NEWGATE RESEARCH

HAWKESBURY-NEPEAN VALLEY FLOOD RESEARCH

Quantitative community survey for Infrastructure NSW

July 2021

REPORT PREPARED FOR

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EXECUTIVE SUMMARY

The key findings follow from a quantitative telephone survey with n=400 household decision-makers from across the Hawkesbury-Nepean Valley Floodplain (HNVF). ***Fieldwork was conducted in January/February 2021 ahead of the major flooding event in March****. This is the third round of social research to guide the implementation of the Hawkesbury-Nepean Valley Flood Risk Management Strategy following surveys in 2014 and 2018.*

Perceived risk of floods occurring has increased since 2018, even ahead of the March 2021 flooding event

- **The HNVF community remains more apprehensive about bushfires, storms and heatwaves than floods – but flood risk awareness has increased.**
- Flood risk was rated by *seriousness of impact* and *likelihood of occurrence*:
  - **Two in five (41%) believed the *impact* of a flood on their property would be very serious** (rating of 7 or more out of 10).
  - Just one in four (26%) thought a flood was *likely* (rating this a 7 or more out of 10).
  - These two measures were previously a single indicator of perceived risk – in the 2018 survey, 18% believed the *overall risk* of flooding was high.
- ***Prior experience of flooding is a key influence on individuals' perceptions and attitudes towards risk***
  - Only two in five (40%) had ever experienced a flood in their lifetime (vs. 45% for bushfires, 74% for severe storms and 80% for heatwaves).
  - Of those who had experienced a flood, 87% could recall at least one negative impact.
- **Those without prior experiences were more likely to downplay flood risks, while those with prior experiences were perversely more likely to take risks by trusting their own judgment over advice from authorities.**

Most households feel unprepared, but more have taken some form of preparatory action compared to 2018

- **More than half of all household decision-makers felt they would not be very prepared for a major flood (56%)** – consistent with the 2018 survey.
  - The majority (85%) were unlikely to bother preparing for a flood or to check existing flood plans – including 46% who were 'not at all likely' to prepare.
  - Half (51%) of survey participants could not name anything they had done to prepare for a flood, though this is a significant improvement from 79% in 2018.
  - Those able to cite at least three SES-endorsed actions has increased significantly from 2% to 8%.
  - More than one in 10 (13%) reported not always having access to a reliable car they could use to evacuate.

EXECUTIVE SUMMARY CONT'D

Recent flood-related information has cut through

- **Three in four residents (75%) could recall recent flood-related information, up substantially from 23% in 2018.**
  - Participants most remembered general messaging about the need to be prepared for flooding (34%).
  - This was followed by messages about the elevated risks of flooding at present, how to evacuate the local area, how to check their own flood risk, and the need to evacuate if ordered to do so.
- **Some specific flood advice appear to have got through:**
  - **Seven in 10 felt confident they would know what to do during an evacuation** – up from six in 10 in 2018. However, we do note there may be an element of bravado and over-estimation in these results.
  - **Nearly half of household decision-makers (48%) could name at least three endorsed evacuation actions** – up from 32% in 2018.
  - Only 4% were unable to name a single action – down significantly from 10% in 2018.

Most say they would obey evacuation instructions, while a minority will make their own judgments

- There was strong consistency in self-judged estimates of likely behaviour during an evacuation:
  - **Seven in 10 say they would do what they are told.**
  - **The remainder preferred to trust their own judgment** (particularly men and those who have experienced a prior flood and/or evacuation).

Estimates of evacuation time needed have increased

- While the majority said they would need no more than 30 minutes to evacuate, **more people now estimated that they would need more time than this – rising from 21% in 2018 to 38%. On average, residents estimated it would take them around 47 minutes to leave after receiving orders.**
  - Almost three in five (57%) would attempt to return if an evacuation was ordered while they were outside the area.
  - This includes a third who said they would be 'extremely likely' to do so for loved ones, pets and valuables.
  - The proportion who think they would need no help at all during an evacuation has grown steadily from 30% in 2014 to 44% now.
  - However, a consistent one in three said they would need some help, especially those with household indicators of vulnerability.

Strong preference for flood warnings, information and orders via SMS

- **Text messages are the preferred way to receive a flood warning or order – 76%, vs. 47% in 2014.**
  - Other channels were TV and radio (23%), social media alerts (9%), emails (8%), and a smartphone app (6%). Many still wanted a personal call or door-knock from emergency services (nett 38%).
  - Four in five (78%) cited the NSW SES as a trusted source of information followed by other emergency services, government departments (unspecified), local councils and the ABC.

KEY METRICS DASHBOARD

Indicates where a 2021 result is statistically significantly higher or lower than the 2018 result.

Question numbers	Key metrics	2014 % *(n=400)*	2018 % *(n=386)*	2021 % *(n=400)*
Q5B / Q5C *(2021 only; perception of risk split in two)*	Perceived risk of flood *(2014 / 2018 only)*	33	18	--
	Perceived likelihood of flood	--	--	26 ↑
	Perceived seriousness of flood	--	--	41 ↑
Q15	Household has done nothing to prepare for a flood	67	79	51 ↓
	Household has done 3+ things to prepare for a flood	4	2	8 ↑
Q18	Recalled local flood-related information in the last 12 months	26	23	75 ↑
Q41 *(updated in 2021 from 'nett agree' to 'nett 6+/10 excl DK')*	Agree with: "I would have plenty of prior warning if a flood was coming, so I don't need to prepare ahead of time."	60	56	29 ↓
	Agree with: "There isn't much point preparing for a flood because the risk at my place is so low."	43	64	41 ↓
Q32B *(updated in 2021 from 'yes' response to 'nett 7+/10 excl DK')*	Likelihood to try to return home during a flood evacuation	27	50	57 ↑
Q23	Not aware of any procedures for a flood evacuation	13	10	4 ↓
	Able to identify 3+ flood evacuation procedures	25	32	48 ↑
Q4B	In an evacuation, would do as told ('exactly' or 'even if you might question the instructions')	71	71	70
	In an evacuation, would use own judgement ('and follow instructions if they're appropriate')	27	26	27
	In an evacuation, would ignore instructions ('because you know the best thing to do')	0	3	2

Please note the survey design and sample composition have evolved over time. Comparisons with previous years should be made with these caveats in mind – especially 2014, where participants were recruited from an SES database rather than general community phonebooks.

INTRODUCTION AND METHODOLOGY

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BACKGROUND AND OBJECTIVES

BACKGROUND

Infrastructure NSW (INSW) commissioned Newgate Research to undertake a program of social research with residents in the Hawkesbury-Nepean valley floodplain (HNVFP). The purpose of this research is to support implementation and evaluation for the Hawkesbury-Nepean Valley Flood Risk Management Strategy.

The HNVFP in Western Sydney covers approximately 500 square kilometres between Bents Basin, near Wallacia, to the Brooklyn Bridge, and includes the backwater effects of flooding in South Creek and Eastern Creek. It includes population centres such as Penrith, Windsor, Richmond, McGraths Hill and many newer suburbs such as Marsden Park in the North West Growth Area.

THE PURPOSE

This is the third round of social research, with previous research undertaken in 2014 and 2018. This social research continues to explore, measure and track community awareness, perceptions, attitudes and anticipated behaviours to help inform future public communications, engagement and strategic planning.

Notably, this round of research took place just under a year after flooding in the HNVFP. INSW, the NSW State Emergency Service and Resilience NSW also delivered public safety campaigns from 2019 to 2021 to increase flood awareness and preparedness. These are important contexts for considering the findings of this year's results.

As with the previous rounds of social research, the research program in 2021 centres on a core module of telephone surveying. This will be followed up with qualitative research.

OBJECTIVES

Key objectives for the 2021 telephone survey were:

- Measure and track key community outcome indicators including flood awareness and preparedness;
- Evaluate community recall of the *'Floods. The Risk is Real.'* public safety campaign and related collateral;
- Test flood messaging to understand drivers and shifts in public attitudes and behaviours around emergency evacuations due to flooding; and
- Evaluate any shift in community values and priorities that would affect behaviours in a flood evacuation.

Car in floodwater, Jerrys Creek Mulgoa Road #2 (10 February 2020)

Photo by Adam Hollingworth

METHODOLOGY

AUSTRALIAN POLLING COUNCIL SHORT METHODOLOGY DISCLOSURE STATEMENT

Overview of approach

- Telephone survey with residents of the Hawkesbury Nepean Valley Floodplain area in suburbs within a 1 in 500 chance per year flood extent, as defined by INSW (with some suburb-level boundary shifts since 2018)
- All participants were a main or joint decision-maker of major household decisions, as a proxy for household decision-making during an emergency
- Total sample of n=400, yielding an overall error margin of +/- 5% at the 95% confidence level (wider for specific sub-groups within the overall sample)
- ABS Census-representative quotas set by floodplain of residence and softer quotas for age and gender to ensure a good mix of participants
- Final survey results weighted by ABS Census-representative proportions for floodplain areas of residence to account for any sampling bias
- A mix of landline and mobile phone numbers were sourced from professional panel partner Sample Pages, using postcodes provided by Newgate
- Fieldwork conducted between 27January and 18 February 2021, immediately prior to the major flooding event of March 2021
- Fieldwork conducted by the call centre team at ISO-accredited fieldhouse CanvasU, with telephone survey calls averaging 21 minutes

Unweighted sample

Floodplain area	n	%
Richmond & Windsor	169	42
Penrith & Emu Plains	123	31
South & Eastern Creeks	59	15
Lower Hawkesbury	33	8
Wallacia	16	4

The research was undertaken in compliance with the Australian Polling Council Quality Mark standards which can be viewed here: https://www.linkedin.com/company/australian-polling-council. The Long Methodology Disclosure Statement for this research appears in the appendix, and can also be viewed here: https://www.newgatecomms.com.au/disclosure-statements/.

