

# Pinehaven Stream Floodplain Management Plan Volume 2



## Building Flood Hazard Maps

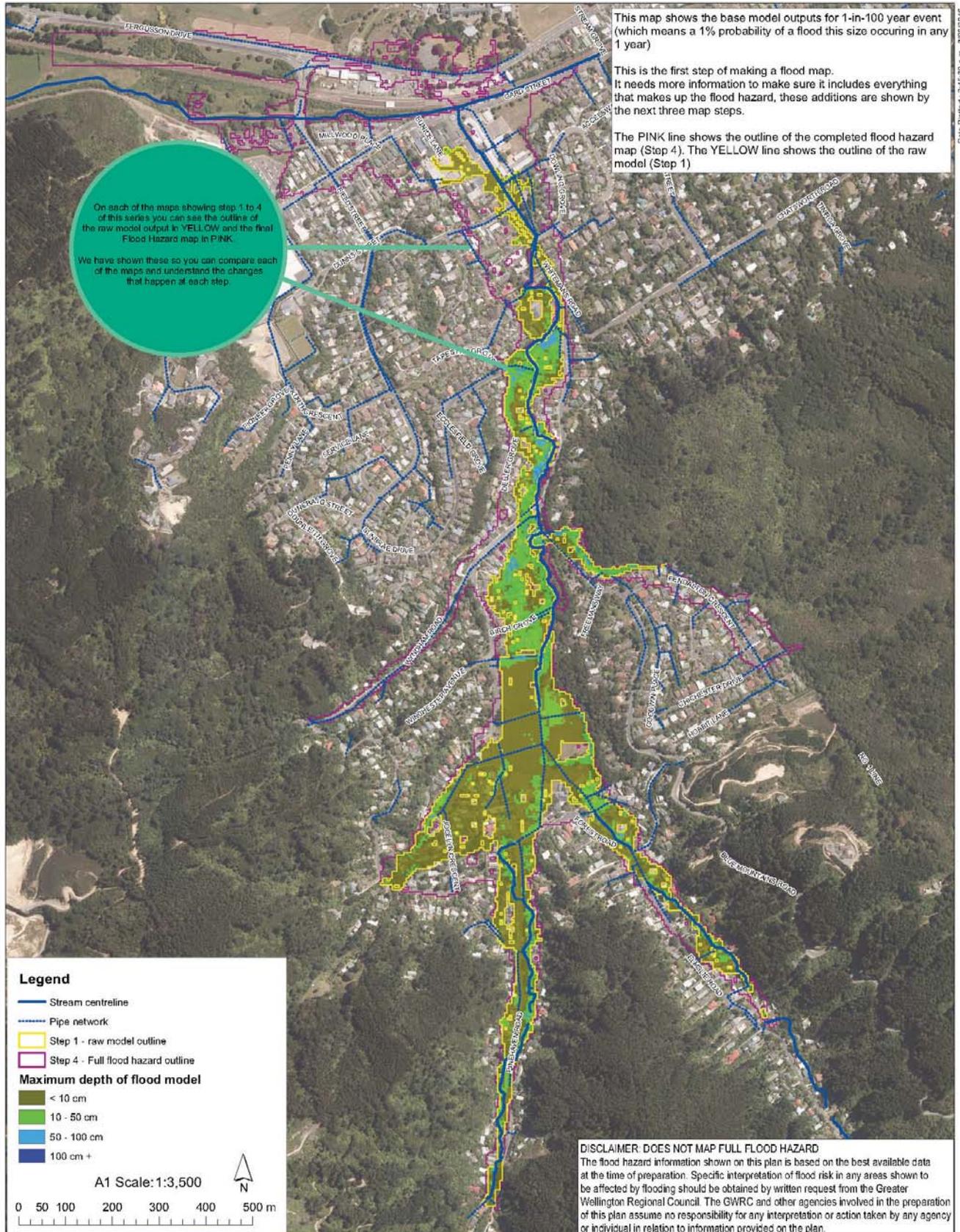
The maps provided in this appendix tell the story of how the Pinehaven Flood Hazard maps in the earlier version of the FMP in Appendix E were developed. These maps showing the flood hazard are shown following maps 1a-d and 2. The final flood hazard map is shown after these maps. The process for developing the maps and explaining the flood risk are shown below:

- Maps 1a – 1d and 2 show the layers that are combined to create a flood hazard map:
  - Map 1a - the area of flooding in a 1% storm event;
  - Map 1b – Map 1a, with additional flooding from increased rainfall intensity as a result of climate change;
  - Map 1c – Map 1b with additional flooding as a result of blockages on the stormwater network (for example blockages to the Silverstream Bypass near 54 Whiteman's Rd) that result in flooding at the lower end of the catchment;
  - Map 1d – Map 1c with the additions of local details – this includes considerations for example, if the channel is heavily vegetated, flood waters may be slowed down;
  - Map 2 shows all of these layers together.
- 'Chance of a flood occurring in any particular year' shows the extent of different probability flood events. The flood hazard maps in Appendix E are based on the 1% flood, this map also shows the extent of flooding expected in higher probability floods (2%, 5%, 10% and 20%).
- 'Time to inundation' shows the progress of a 1% flood through the catchment, identifying the areas that are flooded first (within 75 minutes) until the flood reaches its full extent at >180 minutes.
- 'Flood hazard to life map' identifies areas of high, medium, low, or insignificant risk based on the predicted depth and velocity of flood waters.
- The untitled map shows the modelled 1% flood overlain on the observed 1976 flood extents – this shows some differences in the floods, but general alignment of the areas affected.
- 'Flood map' – this final map shows the 1% flood as is used to communicate areas at risk. This map highlights that due to all of the details that go into these maps (as shown in the previous series) that this map does not provide a definitive story as to areas that will flood, but instead helps identify areas at risk. Residents of the 1% area should contact Council to understand whether their house is flood prone or whether flood levels at their property may be below floor levels.

