

Understanding Flood Probability

When building or developing, it's important to know the probability of flooding so the risk to the property can be minimised through setting an appropriate finished floor level.

There are two acronyms commonly used when talking about the likelihood of a flood, they are Annual Recurrence Interval (ARI) and Annual Exceedance Probability (AEP).

Both ARI and AEP values are based on statistical calculations and represent the average timing of events.

What is Annual Recurrence Interval (ARI)?

The ARI is sometimes also known as 'return period'.

It's the average number of years that it is predicted will pass before an event of a given magnitude occurs. For example, a 50 year ARI event would on average happen every 50 years.

What is Annual Exceedance Probability (AEP)?

An AEP is the probability of a certain size flood occurring in a single year. A 1% AEP means there is a 1% chance in any single year of the flood event happening.

On average, one event of this size will occur every 100 years. That means, 1% AEP is equal to a 100 year ARI, a 2% AEP is a 50 year ARI, and a 10% AEP is a 10 year ARI.

What are the chances of a flood affecting me?

The ARI and AEP values are not exact, and although unlikely, multiple 1% AEP or 100 year ARI events could still happen within the same year.



The terms are often used interchangeably. However our Council uses AEP to describe the probability of flooding. It's important that we assess the risk, so that we can plan for flooding that may happen.

To determine the AEP we use our own local flood modelling, or where flood issues are more complex, we use advanced modelling mostly provided by developers and their consultants.

The risk of being flooded in areas across Canterbury depends on where you live, but for many people living on a floodplain, or near overland flow paths (overland flow paths are the routes taken by water when the man-made drainage network is overloaded), streams or rivers, there is potential for a major flood.

If you have questions or concerns about flooding, contact us on 0800 965 468 or email subdivisioneng@wmk.govt.nz

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Typical AEP's and their use are described in the table below:

AEP	Flood Event	Example of Use
20%	1 in 5 Year	To size primary stormwater pipe infrastructure in roads
10%	1 in 10 Year	To size road culverts
2%	1 in 50 Year	To size overland flow path capacities
1%	1 in 100 Year	To inform finished floor levels of existing urban lots
0.5%	1 in 200 Year	To assess rural and urban finished floor levels under the Regional Policy Statement
0.2%	1 in 500 Year	To inform Natural Hazard Planning

Find out more at waimakariri.govt.nz, or contact Customer Services on 0800 965 468.