NOTES TO THE READER

When interpreting the findings, please note the following:

- For the quantitative research results, the base (number and type of respondents asked each question) and the actual survey questions are shown at the bottom of each page.
- Weighted results are shown throughout the report, unless otherwise specified. For details, please see the Methodology.
- Relevant statistically significant differences between subgroups or years are identified throughout the report at the 95% confidence level. These are either reported in written format, or using light purple or orange arrows to signify a statistically significantly higher or lower result: 
- All questions were examined for statistically significant differences by demographic, behavioural and geographic sub-groups, where meaningful in the context of the question. Where differences have not been discussed, it should be assumed that no differences existed or were noteworthy.
- Throughout the report the term ‘nett’ has been used where coded responses that are similar in nature have been grouped into one overarching theme (e.g. ‘strongly agree’ and ‘somewhat agree’ netted as ‘agree’).
- ‘Prompted’ responses identify that participants were offered a list of choices to select from and ‘unprompted’ questions allowed for participants to provide verbatim responses that were subsequently coded into themes.
- Results may not always total 100% due to rounding or multiple-response questions.
- To ensure data reliability, results are typically only shown when the sample sizes are at least n=30.

Comparisons to previous surveys

- The research approach was largely consistent for 2018 and 2021, with the most notable difference being the revised list of floodplain suburbs provided by INSW and the floodplain areas into which these were grouped; a list of the suburbs and floodplains used for sampling and weighting in the 2021 survey appear in the appendices.
- However, the 2014 survey relied on a sample sourced from an address database maintained by the NSW State Emergency Service (NSW SES) – meaning participants were drawn from those whose addresses could be matched to landline phone numbers. There was also a more granular focus on geographical representativeness, with interlocked place-of-residence quotas and weights set by each address’s flood risk, zone and topography. The participants from the 2014 study were relatively older, more likely to be living in the highest-risk areas and at least well connected enough to be on the NSW SES database. Consequently, comparisons to 2014 results have been limited within this report.
- The wording of questions and codes throughout the survey has been refined over time, in addition to improvements to a small number of response scales. Where material, these have been noted in the commentary.

FLOOD EXPERIENCES

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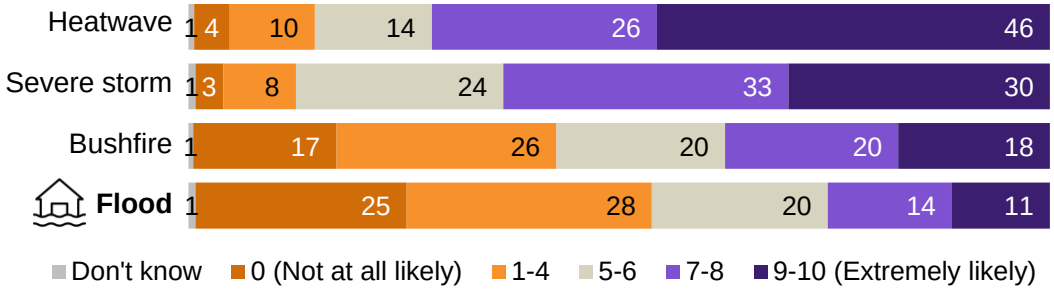
PERCEIVED RISK OF NATURAL HAZARDS

People see floods as less likely to affect their homes than other natural disasters – but many do understand they have a serious impact

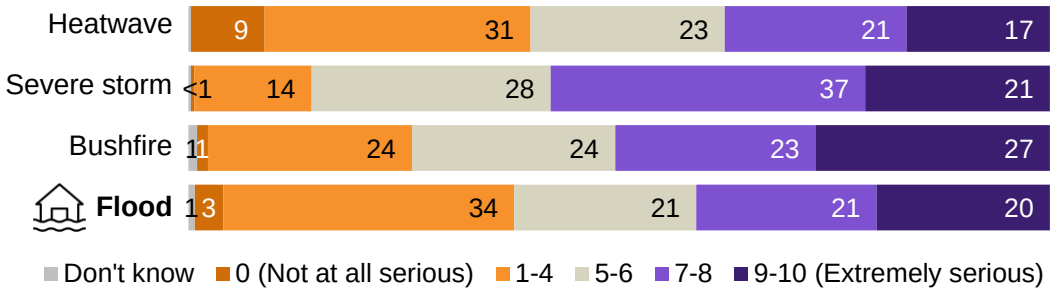
Perceived likelihood of a natural disaster or hazard affecting your property in the next five years (%)



NETT Likelihood (% ex. 'Don't know')

	Low (0-4)	High (7-10)
Heatwave	14	72
Severe storm	12	64
Bushfire	42	38
Flood	**53**	**26**

Perceived seriousness of a natural disaster or hazard affecting your property in the next five years (%)



NETT Seriousness (% ex. 'Don't know')

	Low (0-4)	High (7-10)
Heatwave	40	38
Severe storm	14	58
Bushfire	25	51
Flood	**37**	**41**

In 2018, only 18% believed there was a high risk of flooding affecting their property within the medium term ('next five years').

This risk metric has been split into the twin measures of likelihood and seriousness to more accurately capture the dimensions of risk, so no direct comparisons with 2018 results are available.

However, we note both 2021 results are significantly higher than 18%, suggesting there may be an elevated sense of flood risk amongst the community, even if still relatively lower to other hazards tested. This is potentially due to flooding in 2020 and the public safety campaign.

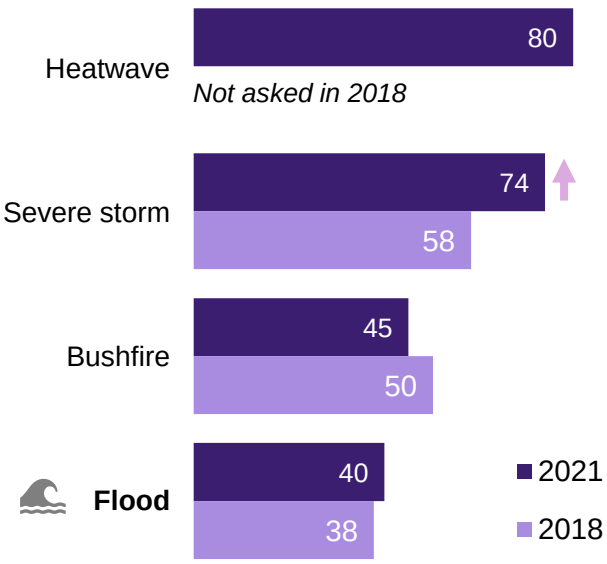
Q5B. Please tell me how likely you think each of the following might affect your property within the next five years – using a 0-10 scale where 0 means 'not at all' and 10 means 'extremely likely'. // Q5C. Now for the same list, please tell me how serious you think the impact on your property would be, using a 0-10 scale where 0 means 'not at all' and 10 means 'extremely serious'. // Base: All participants (n=400)

PRIOR EXPERIENCE WITH NATURAL HAZARDS

Just two in five residents have experienced a flood – less than reported for other natural hazards, perhaps reinforcing lower overall community concern about floods.

Have ever personally experienced any of these natural disasters and hazards (%)

Multiple selections of 'yes' possible



In total, **91% of residents in the HNVFP have experienced at least one natural disaster or hazard** in their lifetime – up significantly from 80% in 2018.

We note this result was driven by an uptick of those who say they've experienced a severe storm, even allowing for inclusion of heatwaves in 2021.

Overall, **23% of those who have experienced a natural hazard have had to evacuate** the property they were in (whether it was in the HNVFP or elsewhere).

Participants from the Lower Hawkesbury floodplain area were more likely to say they have experienced an evacuation due to a natural hazard (45%, vs 22% all other participants).

Q6. Have you personally ever experienced any of these natural disasters and hazards? // Base: All participants (2021 n=400, 2018 n=386) // Q6B. Have you ever had to evacuate the property you were in as a result of a natural disaster or hazard? // Base: Participants who have ever experienced a natural disaster or hazard (2021 n=367)

Purple up / orange down arrows indicate statistically significant difference

WHO HAS EXPERIENCED A FLOOD?

Throughout the survey, prior experience of flood emerged as a key differentiator in knowledge, attitudes, reactions and stated behaviours – creating two broad cohorts:

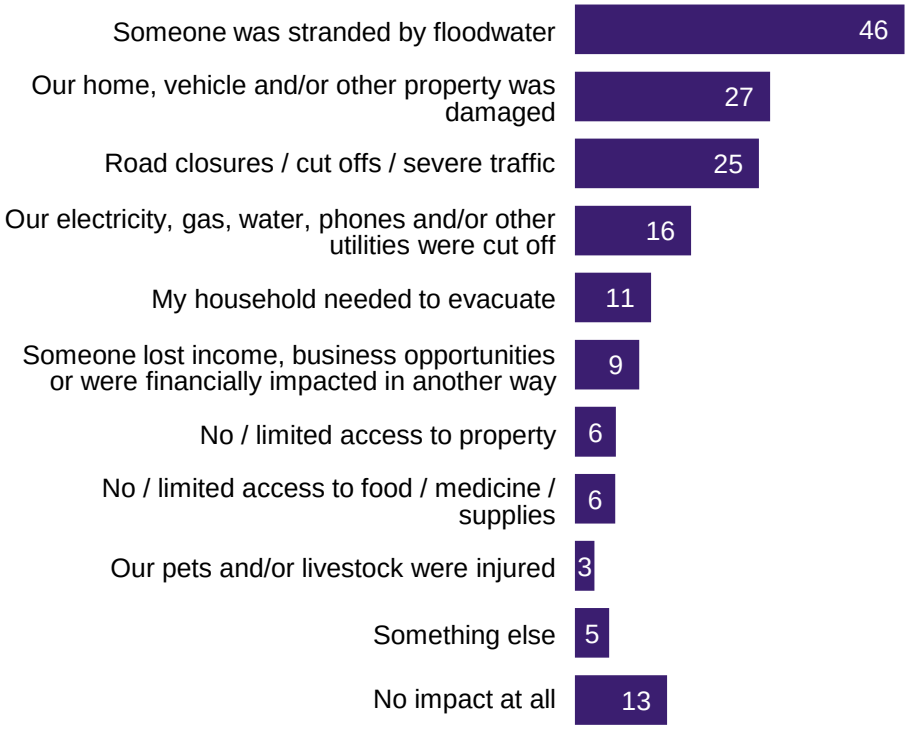
Those who say they have experienced a flood before were more likely to… *(40% of HVNFP residents, n=170)*	**Those who say they have no previous flood experience were more likely to…** *(60% of HVNFP residents, n=230)*
◆ Be from the Lower Hawkesbury area (82%) ◆ Be from the Wallacia area (69%)	◆ Be from the Penrith & Emu Plains area (72%)
◆ Be more likely to prepare for a flood in the next three months (60%)	◆ Be less likely to prepare for a flood in the next three months (63%)
◆ Perceive the likelihood of a flood as high (52%)	◆ Perceive the likelihood of a flood as low (64%)
◆ Be male (48%)	◆ Be female (66%)
◆ Be more confident in their knowledge of what to do after receiving an evacuation order (46%)	◆ Be less confident in their knowledge of what to do after receiving an evacuation order (74%)
◆ Be able to recall seeing or hearing flood-related information in the past 12 months (44%)	◆ Not recall seeing or hearing any flood-related information in the past 12 months (70%)
◆ Be actively involved in their local community (44%)	◆ Have no community involvement (66%)
◆ Have a household of two or more people (43%)	◆ Be a single-person household (74%)

IMPACTS OF FLOODING

Nine in ten (87%) residents who have experienced a flood were able to recall negative impacts.

