aged care services could practice their plans using realistic flood scenarios. A key focus was contingency planning for continuity of service for aged care residents, including the procedures for relocating their residents to facilities outside the floodplain.

Over 20 staff from 15 residential aged care services attended these workshops. Over 80% of participants said they felt better prepared for natural disasters such as floods.

Flooding and vulnerability planning for Hawkesbury

This project has involved activities to help progress work that focuses on communities that are most vulnerable to floods within the Hawkesbury local government area. It has included a multi-agency workshop in January 2021 which brought together the Hawkesbury SES Commander and senior staff, emergency service representatives, and NSW Emergency Transport. Agencies heard from key social and community sector services including community transport providers/community centre managers, and social housing providers.

The workshop identified the need for detailed follow up and a dedicated process to work through and address gaps and design the best model for addressing the additional and disproportion risk faced by parts of the Hawkesbury community. It also helped to strengthen networks to help with emergency response in the event of a flood.

Family support services and neighbourhood centres

Socially and economically disadvantaged individuals and families are more vulnerable in the case of natural disasters such as flood.

There are over 170 family support services and neighbourhood centres in the Hawkesbury-Nepean Valley. This project partnered with their peak body (Fams) to develop and deliver sector specific flood awareness and emergency preparedness workshops for these services.

The project also involved consultation with the services to identify the best strategies for assisting vulnerable families in the valley to reduce their risks in floods.

Three workshops were delivered to 66 attendees from 34 services across the valley in November and December 2019.

Feedback from these workshops included:

- **75%** of attendees strongly agreed the workshop increased their awareness about the risk a flood would pose to their organisation and their clients
- **77%** of attendees strongly agreed their awareness about flooding in the valley has increased
- **80%** of attendees agreed or strongly agreed they have a greater understanding of the role their organisation can play in disaster preparedness.

Caravan parks

There are approximately 40 caravan and ski parks in the valley that are in flood-prone areas. Many are located near the river and become inundated and/or have access routes cut in a flood.

A working group was established to help scope and deliver this project involving Hawkesbury City Council, The Hills Shire Council, Penrith City Council, NSW SES including volunteers from local units, and Infrastructure NSW.

This group undertook a flood awareness survey with caravan park managers and identified 4 parks to be involved in a pilot of new emergency planning resources. Once the new plan template and supporting workbook are finished, training will be rolled out to help other park managers and more people in local NSW SES units to help build the resilience of these caravan parks to flood.



NSW SES volunteers working with managers of Torrens Water Ski Gardens, Wisemans Ferry (Image courtesy of Top Notch Video)



Representatives from 34 family support and neighbourhood centres attended workshops



Local leaders workshop participants in 2020

Supporting local leaders

In partnership with Resilience NSW, recovery training was provided to council staff and representatives from key community services in December 2019.

The training was delivered by recovery expert Anne Leadbeater. It was an opportunity to increase understanding about the valley's flood risk and to understand the perspectives of the different organisations. The training used an all-hazards approach with scenarios based on the flooding in the valley.

This training was very timely as local councils and community services were responding to bushfires in the region, followed by flooding in February 2020.

Work supporting other vulnerable communities

Infrastructure NSW has also supported other activities for vulnerable communities outside this program.

Working with NSW SES, workshops were delivered in December 2018 for case workers who assist homeless and rough sleeping clients. Many homeless people in the Hawkesbury sleep close to the river, so they are at high-risk of flooding. The half-day workshop included local flood information and scenarios.

Infrastructure NSW also provided NSW SES Deaf Community Liaison Officers with a briefing in May 2019 about the flood risk and preparedness messages to help them share with deaf communities in the valley.

Infrastructure NSW participated in the Steering Committee for "Ask Me What I Need" Project, led by Next Step Inc. This project delivered a video resource to train emergency services staff and volunteers to better recognise people on the autism spectrum and how to better support them.

This work has also led to assisting local emergency committees to develop better planning to support vulnerable communities in a flood emergency.