# Map 1a - PINEHAVEN STREAM - Building a flood map

## Step 1 of 4: The raw model stage

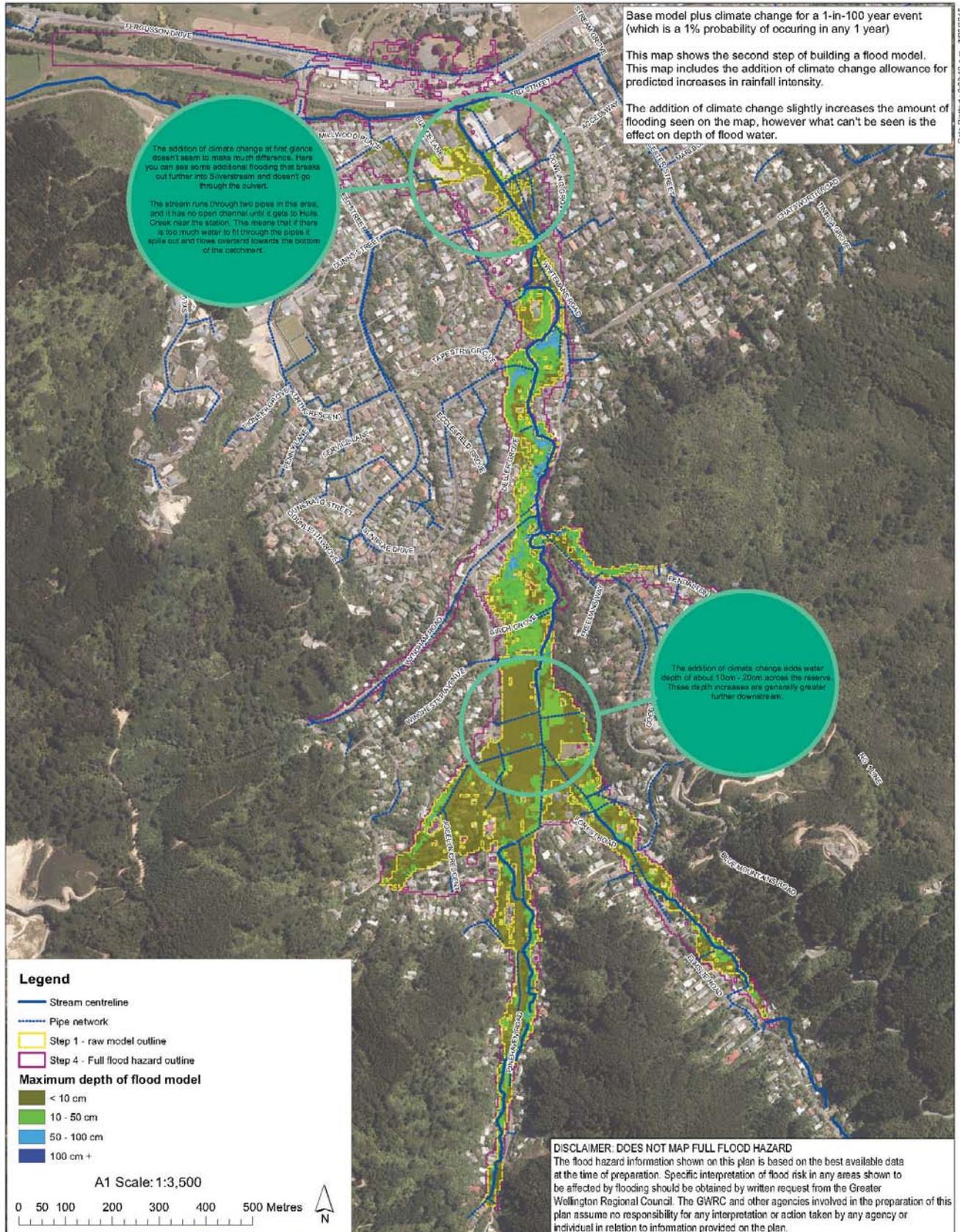
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# Map 1b - PINEHAVEN STREAM - Building a flood map

## Step 2 of 4: Adding climate change

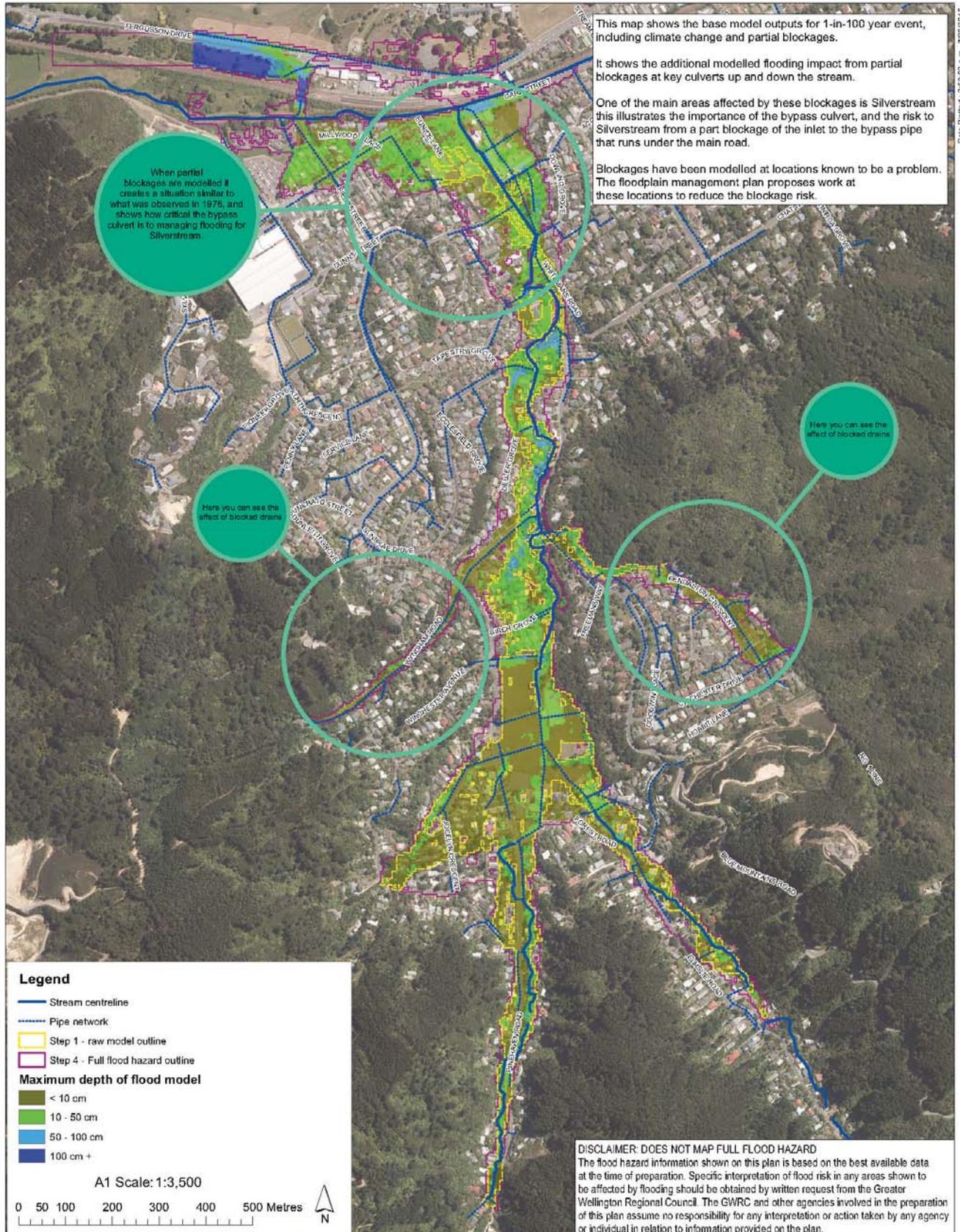
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# Map 1c - PINEHAVEN STREAM - Building a flood map