Impacts experienced as a result of flooding (%)

All unprompted mentions; multiple selections possible



Of the 172 participants who said they had experienced a flood, no one described dealing with impacts such as death or severe injury.

While some of the impacts described here are significant, many participants nonetheless appear to associate flooding with relatively 'minor' inconvenience – at least among the 58% who gave relatively low ratings for anticipated flood severity.

Q6C. Thinking about any flooding you've experienced (from a natural event like heavy rainfall), what were some of the ways in which you and your household were affected by the flood? // Base: Participants who have experienced flooding (n=172)

FLOOD PREPAREDNESS

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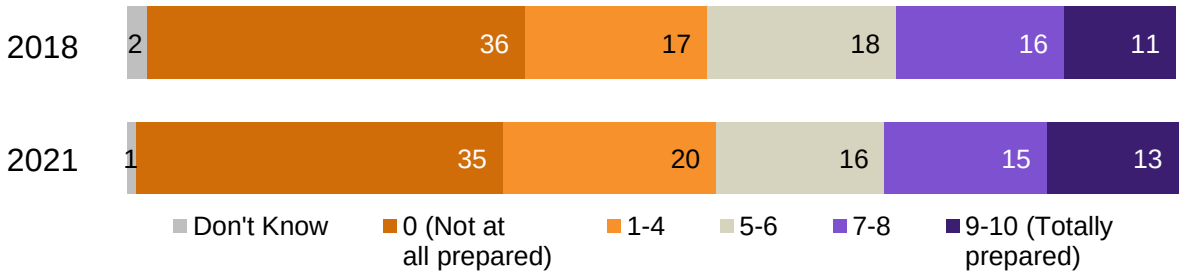
STATED PREPAREDNESS

The community's self-reported preparedness for a major flood remains low, with more than half feeling they would not be very prepared.

Preparedness if a major flood was to reach the property within the next 24-48 hours (%)



NETT Preparedness (% ex. 'Don't know')

	Unprepared (0-4)	Prepared (7-10)
2018	**54**	**27**
2021	**56**	**28**

Those <u>least likely</u> to feel prepared if a major flood was to reach their property within the next 24-48 hours:

- **Live in the Penrith & Emu Plains area** (66%, vs 51% other floodplain areas)
- **Think the risk of a flood is unlikely** (65%, vs 40% who think a flood is likely)
- **Haven't experienced a flood** (64%, vs 42% who have)
- **Female** (61%, vs 49% male)

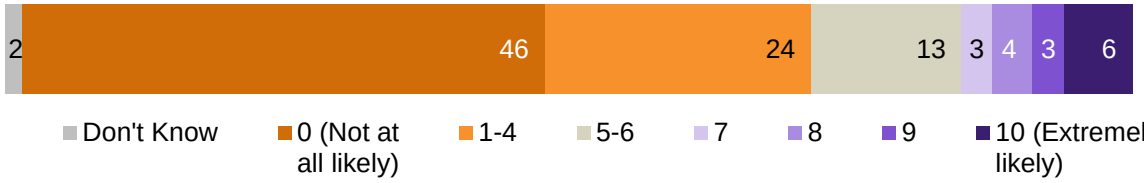
Q11. How prepared would you be if a major flood was to reach your property within the next 24-48 hours – on a 0-10 scale where 0 means 'not at all' and 10 means 'totally prepared'? // Base: All participants (2021 n=400, 2018 n=386)

Purple up / orange down arrows indicate statistically significant difference

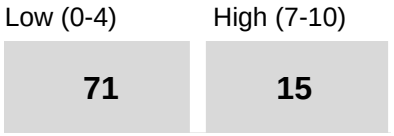
LIKELIHOOD TO PREPARE

Only 15% of residents say they are likely to actively prepare for a flood in the next few months, with nearly half (46%) saying they are not at all likely to do so.

Likelihood to actively take steps to prepare property and household for the possibility of a flood – or to check existing flood preparations, within the next three months (%)



NETT Likelihood (% ex. 'Don't know')



Those <u>least likely</u> to actively take steps to prepare their property and household for floods or to check any existing flood preparations within the next three months:

- **Perceive both the likelihood and the severity of a flood as low** (89% and 78% respectively, vs 40% and 52% who think the likelihood and severity is high)
- Residents in the **Penrith & Emu Plains area** (79%, vs 67% other floodplain areas)
- Those who **think they wouldn't need assistance to evacuate** (77%, vs 60% who think they would need assistance to evacuate)
- Those who **haven't experienced a flood** (77%, vs 62% those who have) **or an evacuation due to a flood before** (74%, vs 61% those who have)
- **Households with three or less people** (74%, vs 63% households with four or more people)

We note there is likely to be some hypothetical bias in these results - either over- or under-claiming of likely behaviours compared to what people would do, especially given the flood risk is deemed to be relatively low. However, it is still important to capture this measure to provide some indication of what people expect they would do.

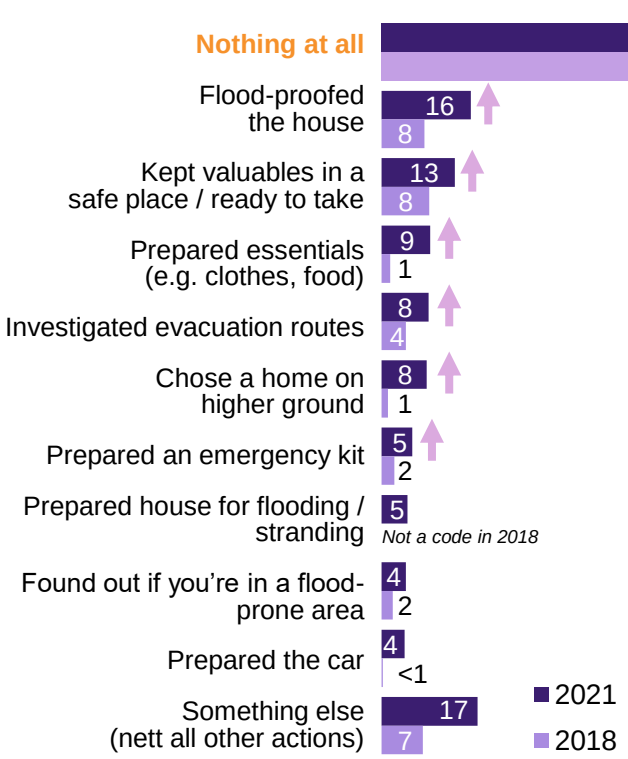
Q38A. Within the next three months, how likely are you to actively take steps to prepare your property and household for the possibility of a flood – or to check your existing flood preparations? Please use a 0-10 scale where 0 means 'not at all' and 10 means 'extremely likely'. // Base: All participants (n=400)

PREPARATION ACTIONS TAKEN

There has been a positive and significant increase in people taking at least one action to prepare for a flood – albeit off a relatively low base.

What households have done to prepare for a flood (%)

Top unprompted mentions 4%+; multiple selections possible



More likely to be true for:

- Single-person households (69%, vs 48% those with 2 or more people)
- Those with no recent flood information recall (66%, vs 46% with recent recall)
- Those with no prior flood experience (60%, vs 38% with experience)
- Those who think a flood is unlikely (56%, vs 37% who think a flood is likely)

In 2018, only 2% of participants could identify three or more things they had done to prepare.

This has increased to 8% in 2021. This is also significantly higher amongst those who could recall any recent flood-related information (11% vs. 0% others).

Those who recalled recent flood-related information were significantly more likely to cite preparing an emergency kit, finding out if they are in a flood-prone area, speaking to family members about what to do in the event of a flood, and organising a place to go outside of the predicted flood area.

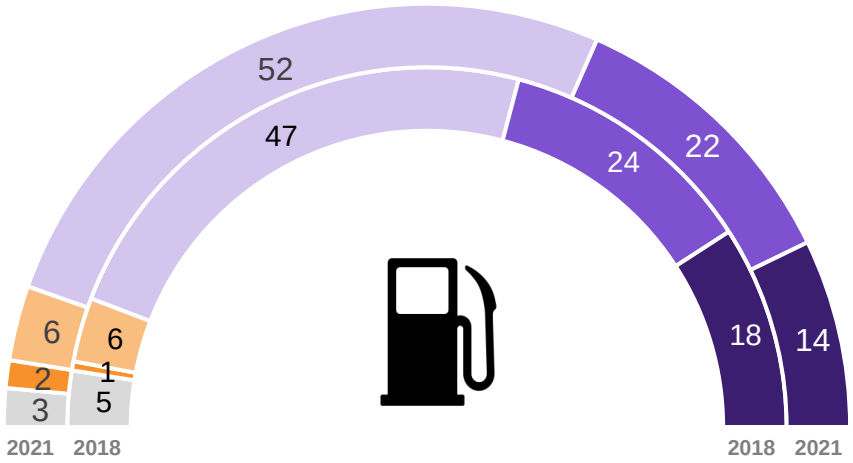
Q15. What have you or your household done to prepare or be ready for a potential flood, if anything? Anything else? // Base: All participants (2021 n=400, 2018 n=386)

Purple up / orange down arrows indicate statistically significant difference

FUEL RESERVES & VEHICLE ACCESS

Nine in 10 car owners claimed to have at least half a tank of fuel at any given time, but 13% of all participants did not always have access to a reliable car.