Education and engagement for young people

This stream aims to empower young people to be part of an aware, prepared and responsive community. It also aims to strengthen the flood resilience of local schools.

School Education Advisory Committee

Work kicked off with the establishment of a School Education Advisory Committee. The Committee provided advice on potential projects and guidance during their delivery. It comprised:

- Association of Independent Schools of NSW
- Catholic Schools NSW
- Geography Teachers Association
- NSW Department of Education
- Western Sydney Social Science Teachers Association.

This stream also engaged with existing networks including the Disaster Resilience Australia New Zealand Education Network (DRANZEN) and key conferences.

Secondary and primary school curriculum resources

The “Flooding in the Hawkesbury-Nepean Valley” geography school resource was developed to build student and teacher understanding of flooding in the valley, and help them prepare strategies to increase their flood resilience.

It was developed by Infrastructure NSW and Western Sydney University’s Centre for Educational Research to support the ‘Water in the World’ curriculum for Stage 4 (Year 7 and 8) geography students.

The education package includes a term’s worth of lesson plans and supporting materials such as spatial mapping, videos and a photo gallery. It includes fieldwork, inquiry-based learning, problem-based learning, geographical skills, case studies and data. It has cross curriculum content for Science, Maths, History and English.

Written by teachers for teachers, the writing team worked with flood and weather experts to create teaching materials which provoke learning through student participation.

The resource was piloted with schools in and outside the valley in Term 3 2019. Rollout in Term 4 2019 included NESA-endorsed professional development for teachers.

While it focuses on the Hawkesbury-Nepean Valley as a case study, the resource can be adapted and used by other schools across NSW and Australia.



Students from Bede Polding High School in Windsor using Hawkesbury-Nepean Community Resilience Program school resources

An extension of this resource, 'Water in the Valley', was developed for primary school students and launched with professional development for teachers in 2020. Over 70 primary teachers and pre-service teachers attended the webinar hosted by Western Sydney University.

Both resources are available on the NSW SES website: www.ses.nsw.gov.au/for-schools/

The screenshot shows the NSW SES website interface. At the top, there's a navigation bar with 'SES NSW' logo and contact information (132 500). Below that, a banner for 'SECONDARY - WATER IN THE WORLD' features a photo of a bridge over water. A grid of icons represents different resource categories: 'FLOODING in the Hawkesbury-Nepean Valley', 'Geographical Skills', 'Fieldwork', 'Stories of Resilience', 'Cross-Curriculum Content', and 'Gallery'. The 'Geographical Skills' section is expanded, showing an 'Overview' and 'Teacher Resources' table. The table lists various skills and maps available for download.

Secondary school student content on the NSW SES website

This activity sheet is titled '4 Answer Search: Safety during Floods & Storms'. It instructs students to match actions to 'WHAT TO DO?' questions by placing a number in an action box. The questions and actions are as follows:

- 1 WHAT TO DO?** A thunderstorm has just gone through your area and now the road you take to school is flooded!
ACTION: You must act quickly and leave well before roads to high ground are closed.
- 2 WHAT TO DO?** The gutters on your roof are clogged with leaves from the trees in your yard.
ACTION: Ask your parents to put together an Emergency Plan with the whole family and work out what to do and where to go in an emergency.
- 3 WHAT TO DO?** A flood is coming to your town and you have to evacuate your house because it is too dangerous to stay!
ACTION: Quickly check that all the things in your yard are put away so they don't blow around in the storm and bring your pets inside where it is safest.
- 4 WHAT TO DO?** Just after it got dark, a big storm came over and now your house has no electricity.
ACTION: Never enter or travel through floodwater. It is very dangerous! Find a safer way or wait till the floodwater has gone.
- 5 WHAT TO DO?** The local radio station is telling you that a very big storm is on its way!
ACTION: You and your parents have checked your house and it is ok, but you're not sure how your neighbours are going. Check to see if your neighbours need help.
- 6 WHAT TO DO?** Strong winds have blown your garden shed across the backyard and smashed one of the windows in your house.
ACTION: In the school holidays you helped your parents put together an Emergency Kit. Take out the portable radio and listen for updates, information and advice.
- 7 WHAT TO DO?** An unexpected thunderstorm just hit your area and has now moved on.
ACTION: If a really big storm comes, your house will be safer if the roof is in good repair and your gutters are not clogged. Ask your parents to check the roof & clean the gutters regularly.
- 8 WHAT TO DO?** You're not sure what you would do if your family was faced with an emergency!
ACTION: Call the NSW SES on 132 500 for help.

