



# Whangamatā Stormwater Flood Model Map – Fact Sheet

## Answers to commonly asked questions

### *Why does Council map Stormwater Flooding?*

We can't control the weather, but our Council can model and map stormwater flooding to understand the risks, allow our communities to be prepared and become more resilient to flooding. We are also using this information for our stormwater infrastructure and emergency planning.

### *What is the result of the stormwater flood modelling in Whangamatā?*

It is important to understand this shows the extent of flooding in a 1% Annual Exceedance Probability (AEP) flood event (see more below). Stormwater runoff naturally flows overland to the lowest point. In Whangamatā we typically experience stormwater ponding, where water can become trapped and collect during heavy rain at low points for short periods of time, with the stormwater infiltrating into our sandy soils quite rapidly. The lack of velocity in the ponding flood waters significantly reduces the risk to people and damage to property.

## Property Files, Insurance, LIMs, Property Values:

### *What are the legal requirements to map flooding?*

It is a requirement under the Resource Management Act 1991, whereby our Council is responsible for controlling any effects of the use, development or protection of land to avoid or mitigate natural hazards.

In addition, under our Council's Comprehensive Stormwater Discharge Consent we are required to avoid or minimise adverse flooding of land and property.

### *Will the flood information appear on a LIM?*

Yes, the Local Government Official Information and Meetings Act 1987 requires the Land Information Memorandum (LIM) to state if the property is subject to a stormwater flood hazard.

### *Will the flood information affect my rates?*

No, the flood information will not directly affect your rates. The work undertaken to address flooding will be funded from either rates or a combination of rates and development contributions.

### *What can I do if I do not agree with the flood map?*

The flood maps can be reviewed to take into account any property specific information. You can request a review of the flooding risk that has been identified on your property. Contact us with all relevant property information and a Three-Waters Engineer will review the situation.

### ***Could this information affect property values?***

Our Council is required to produce the best available flood information and make it available to the public on request, including anybody considering buying a property. Over time, property sales evidence will reveal any effects. If you are concerned about the potential impact of flood hazard information on property value, then you could seek advice from a registered valuer.

### ***Does this affect insurance?***

Our Council cannot advise on how flood information affects insurance cover. If you have questions in this regard, we recommend discussing this with your insurance provider. Insurance policies often require policy holders to advise the insurer of any new information about natural hazards on an insured property. The public, including insurance companies, can access our Flood Model Map.

### ***Do I need to take any action?***

No. However, if your property is a rental, we advise that you inform your tenants.

## **Information of the Flood Model Map:**

### ***What does the Flood Model Map show?***

The Flood Model Map shows where properties within the modelled areas are affected by stormwater flooding in 1 % Annual Exceedance Probability (AEP) flood event. The 1% AEP flood event has a 1% chance of occurring every year, e.g. once in every 100 years. It also shows the building footprints and the boundary of the flood model.

### ***Why is the Flood Model Map information important?***

The Flood Model Map indicates where properties are likely to flood during the 1% Annual Exceedance Probability (AEP) stormwater flood event. These floods have a 1% probability of occurring in any given year.

## **How the Flood Model Map relates to my property?**

### ***Will my house be flooded?***

The map can look like flooding is on top of the buildings, however it is showing the modelled extent of the flood based on a 'bare earth' terrain. The model has removed the buildings, sheds, fences, and trees from the land surface. In reality, flood waters may go around the building, under or through. Whether your house will flood depends on your floor level relative to flood depths.

We are unable to provide the floor levels of existing buildings, but please contact us for detailed information regarding the modelled flood level, flood depth and velocity for individual properties.

### ***The map shows flooding at my house, do I have to raise my floor level or move out?***

No, you are not required to move out of your home or raise the floor level.

You can have a flood risk assessment undertaken for your property which will address the specific impact of the flooding and how to reduce the risk at your property.

The Flood Model Map will guide the development of new buildings and extensions to existing buildings. It will be used to inform new subdivision, land use and development. The Flood Model Map is also used to inform stormwater infrastructure works.

### ***My property is in the indicated flood zone, what can I do to protect my property from flooding?***

Owners of properties with a flood hazard showing should consider where flood water will rise and flow on the property, particularly if intending to develop. People must avoid making flooding worse on any other properties by blocking or diverting flood water. For example, this could happen by constructing a raised garden, garden shed or playhouse in a flood area. They should also take care when altering the level of their property that they do not inadvertently direct water where it is not wanted, such as towards the door of a building.