Average amount of fuel in car at any given time (%)



This question was asked of all participants and 4% were not able to give an answer as they did not have a car.

However, when probed in a follow-up question, 13% of all participants said they do not always have access to a reliable vehicle their household could use to evacuate.

Really don't know | Close to or on reserve | About a quarter full | About half full | About three quarters full | Close to full

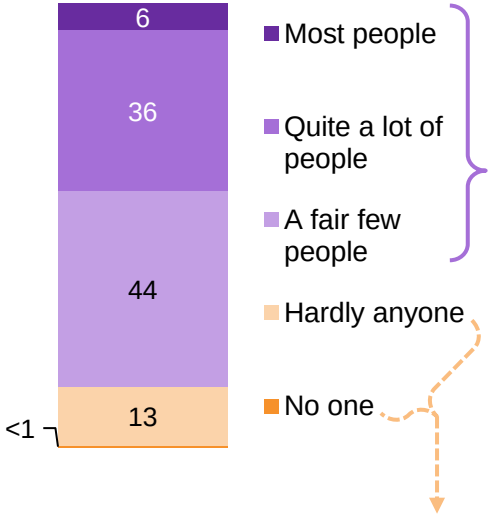
Q30B. And for the main car you use, at any given time is the fuel more likely to be…? //
Base: All participants with a car (2021 n=385, 2018 n=371)

Purple up / orange down arrows indicate statistically significant difference

COMMUNITY COHESION

Community connection within the HNVFP remains high – though younger residents are more likely to feel disconnected. Those with fewer connections are less aware of any recent flood-related information.

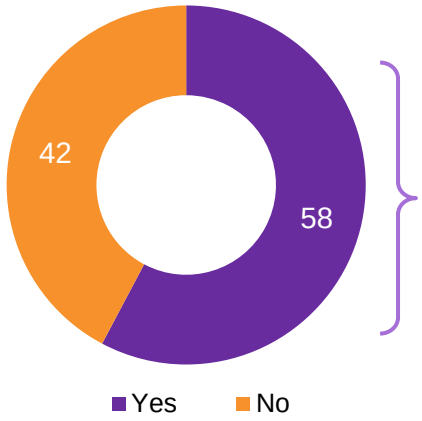
"In my community, I know…" (%)



A nett 86% knew at least 'a fair few people', compared to 92% in 2014. While there are differences in the sample composition, this may be indication of a downward trend as the demographics of the HNVFP has continued to evolve.

Those who know no one or hardly anyone were more likely to be younger (24% Gen Y/Z, vs 12% others).

"I am or have been actively involved in my community…" (%)



In 2014, 30% said they were involved in local community groups – though we note the wording in 2021 was updated to broaden the scope to any previous involvement, which may account for some of the upward shift.

The 2018 survey focused on a different measure, finding that 74% of locals 'often did things to help other people in the community'.

Q2. Apart from the people in your household, how many people do you know in your local community? Would you say you know…? // Q2B. Have you ever been actively involved in your local community in any way – for example, volunteering or joining a community group? // Base: All participants (n=400)

INFORMATION RECALL

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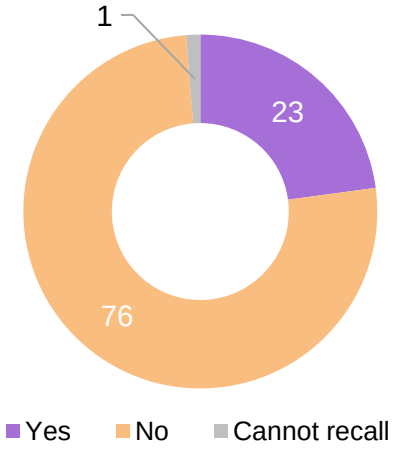
RECALL OF FLOOD-RELATED INFORMATION

Three in four residents (75%) recall seeing or hearing flood information in the last 12 months, a significant increase from 23% in 2018.

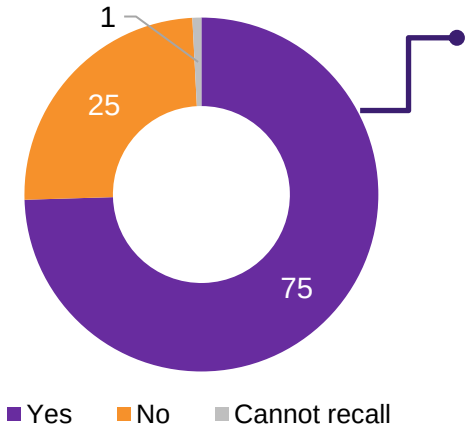
2018

Recall of flood-related information about local area (%)



2021

Recall of flood-related information about local area or the Hawkesbury-Nepean Valley (in the last 12 months) (%)



More likely recalled by:

- Those better-connected in the community (85%, vs 68% who aren't)
- Men (83%, vs 68% women)
- Those who have experienced a flood (82%, vs 70% who haven't before)
- Those who live in a larger house (78%, vs those who live in an apartment 50%)

Fewer than a quarter (23%) of participants in 2018 recalled seeing or hearing flood information at the time of that survey. This has now tripled in 2021, indicating a strong increase in the prominence of flood information for HNVFP residents. This dramatic and significant increase may be attributed to a number of factors, including the February 2020 flood, an increased volume of media stories and weather reports referencing floods, and the NSW Government's ongoing floods campaign to raise awareness in the community regarding flood risks, preparedness and evacuation procedures.

Q18. In the last 12 months, have you seen or heard any flood-related information about your local area or the Hawkesbury-Nepean Valley in general? // Base: All participants (2021 n=400, 2018 n=386)

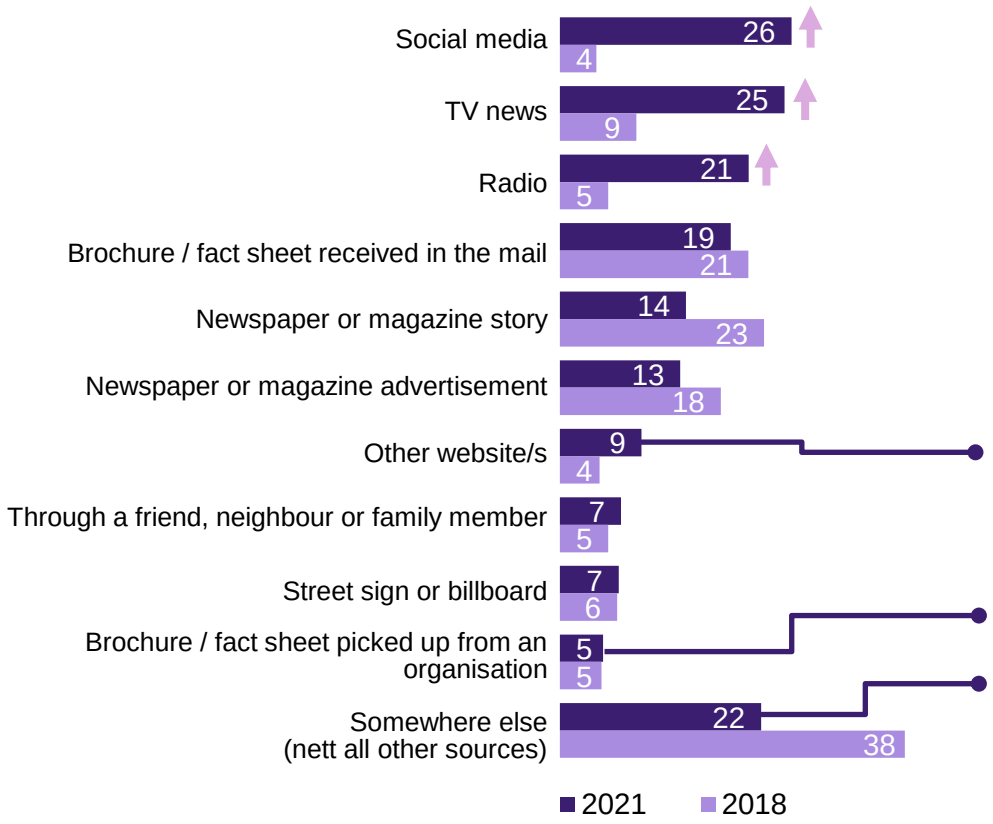
Purple up / orange down arrows indicate statistically significant difference

FLOOD INFORMATION SOURCES

The top information sources recalled by participants were social media, TV news and radio – all of which have increased substantially since the 2018 survey.

Where the information was received from (%)

Top unprompted mentions 5%+; multiple selections possible



Only 4% of participants spontaneously recalled receiving flood information from emergency services websites. Responses showed that these people almost exclusively visited the NSW SES website, with a few also making generic mentions of 'state government' websites.

Websites commonly cited included **news story websites** (e.g. Nine, News.com.au, the ABC), **local council websites**, **weather websites** (e.g. Bureau of Meteorology), and **utility provider websites** (e.g. Sydney Water, AusGrid)

Predominantly picked up from **local councils** and **the NSW SES**

Other sources in 2021 included **emergency services websites, TV ads, community events / meetings / workshops, insurance / energy providers, local councils, children's schools, SMS notifications**, and connections to **emergency services and government agencies**

Q19. Where did you see or hear that flood-related information? Anything else? //
Base: Participants who had seen flood related information (2021 n=299, 2018 n=87)