## Step 3 of 4: Allowing for blockages

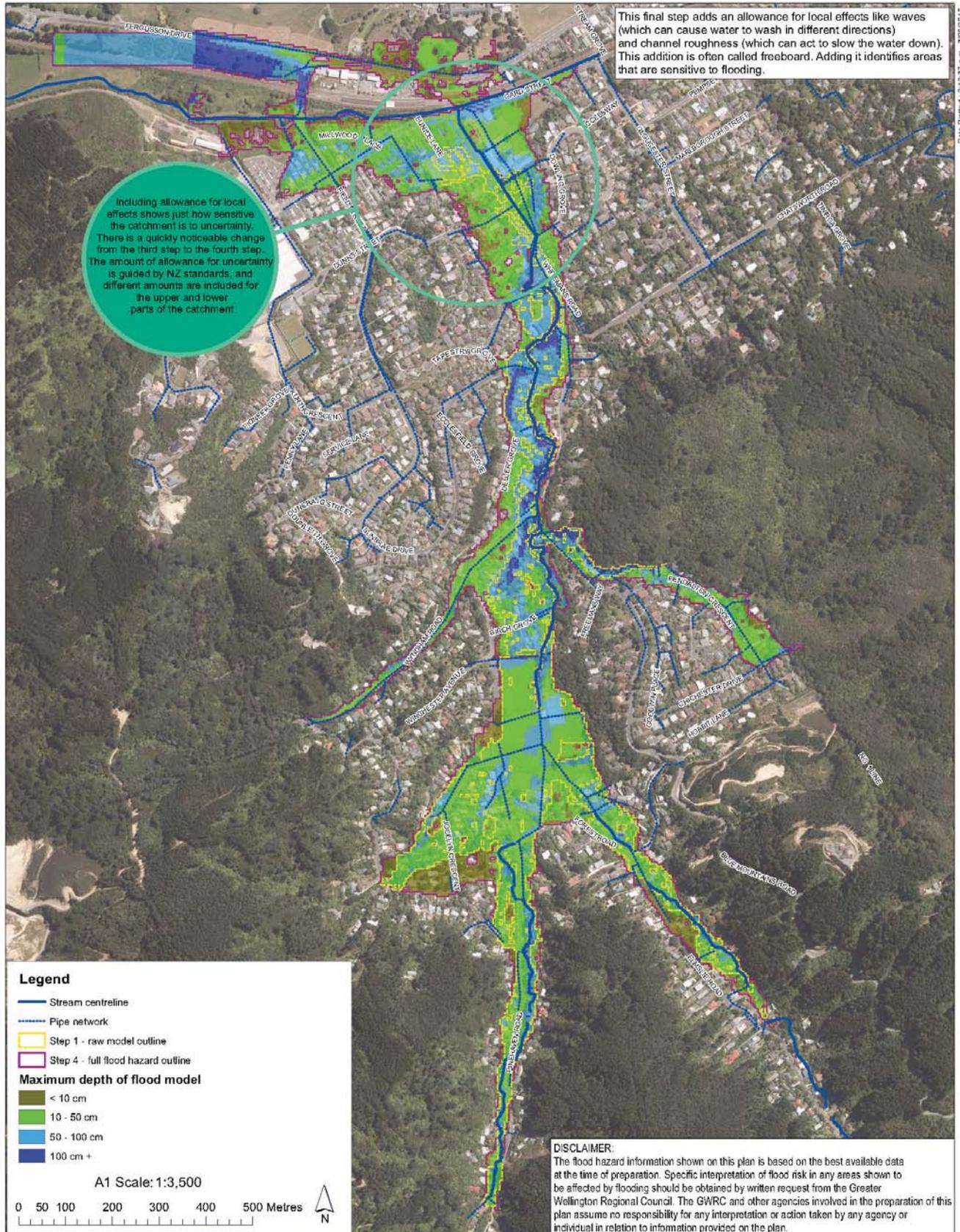
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# Map 1d - PINEHAVEN STREAM - Building a flood map

## Step 4 of 4: Allowing for local effects

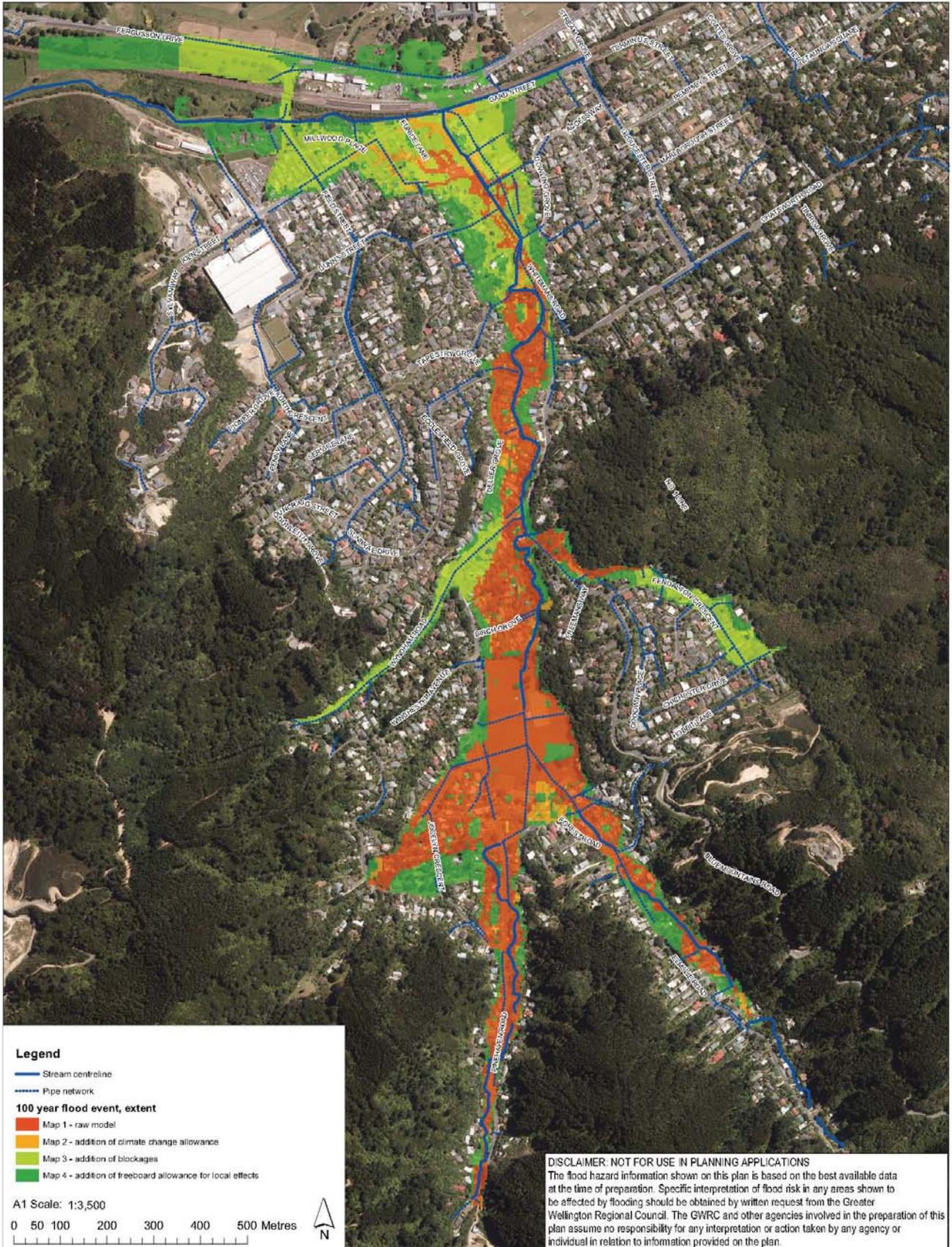
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# Map 2 - PINEHAVEN STREAM - building a flood map