### ***My house or property is in the flood extent area, what does that mean for development?***

The floors of any new buildings and extensions to existing buildings are required to be a minimum height above the floodwater level. The freeboard height is set by the New Zealand Building Code E1 Surface Water. If the development requires a Resource Consent, the flood hazard risk assessment will be required.

### ***No flooding on my property—am I flood-free?***

The map shows potential risks using the best available information but doesn't guarantee your property is flood-free. The model has relied on data inputs and assumptions, which can evolve over time, for example the risk of climate change or change in land use.

## **What can be done about Flooding?**

### ***Is our stormwater system adequate?***

Stormwater runoff can exceed the drainage capacity of the stormwater network and ponding and overland flow is expected. Building infrastructure, or pipes, large enough to accommodate the amount of rainwater generated during this type of event below ground, is simply not affordable or realistic.

It is extremely expensive and more often than not physically impossible to provide a drainage network that avoids all ponding and overland flow.

### ***Can Council fix the flooding or make sure it doesn't get worse?***

Our Council will consider flood information when managing its assets and planning future stormwater network improvements. These improvements could include increasing culvert or stormwater pipeline sizes or constructing stormwater detention facilities. Decisions on the priority and timing of stormwater upgrades are made via our Council's Annual Plan and Long Term Plan processes.

Budget of \$9.2 million has been allocated in the 2024-2034 LTP ([tcdc.govt.nz/LTP-2024-2034](https://www.tcdc.govt.nz/LTP-2024-2034)) for stormwater improvement works over the next six years. See [tcdc.govt.nz/Whangamatāstormwater](https://www.tcdc.govt.nz/Whangamatāstormwater) for more information.

### ***What can I do to reduce the effects of flooding on my property?***

Any works to reduce flooding on your property cannot make flooding worse on another property. If there is an overland flow path through your property, water must be able to enter and exit freely at its natural point.

However, there are some improvements you can make to minimise the impacts of flooding:

- Keep drains clear of litter, debris and rubbish.
- Unblock, fix and replace broken gutter and downpipes to prevent water pooling by your house.
- Increase permeable areas on your property – lawns, gardens and permeable pavements can reduce stormwater runoff.
- Manage water flow:
  - Be mindful of how water flows and collects on your property. Take a note of low areas where water may pool.
  - Shape your driveway, other paved areas and landscape so that water flows away from your house and into a drain.
  - If the ground level outside your house is the same as the inside floor level, you are more likely to be flooded. Maintain a step up between the outside and inside of your house.
  - When your driveway is lower than the road and is not in an overland flow path, ensure the driveway high enough or has a hump so water stays on the road instead of running down your drive.
- Do not block overland flow paths:
  - An overland flow path is a route that rain takes to reach waterways during heavy rainfall. When blocked, it can cause flooding in your property or onto neighbouring properties.
  - You have to accept stormwater runoff that naturally flows onto your property.
  - Do not build fences, sheds and other structures that block overland flow paths. Ensure fences have a gap at the bottom to allow water to travel underneath.
  - Raising the ground level around such paths may cause more flooding.

We also encourage you to seek professional advice (e.g. from a stormwater engineer) about ways you can reduce the risk of flood damage to your property.

### ***What is freeboard?***

Freeboard is the vertical distance between the modelled top level of flood water and the underside of a concrete floor slab, or the underside of a floor joist.

The freeboard height is set by the New Zealand Building Code E1 Surface Water.

### ***Why is freeboard required?***

The freeboard provides a safety factor to reduce the risk of a building being flooded in an 1% Annual Exceedance Probability (AEP) flood event. It also provides a margin of safety to reduce the risk if the flood event is greater than an 1% AEP flood event.

The freeboard allows for:

- The predicted flood levels.
- The unpredictability of flowing water:
  - The wake/waves of people or vehicles moving in water.
  - Uncertainty of water movement around obstacles.

### ***When is freeboard required?***

If the Flood Model Map indicates flooding could impact any part of a property, freeboard is required. All new buildings and extensions to existing buildings must comply with the minimum freeboard.

### ***The Flood Model Map shows flooding on my property, and I want to make a building or resource consent application?***

Anyone can request data that informs the Flood Model Map. This includes the maximum depth, velocity and design flood level. The information provided is suitable for determining floor levels and/or Building and Resource Consent applications. Input data is accurate/best available and consistent with current guidelines. This information can be used to support your application. Please contact us.

### ***Is the 1% Annual Exceedance Probability flood event indicated on the Flood Model Map the worst flooding I can expect?***

Modelling a 1% Annual Exceedance Probability flood event has historically been best practice for urban planning and development. However, more extreme events may also occur in any given year, during which properties may experience greater flooding, like deeper floodwaters, and properties outside of the 1% AEP flood extent may also become flooded. The Flood Model Map is a useful information portal, but we encourage property owners to remember it is possible that you might experience flooding worse than what Flood Model Map shows, and to have an emergency plan in place.