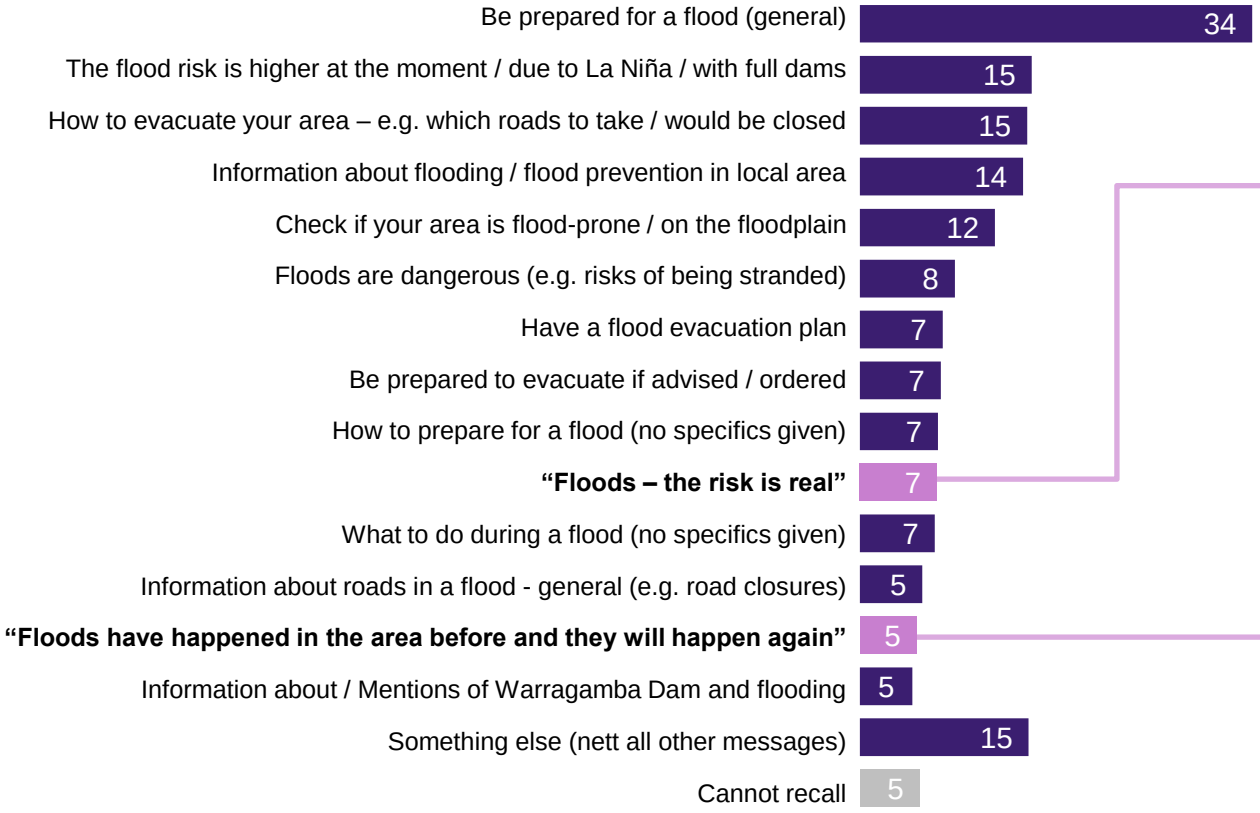
Purple up / orange down arrows indicate statistically significant difference

FLOOD MESSAGING RECALL

The most commonly recalled messages were about being prepared for a flood – followed by messages about the current risk, how to evacuate, and how to prepare.

What the flood-related information was saying (%)

Top unprompted mentions 4%+; multiple selections possible



Of those who recalled seeing or hearing flood-related information, 12% cited a specific NSW Government campaign slogan, including <3% who also mentioned the NSW SES's *My Flood Risk* website.

Q18B. What was that flood-related information telling you? Anything else? // Base: Participants who had seen flood related information (n=292)

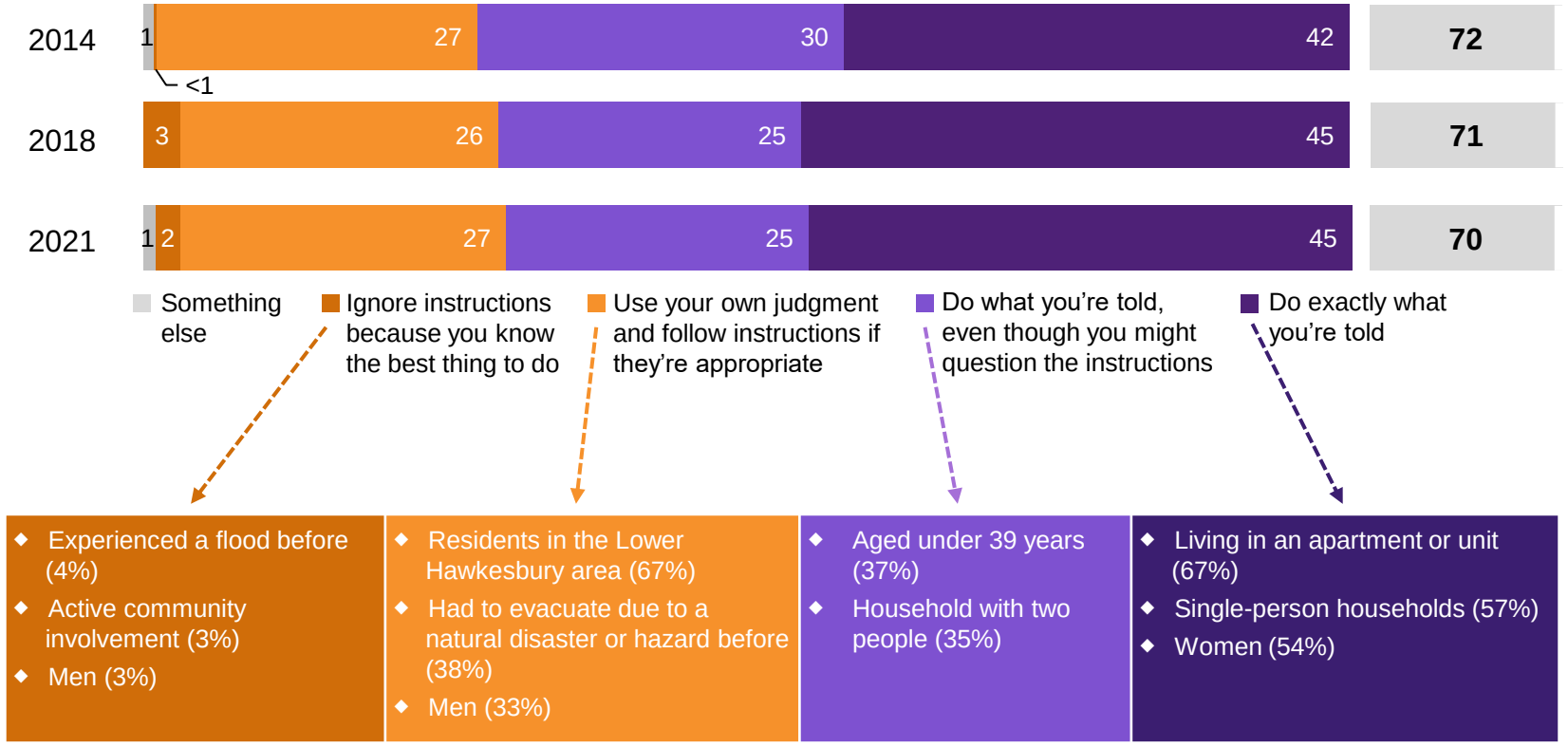
RESPONSE AND EVACUATION

NEWGATE RESEARCH

LIKELY EVACUATION BEHAVIOUR

Most people (seven in 10) say they would follow flood evacuation advice. Those less likely to comply included those with prior flood or evacuation experience, suggesting greater confidence in their own judgment.

Likely response to emergency evacuation (%)



Q4B. If you were in the same evacuation situation, which of the following actions best describes how you would respond…? // Base: All participants (2021 n=400, 2018 n=386, 2014 n=400)

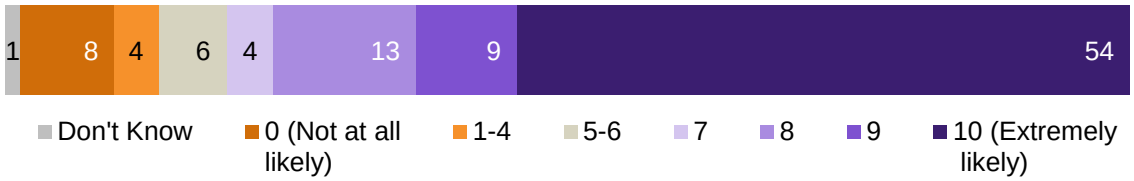
Purple up / orange down arrows indicate statistically significant difference

**Please note: results from charts may not always total indicative NETT % due to rounding.*

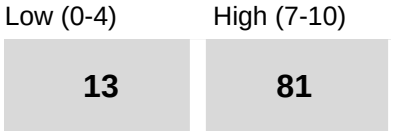
LIKELIHOOD TO EVACUATE

In a new measure, more than half said they would be 'extremely likely' to follow flood evacuation instructions. Around 13% are very unlikely to do so, particularly those who have experienced a flood before.

Likelihood to follow flood evacuation instructions from emergency services to leave the area within the next few hours (%)



NETT Likelihood (% ex. 'Don't know')



Those <u>least likely</u> to say they would follow flood evacuation instructions from emergency services to leave the area within the next few hours:

- Residents in the **Lower Hawkesbury area** (36%, vs 12% other floodplain areas)
- **Have experienced a flood before** (20%, vs 8% who haven't experienced a flood before)
- **Better connected in the local area** (17%, vs 9% who aren't well connected) and who are **actively involved in their local community** (17%, vs 6% who are not)
- **Own or manage a local business** (17%)

In the 2018 and 2014 surveys, participants were asked what they would do or wait for before evacuating during a flood. **Unprompted responses to this question found that 5% in 2018 and 8% in 2014 *would do nothing and would not leave* – a similar result to the 8% in 2021 who claimed they were not at all likely to leave their area.** This emphasises a persistent cohort of at-risk residents due to their desire to remain at their property.

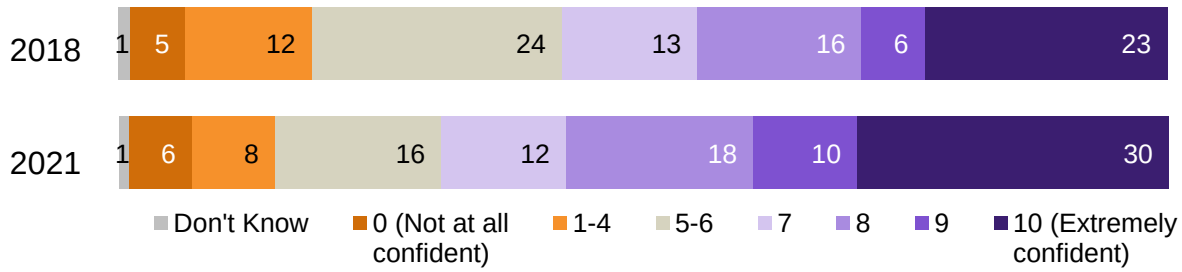
We note there is likely to be some hypothetical bias in these results - either over- or under-claiming of likely behaviours compared to what people would do in the event of an actual flood (especially considering the low perceived risk overall). However, it is still important to capture this measure to provide some indication of what people expect they would do.