## Summary map of steps 1 to 4

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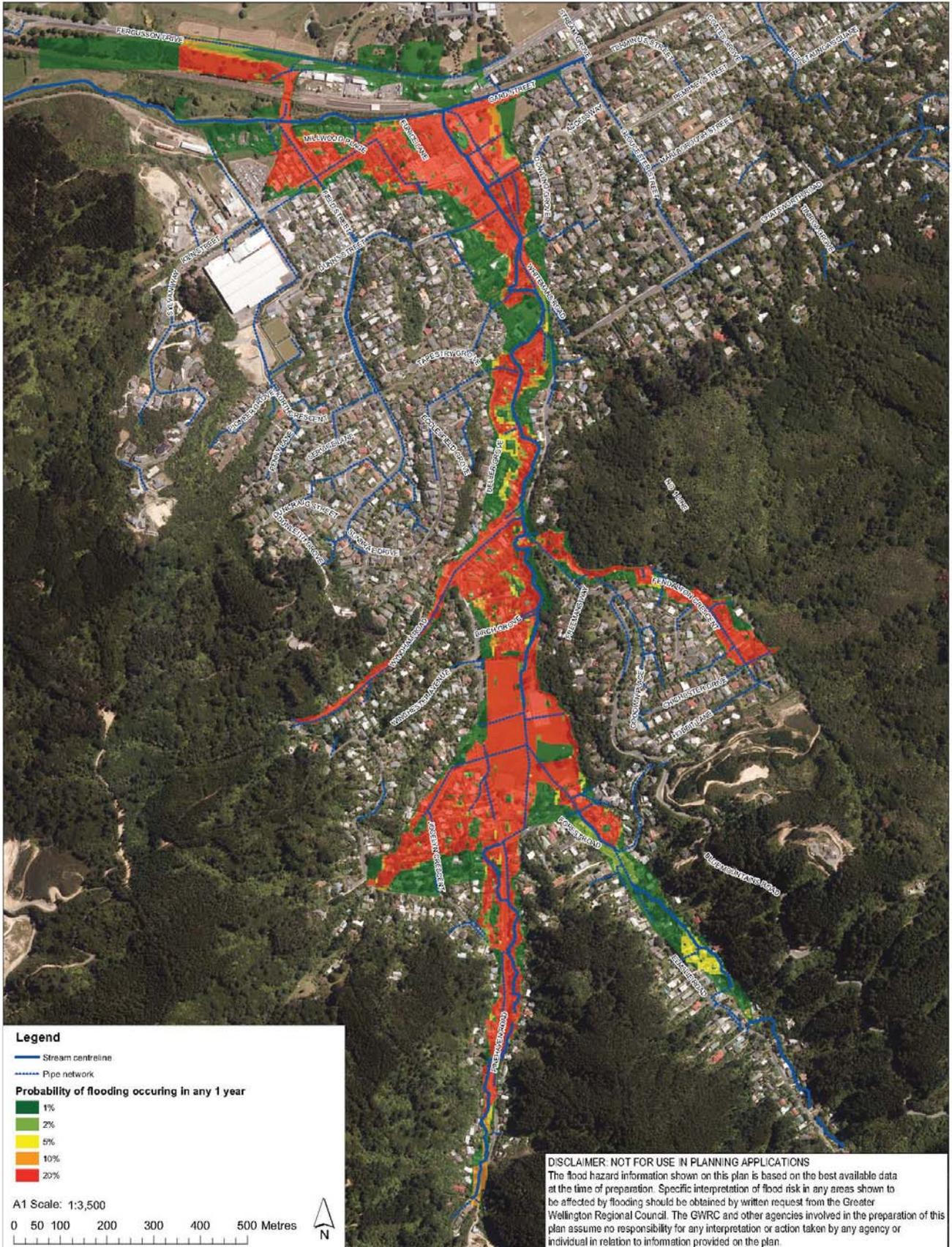
Data Prepared: 1:40:07 p.m., 3/26/2016

