Flood risk in the Hawkesbury-Nepean floodplain

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Since time immemorial the Hawkesbury-Nepean River has flooded after severe storms have brought very heavy rain. Climate change will increase the frequency of both severe storms and severe floods posing a heightened risk to human life.

The risk to human life posed by floods has been greatly increased by local councils and the NSW Government allowing housing to be built – and continue to be built – on the Hawkesbury-Nepean River valley floodplains, a valley in which historically the most severe flood reached 21 metres in depth.

The NSW Government proposes to reduce the risk to existing and new residents by raising the Warragamba Dam wall by 14 metres to provide space to store flood waters originating upstream[1]. If implemented, this proposal would have numerous well documented and reported adverse impacts on the environment of the World Heritage listed Blue Mountains National Park, and on sites of significance to the Gundungurra people[2].

No flood control dam ever prevents the most severe floods. Dams and levees can actually increase flood risk when governments permit more development on the floodplain. There are better options[3] to protect lives and property than raising the Warragamba Dam wall.

1. Stop putting people in harm's way

No dam can stop the largest of floods. This is particularly true in the case of the Hawkesbury-Nepean floodplains because nearly half the floodwaters originate downstream of the Dam or outside the Dam catchment.

The first and most practical step is for the NSW Government to immediately stop further homes being built on the floodplain. Currently, the NSW Government expects to increase the population in the area by over 130,000 people by 2050.

2. Provide alternative flood storage in Warragamba Dam

Lowering the full storage level of Warragamba Dam by 12 metres would free space for flood control. Further, lowering the full storage level can be implemented immediately and would have no upstream environmental impacts. Independent experts[4] have found that this option, coupled with use of current

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[1] http://epbcnotices.environment.gov.au/_entity/annotation/8a689cdd-bd3a-e711-998c-005056ba00a8/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1495591686007
[2] https://www.giveadam.org.au/impacts
[3] Pittock (2018), Managing flood risk in the Hawkesbury – Nepean Valley A report on the alternative flood management measures to raising Warragamba Dam wall. A submission to NSW Parliament: https://www.parliament.nsw.gov.au/lcdocs/submissions/65507/0364%20Professor%20Jamie%20Pittock-%20Attachment%201.pdf
[4] Khan (2012), Inquiry into adequacy of water storages in NSW. A submission to NSW Parliament: https://www.parliament.nsw.gov.au/lcdocs/submissions/52166/0025%20Dr%20Stuart%20Khan.pdf

and new desalination plants, could protect Sydney's water security, diversify the supply, and be more cost effective than raising the Warragamba Dam wall.

3. Improve evacuation routes

Previous NSW Government investigations have found that effective evacuation is the only measure that guarantees a reduced risk to life in the Hawkesbury-Nepean River valley[5]. As floodwaters are sourced from many catchments, and low-lying parts of the current roads are cut early as floodwaters rise, a program of upgrading roads to allow evacuation at higher flood levels would dramatically increase the safety of residents. The Windsor Viaduct/Bridge, completed in 2005, is an example of such infrastructure.

4. Help the most flood prone residents to relocate through a home buy-back scheme

A large number of people on the Hawkesbury-Nepean floodplain live in the 7,600 homes located below the 1:100 historical flood risk level. These homes are either flooded regularly or are at very great risk of flooding.

A further 7,900 homes are located above the 1:100 historical flood risk level but below the 1:500 historical flood risk level. These homes are at significant risk of flooding.

In many cases the risk to these homes is from floodwaters from catchments downstream of the Dam or outside its catchment. A voluntary home buy-back scheme commenced in Lismore in October 2022[6] and a similar approach was taken when relocating the Brisbane River valley town of Grantham after the 2011 Queensland floods. A similar approach could also be taken in north-western Sydney.

The cost of these alternative flood management options is significant, as is the cost of raising the Dam wall. However, all the alternative options have additional benefits for western Sydney, including greater safety for the most flood prone residents, safer roads, a more vibrant agricultural sector, more recreation opportunities, a healthier environment and improved water security.

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This is a summarized version of a submission made to the Parliament of New South Wales which is available at https://www.parliament.nsw.gov.au/lcdocs/submissions/65507/0364%20Professor%20Jamie%20Pittock-%20Attachment%201.pdf. This document incorporates the NSW Government's most recent (2022) estimate of the number of homes located below the 1:100 and 1:500 historical flood risk levels.

[5] Infrastructure NSW. 2017. Resilient valley, resilient communities. Hawkesbury-Nepean valley flood risk management strategy. Infrastructure NSW, Sydney.
[6] https://www.nsw.gov.au/media-releases/northern-rivers-voluntary-home-buy-backs-to-start