Q38B.If you heard or received flood evacuation instructions from the emergency services, telling you to leave the area within the next few hours, how likely would you be to follow these instructions? Please use a 0-10 scale where 0 means 'not at all' and 10 means 'extremely likely'.// Base: All participants (n=400)

CONFIDENCE IN EVACUATING

Seven in ten felt confident that they would know what to do after receiving an evacuation order, up significantly from six in 10 in 2018.

Confidence in knowing what to do after receiving an order to evacuate property in the next few hours due to a flood (%)



NETT Confident (% ex. 'Don't know')

	Low (0-4)	High (7-10)
2018	18	58
2021	14	70 ↑

Those least confident:

- **Aged 75 years and older** (29%, vs 11% other generations)
- Those who **recalled recently seeing or heading flood information** (24%, vs 10% who haven't)
- Those who **think they would need assistance to evacuate** (22%, vs 11% who think they wouldn't need assistance to evacuate)
- **Haven't experienced a flood before** (17%, vs 9% who have)
- **Women** (17%, vs 9% men)

However, as per previous rounds of this social research, we note that there is a degree of bravado and unfounded presumption of 'common sense' knowledge that fuels people's expectations that they will know what to do if ordered to evacuate. As such, these figures should be considered as *self-rated* confidence only, and not assumed as genuine knowledge or ability in knowing what to do.

Q10. How confident are you that you would know exactly what to do if the emergency services told you that you needed to evacuate your property in the next few hours due to a flood – using a 0-10 scale where 0 means 'not at all' and 10 means 'extremely confident'? // Base: All participants (2021 n=400, 2018 n=386)

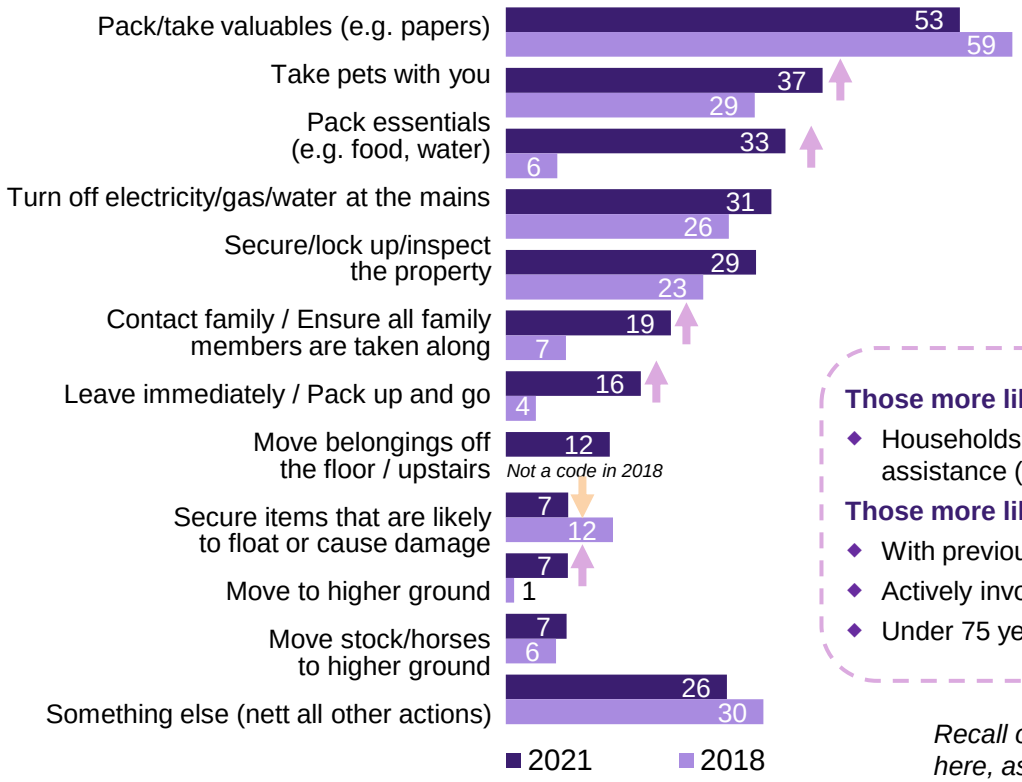
Purple up / orange down arrows indicate statistically significant difference

KNOWLEDGE OF EVACUATION PROCEDURES

The proportion able to cite three or more evacuation procedures has increased significantly since 2018 to almost half (48%) of all residents – most commonly taking valuables, pets and essentials, and turning off utilities and securing the property.

Awareness of flood evacuation procedures (%)

Top unprompted mentions 5%+; multiple selections possible



Only **4% of participants were unable to name a single procedure** – a significant decrease from 10% in 2018.

Comparatively, **the proportion able to identify 3+ procedures significantly increased to 48%,** up from 32% in 2018.

Those more likely to not be able to identify any procedures were:

- Households with children or elderly who would need evacuation assistance (8%, vs 4% other households)

Those more likely to be able to identify 3+ procedures were those:

- With previous flood experience (58%, vs 42% no experience)
- Actively involved in the community (55%, vs 40% not involved)
- Under 75 years of age (53%, vs 23% aged over 75 years)

Recall of recent flood-related information was not a differentiator here, aside from turning off utilities at the mains (35% vs. 20%).

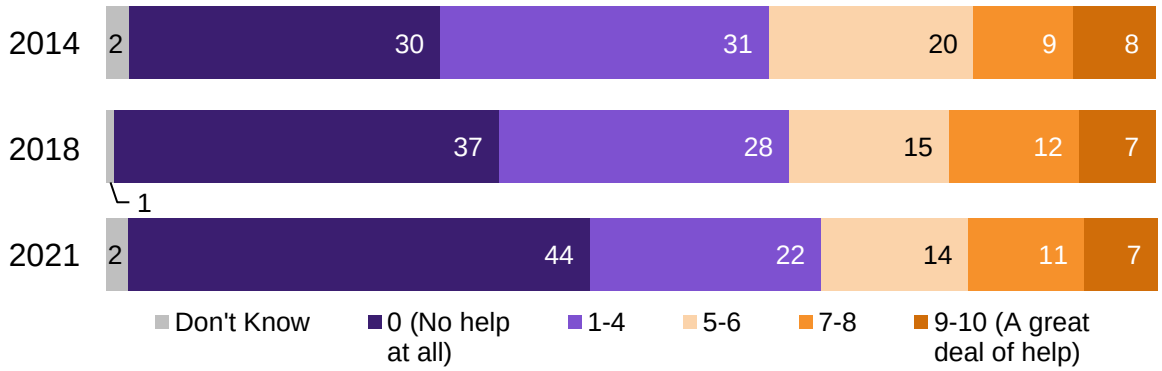
Q23. What are the things you need to do when evacuating during a flood, both before leaving home and after? What else? // Base: All participants (2021 n=400, 2018 n=386)

Purple up / orange down arrows indicate statistically significant difference

NEED FOR EVACUATION ASSISTANCE

Some 44% now think they would need no help at all during an evacuation, a significant increase on 2014. However, one in three think they would need some help.

Expected extent of help needed from others to evacuate household (%)



NETT Need help (% ex. 'Don't know')

	Don't need (0-4)	Need (5-10)
2014	62	38
2018	64	36
2021	67	33

Those <u>most likely</u> to feel that their household would need help:

- **Experiencing financial difficulty** (54%, vs 29% who are financially comfortable)
- Households with **someone with a disability or health condition that could affect their ability to evacuate** (53%)
- Aged **75 years and over** (52%, vs 29% other generations)
- Households with **children or elderly who would need assistance** (45%)
- **Perceive both the likelihood and the severity of a flood as high** (44% and 45% respectively, vs 29% and 25% who think the likelihood and severity of a flood is respectively low)
- **Living in any floodplain area except Penrith & Emu Plains** (36%, vs 25% Penrith & Emu Plains area)

Q14. And if you did need to evacuate due to a flood, how much help – if any – do you think your household would need from people outside your household? Please use a 0-10 scale where 0 means 'no help at all' and 10 means 'a great deal of help'. // Base: All participants (2021 n=400, 2018 n=386, 2014 n=400)

Purple up / orange down arrows indicate statistically significant difference

ESTIMATED TIME TO EVACUATE

While the majority of residents said they would need no more than 30 minutes to evacuate, more people now estimate longer – from 21% in 2018 to 38%. On average, residents estimated it would take them 47 minutes after receiving instructions to leave.

On average, residents estimated that it would take 47 minutes to evacuate. Time estimates offered ranged from 'immediately' to 3 hours.

When asked for a time estimation, 2% said they would not leave – on par with 3% in 2018.

Similarly, 4% responded with 'don't know', reflecting 3% who didn't know in 2018.

NETT Estimated time to evacuate home due to a major flood (% ex. 'Won't leave' and 'Don't know')

	Rapid evacuation (0-30 minutes)	Slower evacuation (31+ minutes)
2018	74	21
2021	62 ↓	38 ↑

While not statistically significant, those who would indicatively need longer to evacuate were:

- Living in a rural property or farm (58min*)
- Think a flood would have a severe impact (57min)
- Own or manage a local business (56min)
- More likely to prepare for a flood (56min)
- Likely to need evacuation assistance (55min)
- Less confident in evacuation knowledge (54min)
- Don't always have access to a vehicle (54min)
- Living in the Richmond & Windsor area (53min)
- Households with children or elderly (52min)
- More likely to believe flooding is likely (52min)

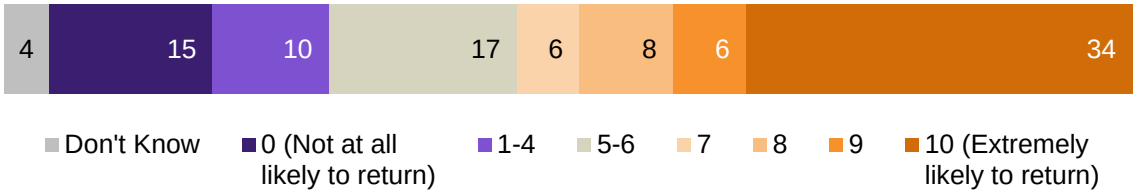
*Q28B. If the emergency services told you that you had to leave your home due to a major flood, how long do you think it would take you to leave? Please give me your best estimate in hours and/or minutes.// Base: All participants (2021 n=400, 2018 n=386) // *NB: Small sample size (n=23) – interpret with caution.*

Purple up / orange down arrows indicate statistically significant difference

LIKELIHOOD TO RETURN

Almost three in five (57%) said they would attempt to return if an evacuation was ordered while they were outside the area – including a third who said they would be 'extremely likely' to do so on account of concerns for loved ones and valuables.