# PINEHAVEN STREAM - Understanding flood risk

## Chance of a flood occurring in any particular year (AEP)

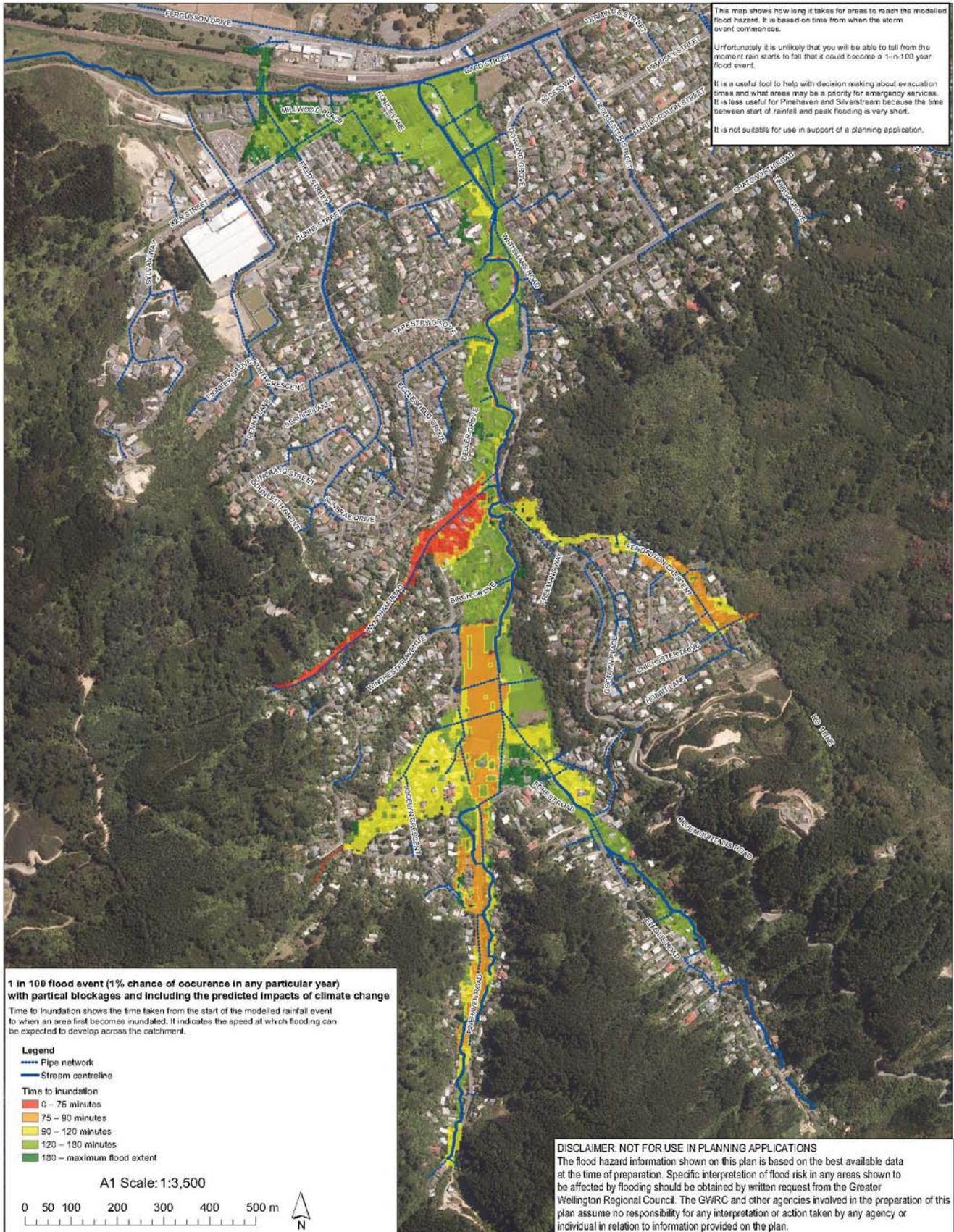
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Data Prepared : 9:18:15 a.m., 3/26/2018



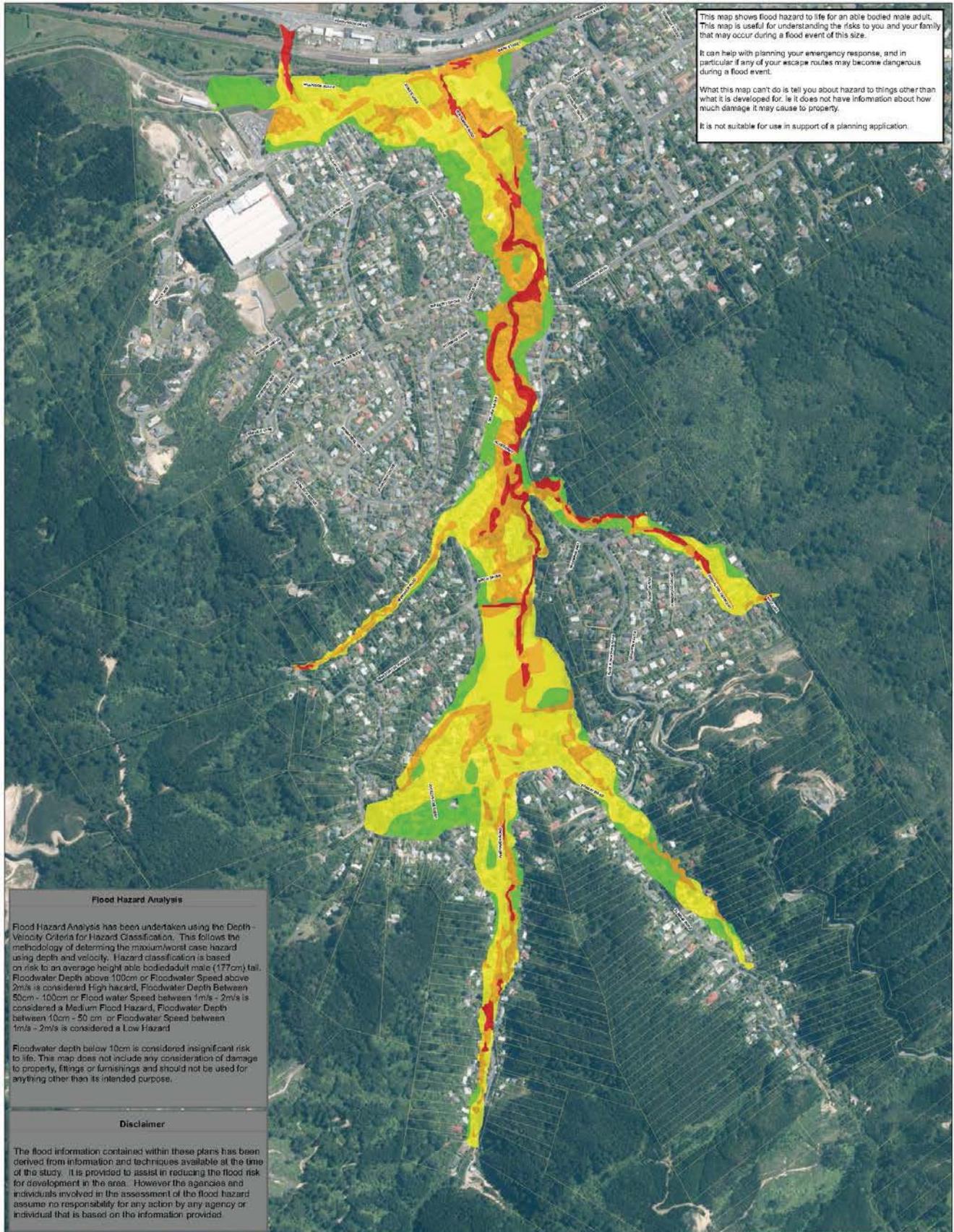
# PINEHAVEN STREAM - Time to inundation (length of time from start of storm until flooding occurs)

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# PINEHAVEN STREAM - Flood Hazard to Life map (based on hazard for an able bodied male adult)

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This map shows flood hazard to life for an able bodied male adult. This map is useful for understanding the risks to you and your family that may occur during a flood event of this size.

It can help with planning your emergency response, and in particular if any of your escape routes may become dangerous during a flood event.

What this map can't do is tell you about hazard to things other than what it is developed for. It does not have information about how much damage it may cause to property.

It is not suitable for use in support of a planning application.