This activity sheet is titled '5 Colouring In Fun: Flood & Storm Hazards'. It asks students to color a picture of a house and find and circle flood and storm hazards. The instructions are:

- WHAT CAN I DO TO STAY SAFE?**
 - Remind Mum or Dad to trim the tree branches
 - Ask Mum or Dad to check the roof for damage
 - Remind Mum or Dad to clean the gutters
- Helps Mum or Dad secure loose items in the yard**
- Remind Mum and Dad to park the car away from trees when a storm is coming**
- Stay away from drains**
- NEVER enter floodwater**
- DON'T WANT TO LOSE THE HOUSE IN THE STORM!**

Example of primary school resources available for teachers and students

School emergency planning

Thirty-eight schools lie within the flood extent of the probable maximum flood (PMF) in the valley. All schools are required to have a School Emergency Management Plan that has arrangements for before, during and after a natural disaster.

This project aimed to increase the flood awareness of these schools and their education sector partners. It also aimed to encourage these schools to better incorporate flood preparedness, response and recovery into their emergency plans.

It was developed in partnership between Infrastructure NSW, the NSW Department of Education, Catholic Schools NSW and Catholic Education Diocese of Parramatta, the Association of Independent Schools of NSW.

Two half-day briefings were delivered for school executive teams and sector leaders. They were independently facilitated and included speakers from a range of emergency services.

This was followed up with 3 full-day hands on workshops. Workshops included a scenario-based exercise, allowing

schools to practice their plans against realistic flood scenarios in a friendly, collaborative environment.

Thirty-one local schools at flood risk participated in the series of briefings and workshops (82% of schools within the PMF extent). Four primary schools and 3 high schools from the PMF 'buffer zone' also participated.

The briefings met their outcomes, with 98% of participants reporting they improved their understanding of flooding, and 92% agreeing they improved their understanding of the flood risk to their school. The majority (88%) reported the briefings improved their understanding of how to plan for a flood affecting their school.

Feedback from an emergency volunteer after the February 2020 flood event noted this work has already assisted with proactive school closures: "... those sessions are what engagement is all about, and it is nice to be able to see the benefits so soon after the event".

More information is available at: www.ses.nsw.gov.au/for-schools/leadership/school-emergency-planning-for-flood/



Leadership teams from 31 local schools attended a series of workshops in 2019 to learn and prepare for floods

Next steps

The Community Resilience Program has achieved significant results in its first 4 years. However, there is still much work to be done to create a truly resilient community in the Hawkesbury-Nepean Valley. This community is highly dynamic with 33% of the population having lived in the region for less than 5 years. In addition, floods are unpredictable and could occur at any time.

The work that continues in 2021-22 and beyond will build on established projects and partnerships, learning from what has been successful and created a high level of engagement. Current work is focused on: caravan parks in the floodplain; social housing tenants; residents with pets, large animals and stock; and residents from CALD communities. In the coming year, new projects will be implemented with the local business community and local Aboriginal communities.

The program will also transition from a primary focus on building flood awareness to helping the community practically prepare for floods. This will include a new phase of a public campaign focused on supporting the community to take active preparedness steps and plan for floods.

Recognition for the program

In mid-2021 the program was awarded the Floodplain Management Australia (FMA) NRMA Insurance Flood Risk Management Project of the Year.

The award acknowledges the innovation and breadth of community engagement in the program. Judges also noted the comprehensive suite of tools and resources developed to help the community build flood resilience.



www.infrastructure.nsw.gov.au