Likelihood to try and return to local area during an evacuation (%)



NETT Likelihood (% ex. 'Don't know')

Low (0-4)	High (7-10)
26	**57**

Those <u>more likely</u> to say they would try to return to their local area during an evacuation:

- **Households with four or more people** (73%%, vs 50% households with three or less people)
- **Aged between 40-54 years (Gen X)** (71%, vs. 51% other generations)
- **Often commutes out of the area for work** (65%)
- **Have any household vulnerability indicator** (e.g. have children / elderly / pets / livestock that would be assistance evacuating, have disability or health condition, or don't always have reliable vehicle access) (62%, vs 40% no household vulnerability indicator)

In 2018, half of participants (50%) stated that they would try to return home (as a simple 'yes' or 'no' response, instead of a rating of *likelihood* to return as in 2021). While not directly comparable due to this update in response type, the results suggest a potential increase – something to be explored further in the qualitative research.

Q32B. And if you were outside of your local area and heard it was being evacuated, how likely would you be to try and return – for example, to help evacuate children, pets or other family members, or to get important personal belongings? Please use a 0-10 scale where 0 means 'not at all' and 10 means 'extremely likely to return'. // Base: All participants (n=400)

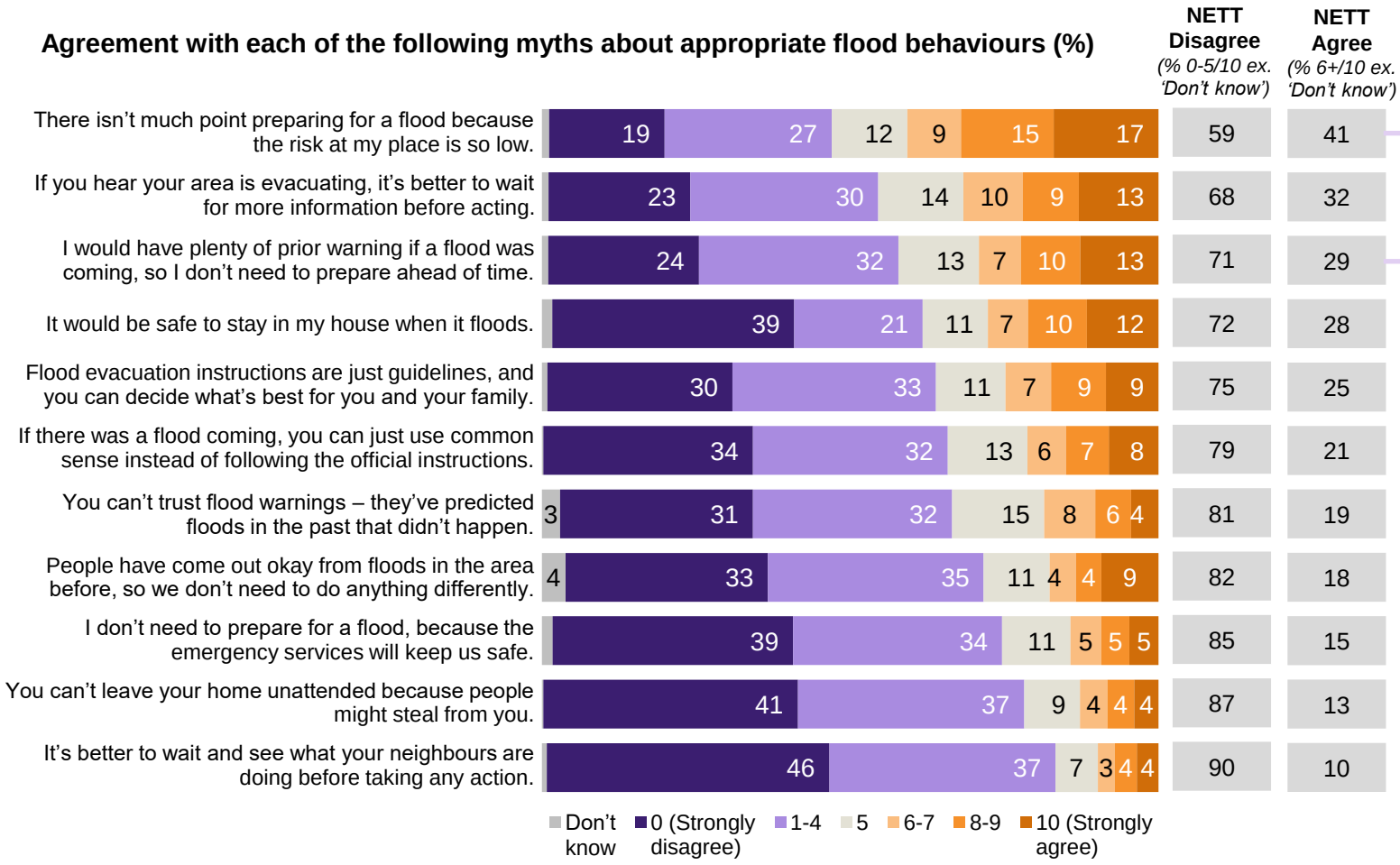
MESSAGING & COMMUNICATIONS

NEWGATE RESEARCH

TESTING FLOOD MYTHS

To better understand potential drivers for undesirable behaviour, we tested a series of flood myths based on previous community research and academic literature – arguing for inaction. We found that most people did not accept these arguments – and even the most 'credible' messages were far less accepted than in 2018.

Agreement with each of the following myths about appropriate flood behaviours (%)



Compared to 2018, significantly fewer people accepted these propositions down-playing risk.

Just 41% agreed "the risk at my place is so low" (compared with 64% in 2018) while only 29% agreed "I would have plenty of prior warning" (56% in 2018).

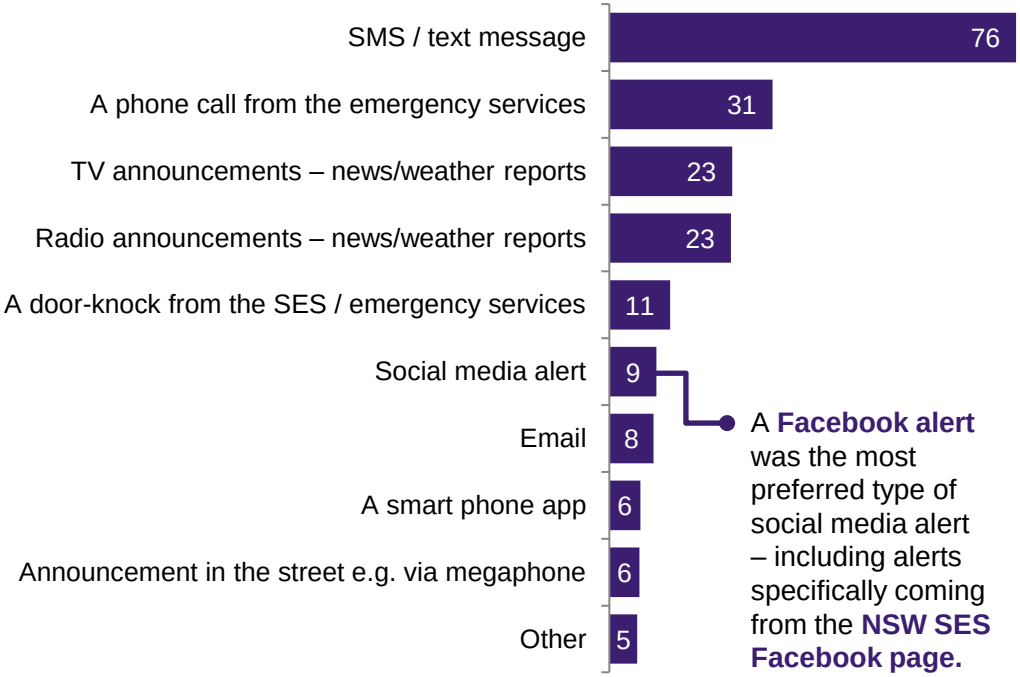
Q41. For each of the following opinions, please tell me to what extent you agree or disagree – using a 0-10 scale where 0 means 'strongly disagree' and 10 means 'strongly agree'.// Base: All participants (n=400) // NB: The two statements from 2018 were rated on a five-point agree-disagree scale, whereas the 2021 survey has used a more nuanced 0-10 scale. To enable comparisons over time, a score of 6+ out of 10 was deemed to be an appropriate proxy for the previous 'nett agree' metric.

EVACUATION NOTIFICATION

Text messages remained the preferred way to receive a flood warning or order by far, up significantly since 2014.

Best way to receive an urgent flood warning or evacuation order (%)

Top unprompted mentions 5%+; multiple selections possible



A **Facebook alert** was the most preferred type of social media alert – including alerts specifically coming from the **NSW SES Facebook page.**

The top five most preferred ways to receive a flood warning or evacuation order remains consistent since 2014, with some notable significant changes in magnitude:

- **SMS / text messages have dramatically increased** as the top method, up from 47% in 2014
- **TV announcements have also increased**, up from 8% in 2014
- **Door-knocking has decreased** in preference, down from 30% in 2014 (perhaps owing to COVID concerns)

Fewer than **1% of participants said they wouldn't want to be notified** about an urgent flood warning or evacuation order, also consistent with the 2014 result.

Only 1% of participants said that they or someone in their household would need information in a language other than English – though we note the limitations of conducting this research in English.