### ***How to plan for a flood emergency?***

Understanding the risk of flooding at your property is important as it can inform your emergency plan. To help you prepare your whanāu against flooding and for information on putting together an emergency plan, visit [tcdc.govt.nz/emergencymanagement](https://tcdc.govt.nz/emergencymanagement).

## **What process has Council used to get and publish flood information?**

### ***Where does the flood information shown in the Flood Model Map come from?***

A specialised computer flood model is used to produce the flood information shown in the Flood Model Map. The modelling and mapping is prepared and peer-reviewed by experts.

### ***Will the flooding shown on the Flood Model Map for my property change overtime?***

Yes, there may be changes.

The flooding shown on the Flood Model Map is the best available information.

The model inputs will be reviewed every two years, which includes changes to modelling methods, inclusion of new infrastructure (e.g. new pipes), new or updated inputs and assumptions (e.g. climate change allowance) and changes to landforms (e.g. new LiDAR information). If there are significant changes, Council will inform the community and update the model.

## **Technical Information about the TCDC Flood Model Map**

### ***How is flooding from rainfall mapped?***

Flood hazard maps are generated by computer models that use the contours of the land, flow paths and infrastructure information to represent flood risks during intense rainfall.

### **What land contours are used in the model?**

Land contours are mapped by what's called a LiDAR (Light Detection and Ranging) system – this measures the ground levels of the land using laser pulses. LiDAR is very reliable technology and used by most councils in New Zealand. This generates an accurate contour map which is used as an input into the stormwater computer model. The model uses a 'bare earth' terrain map, where the buildings, trees, fences etc have been removed from the surface of the topography.

The Flood Model Map is primarily based on LiDAR survey data flown in 2013 in combination with 5m contour data in areas where no LiDAR data is available.

### **My house is on a hill, how can it flood?**

Rain falling downhill, overland, through channels, waterways and gullies can accumulate in depression areas (e.g. a pond) or an overland flow path, both which are included in the Flood Model Map.

### **What is a 1% Annual Exceedance Probability flood event?**

Extreme rainfall can cause a flood event which would occur on average once in every 100 years. It has a 1% probability of occurring in any given year.

### **Why does our Council use a 1% Annual Exceedance Probability (AEP) flood event?**

Understanding and managing risks associated with 1% AEP events are recognised as current best practice. It is also required by the Waikato Regional Policy Statement.

### **When did a 1% Annual Exceedance Probability flood event last occur in Thames-Coromandel District?**

Although the district has experienced some large flood events, for example over the 7th- 8th March 2017, in which Whangamatā received 259.8mm of rain in less than 36 hours, the district has not experienced a 1% AEP flood event as shown in the Flood Model Map.

The 24-hour Annual Return Interval (ARI) rainfall depth for the 1% AEP flood event used in the model was 374mm.

### **Does the flooding in the Flood Model Map have all the same accuracy?**

Yes, the Whangamatā Flood Model Map has been generated from the same modelling exercise.

### **What climate change assumptions is the model based upon?**

The flood model used to produce the information shown on the Flood Model Map adopts a 2.1°C average temperature rise (Ministry for Environmental - Climate Change Effects and Impact Assessment 2008).

The hydrological model uses 24-hour rainfall depths from NIWA's High Intensity Rainfall Design System (HIRDS version 4).

### **What tidal data and sea level rise has been used in the model?**

The model has adopted 1.0m sea level rise based on recommendations from Coastal Hazards and Climate Change, Ministry for the Environment, 2017. The Mean High-Water Spring (MHWS) with future project 1.0m sea level rise is 2.10m RL. For further information regarding coastal inundation refer to the Waikato Regional Council tool Coastal Inundation Tool ([waikatoregion.govt.nz](http://waikatoregion.govt.nz)).

### **What is maximum probable development (MPD)?**

The impervious surfaces (e.g. buildings, road, parking areas) used to develop the model is based on the maximum probable development (MPD) based on the District Plan development restrictions for the respective land use.

#### **Please contact us:**

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## **Prepare your property and household before a flood happens**

**There are things you can do to prepare your home before extreme weather strikes.**

You can:

- clear your own drains and catchpits, if safe to do so
- make an emergency plan for you and your household, including pets and livestock
- move your car to higher ground, if possible
- move valuables to upper levels or shelves in your home.

See [tcdc.govt.nz/emergencymanagement](http://tcdc.govt.nz/emergencymanagement) for more information.