**Flood Hazard Analysis**

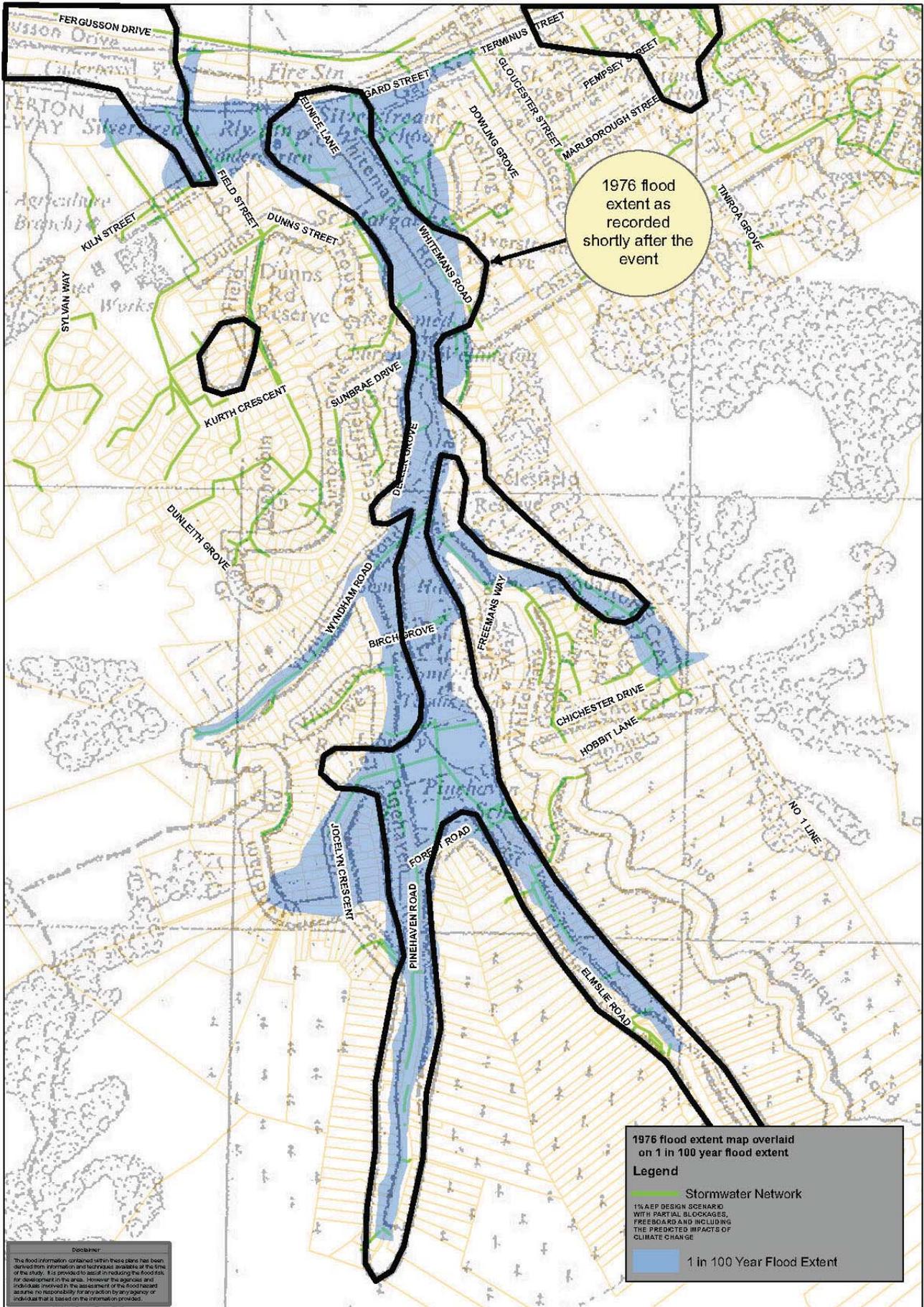
Flood Hazard Analysis has been undertaken using the Depth-Velocity Criteria for Hazard Classification. This follows the methodology of determining the maximum/worst case hazard using depth and velocity. Hazard classification is based on risk to an average height able bodied adult male (177cm) tall.

Floodwater Depth above 100cm or Floodwater Speed above 2m/s is considered High hazard, Floodwater Depth Between 50cm - 100cm or Flood water Speed between 1m/s - 2m/s is considered a Medium Flood Hazard, Floodwater Depth between 10cm - 50 cm or Floodwater Speed between 1m/s - 2m/s is considered a Low Hazard

Floodwater depth below 10cm is considered insignificant risk to life. This map does not include any consideration of damage to property, fittings or furnishings and should not be used for anything other than its intended purpose.

**Disclaimer**

The flood information contained within these plans has been derived from information and techniques available at the time of the study. It is provided to assist in reducing the flood risk for development in the area. However the agencies and individuals involved in the assessment of the flood hazard assume no responsibility for any action by any agency or individual that is based on the information provided.