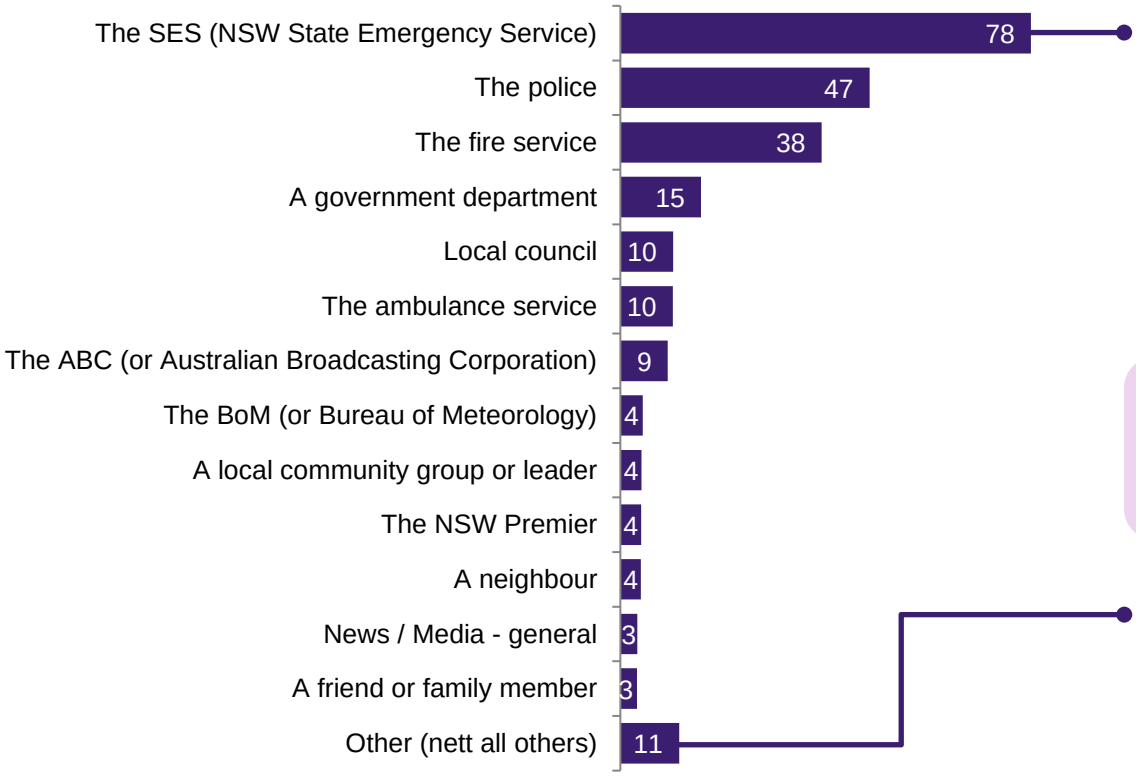
Q35. What would be the best way for you to get an urgent flood warning or evacuation order – for example, to tell you that an evacuation is likely, or that you must leave the area immediately? Any other ways? // Q33B. Would you – or someone in your household – need information in a language other than English? // Base: All participants (n=400)

TRUSTED INFORMATION SOURCES

The NSW SES was cited spontaneously by 78% of participants as a trusted source of information for flood warnings and evacuation orders, followed by other emergency services, government departments (unspecified), local councils and the ABC.

Who is trusted to deliver urgent flood warnings and evacuation orders (%)

Top unprompted mentions 3%+; multiple selections possible



Those more likely to trust the NSW SES were:

- Working (or had immediate family working) in roles relating to emergency services, including any volunteering (92%, vs 75% not in the profession)
- Renters (91%, vs 77% non-renters)
- More likely to think the likelihood of a flood is high (86%, vs 75% who think the likelihood of a flood is low)
- Those who recalled seeing recent flood information (81%, vs 70% no recall)

A related question in 2014 asked who participants would need to receive an evacuation order from to convince them to leave immediately – the NSW SES (76%) and police (74%) also emerged as the front-runners, followed by the fire service (29%).

Other organisations named as trustworthy included the **NSW Minister for Police and Emergency Services**, the **army and defence forces**, a **local MP**, the **Prime Minister**, a **researcher or expert** in floods, and **insurance and utility companies** (e.g. Sydney Water).

Q37. During a major flood, who would you trust to deliver urgent flood warnings or evacuation orders? This can be an individual or an organisation. Anyone else? // Base: All participants (n=400)

APPENDICES

NEWGATE RESEARCH

SAMPLE COMPOSITION

All participants were a main or joint decision-maker of major household decisions, as a proxy for household decision-making during an emergency. This accounts for some skews in the demographic traits of the sample, such as age. This is consistent with previous rounds of research.

FLOODPLAIN AREA*	*UNWEIGHTED %*	%	n
Richmond & Windsor	*42*	46	169
Penrith & Emu Plains	*31*	32	123
South & Eastern Creeks	*15*	17	59
Lower Hawkesbury	*8*	4	33
Wallacia	*4*	2	16

HOME TYPE	%	n
A larger house (e.g. with a garden / swimming pool)	62	248
A smaller house (e.g. terraces, townhouses, semi-detached)	25	97
An apartment or unit	5	18
A mobile home, such as a caravan, motorhome or camper trailer	1	4
A retirement home	1	5
A rural property or farm	6	25
Other	1	2
Prefer not to say	0	1

AGE	%	n
18-39	15	61
49-54	29	116
55-74	42	167
75+	14	56

GENDER	%	n
Male	43	170
Female	57	230

HOME STATUS	%	n
Owner	83	335
Renter	15	58
Other	1	4
Prefer not to say	1	3

YEARS IN LOCAL AREA	%	n
0-9	16	63
10-19	15	63
20-29	23	92
30-39	19	76
40-49	14	55
50+	13	50

# PEOPLE IN HOUSEHOLD	%	n
1	18	71
2	38	151
3	15	59
4	18	71
5	7	28
6+	5	20

** NB: Weighted percentages shown here, except in the case of floodplains – where the unweighted percentages are also shown; these reflect the sample achieved by location, which was very close to the target quotas. The data were subsequently weighted to reflect the proportion of households per location as per Census 2016, to correct for the slight sampling bias.*

SAMPLE COMPOSITION *CONT'D*

ANY OF THE FOLLOWING APPLY TO YOU PERSONALLY	%	n
You identify as Aboriginal or Torres Strait Islander	3	12
One or both of your parents were born in a mainly non-English-speaking country	19	75
You have religious, spiritual or cultural beliefs that could affect your decision about whether or not to evacuate in a flood	1	3
You own or manage a business in the local area	18	74
You often commute out of the local area for work	40	161
None of the above	44	174

ANY OF THE FOLLOWING APPLY TO YOUR HOUSEHOLD	%	n
You have children or elderly family members who would need assistance during a flood evacuation	26	103
You have pets or livestock that would need to be evacuated in a flood	60	239
You or someone in your household have a disability or health condition that could affect their ability to evacuate in a flood	19	72
You and your household do not always have access to a reliable vehicle that you could use to evacuate	13	51
None of the above	22	88

CURRENT FINANCIAL SITUATION	%	n
Having a lot of difficulty covering basic living expenses	4	15
Having some difficulty but just making ends meet	8	35
Doing okay and making ends meet	48	190
Doing well and feeling comfortable	36	144
Prefer not to say	4	16

EXPERTISE – SELF OR IMMEDIATE FAMILY, PAST/CURRENT ROLES	%	n
A government department or paid role that relates to emergency services	14	54
An emergency services organisation	8	30
None of these	81	325

Weighted percentages shown here

FLOODPLAIN AREAS – SUBURBS INCLUDED IN 2021 SURVEY

Richmond & Windsor	Penrith & Emu Plains	South & Eastern Creeks	Lower Hawkesbury	Wallacia
Agnes Banks	Emu Heights	Berkshire Park	Bar Point	Greendale
Bligh Park	Emu Plains	Llandilo	Berowra Creek	Wallacia
Cattai	Jamisontown	Marsden Park	Berowra Waters	
Clarendon	Leonay	Riverstone	Colo	
Cornwallis	Penrith	Schofields	Cumberland Reach	
Freemans Reach	Regentville	Shanes Park	Ebenezer	
Grose Wold		Windsor Downs	Gunderman	
Hobartville			Laughtondale	
Londonderry			Leets Vale	
Maraylya			Lower Macdonald	
McGraths Hill			Lower Portland	
Mulgrave			Marlow	
North Richmond			Milsons Passage	
Oakville			Sackville	
Pitt Town			Sackville North	
Pitt Town Bottoms			Singletons Mill	
Richmond			Spencer	
Richmond Lowlands			Webbs Creek	
South Windsor			Wendoree Park	
Vineyard			Wheeny Creek	
Wilberforce			Wisemans Ferry	
Windsor				
Yarramundi				

AUSTRALIAN POLLING COUNCIL METHODOLOGY DISCLOSURE STATEMENT

This research was conducted by Newgate Research on behalf of Infrastructure Australia between 27January and 18 February 2021.

The target population for the research was household decision-makers aged 18 years or above who reside within the Hawkesbury-Nepean Valley Floodplain, defined by a list of suburbs supplied by Infrastructure NSW.

The research comprised a telephone survey with n=400 participants.

Survey participants were drawn from the database of Sample Pages, a commercial provider of research sample. Participation was on a voluntary, and a mix of landlines and mobiles were dialled.

Weighting was applied to the survey dataset to more accurately reflect the target population, using RIM (Random Iterative Method) weighting (or raking).

The dataset was weighted to match population data from the Australian Bureau of Statistics' Census 2016 by floodplain of residence location, age and gender. The weighting approach was consistent with that used in the 2018 study, bar adjustments to the list of in-scope suburbs provided by Infrastructure NSW.

Using the effective sample size, the maximum margin of error for estimates made on the total sample is +/- 5%. Weighting efficiency was around 96% for most survey estimates; that is, the effective sample size for most estimates was around 96% of the actual sample size (i.e. n=383 for estimates made on the total sample).

The full question wording used in the survey is included within the footnotes of the report. For multiple choice questions and statement grids, the order of response options and statements was randomised to avoid potential order effect.

The research was undertaken in compliance with the Australian Polling Council Quality Mark standards which can be viewed here: https://www.linkedin.com/company/australian-polling-council.

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