1976 flood extent as recorded shortly after the event

**1976 flood extent map overlaid on 1 in 100 year flood extent**

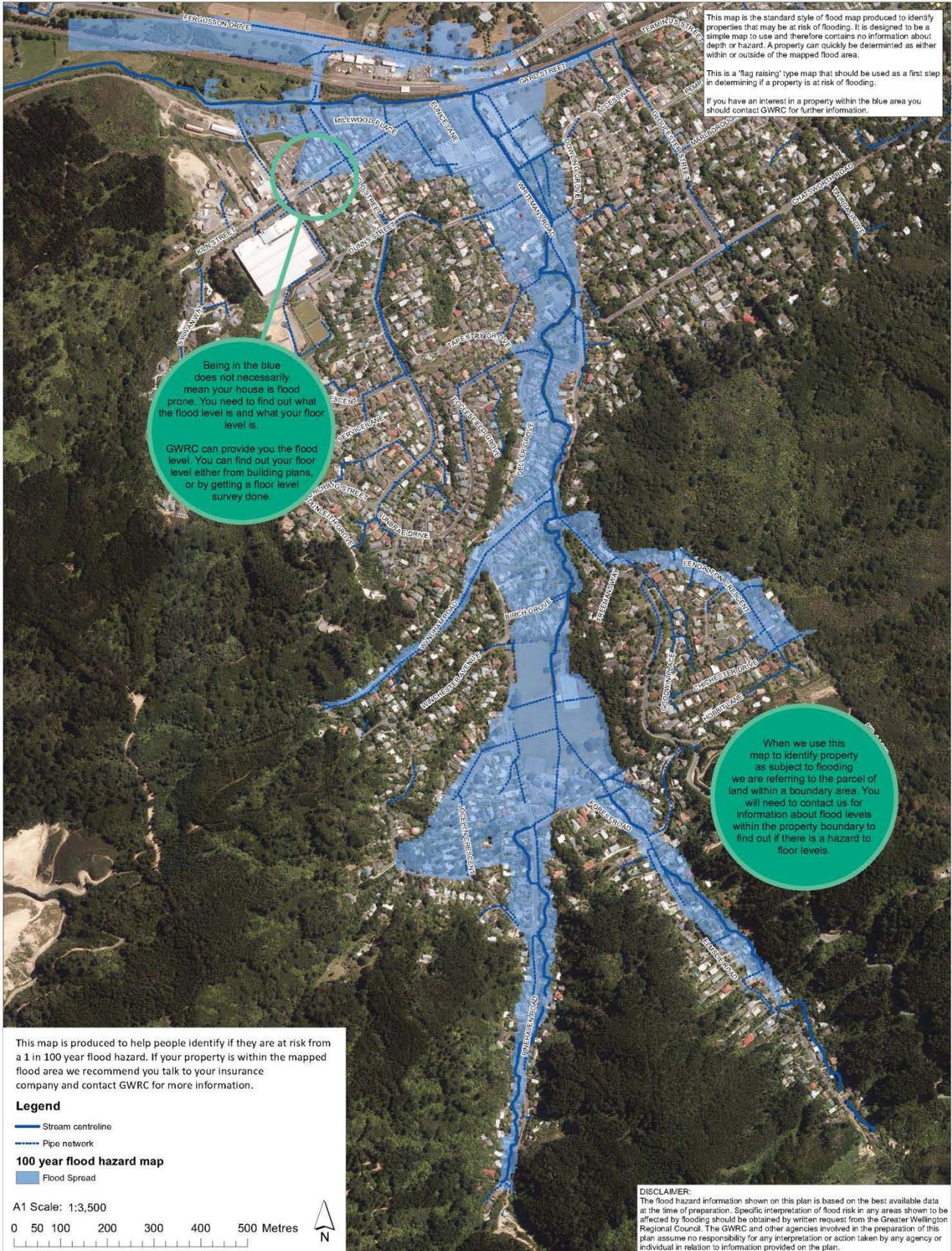
**Legend**

- Stormwater Network
- 1% AEP DESIGN SCENARIO WITH PARTIAL BLOCKAGES, FREEBOARD AND INCLUDING THE PREDICTED IMPACTS OF CLIMATE CHANGE
- 1 in 100 Year Flood Extent

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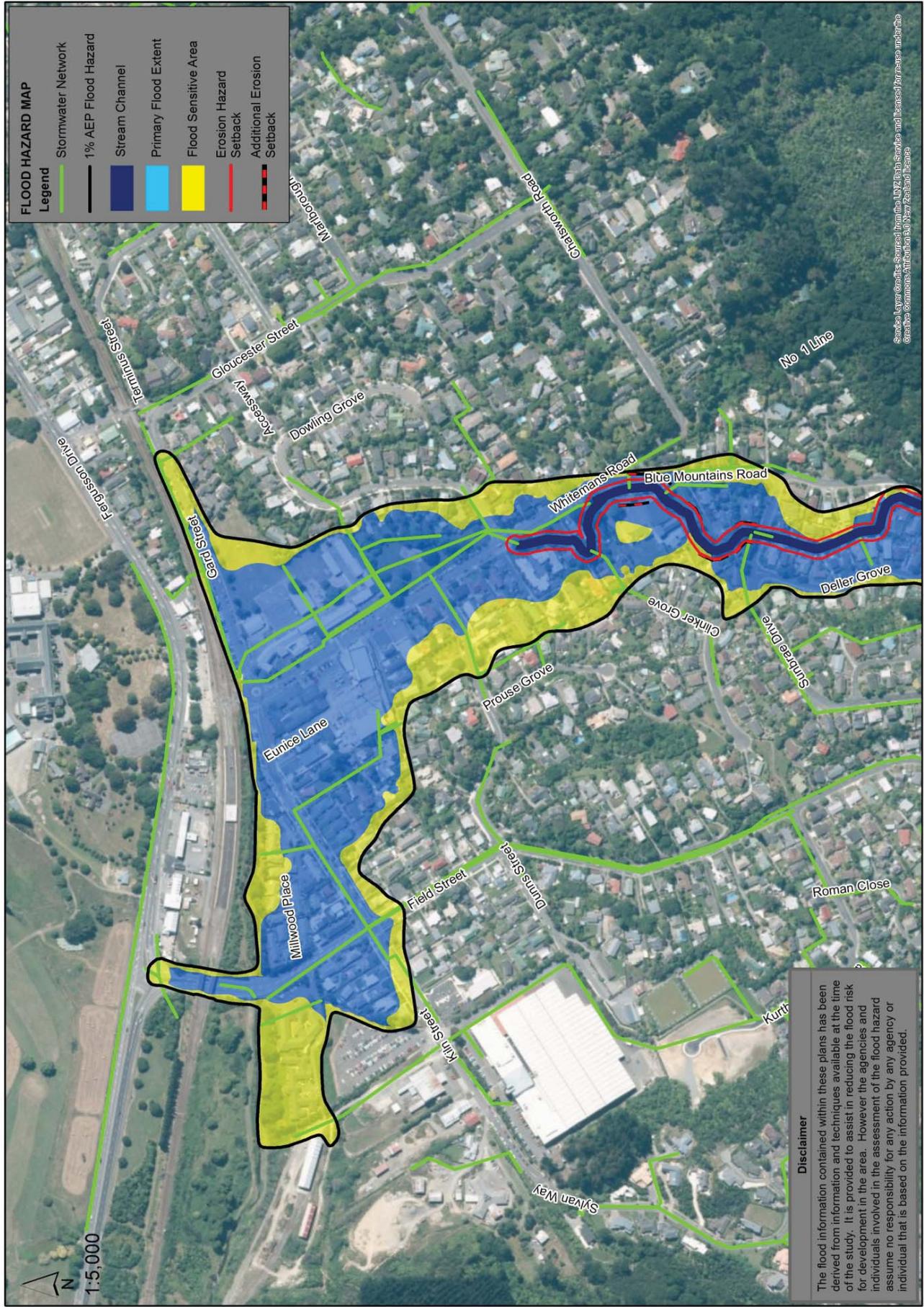
# Map 7 - PINEHAVEN STREAM - Flood Map

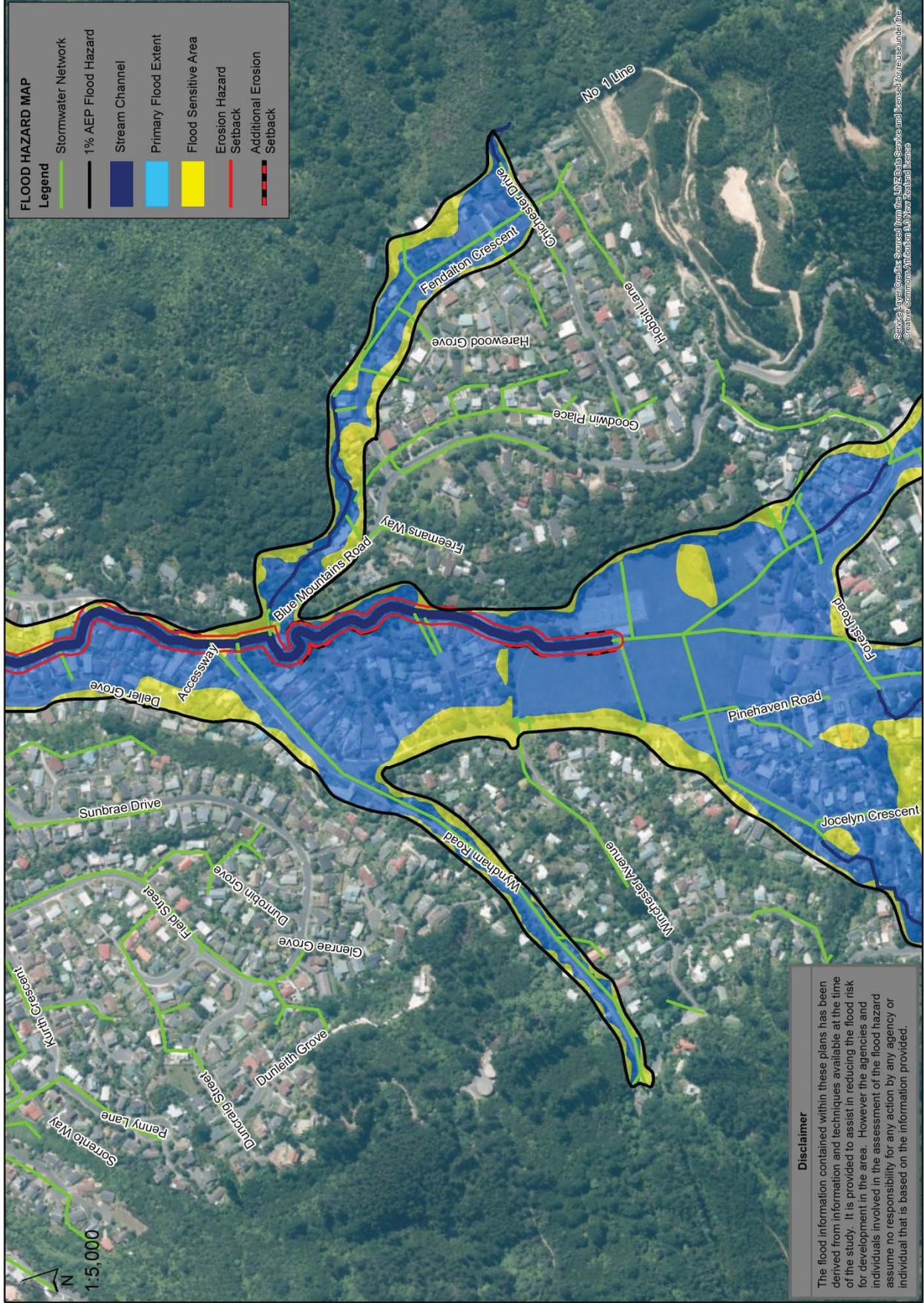
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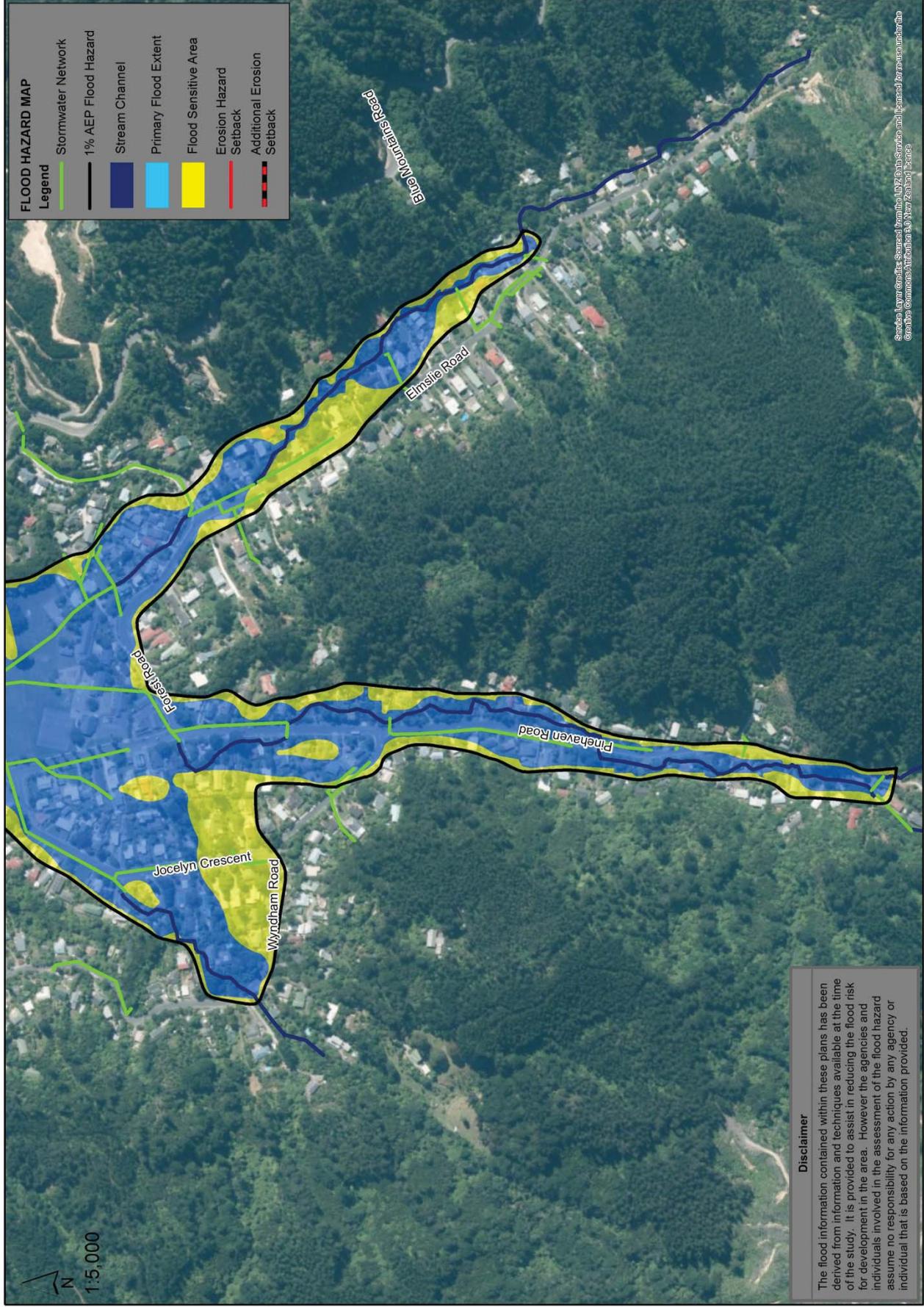


Date Plotted : 4:04:09 pm, 7/06/2016

# Flood Hazard Maps









**Legend**

- Stormwater Network
- 10% AEP FLOOD DEPTH CLASSES
- 1.0m +
- 500mm - 1000mm
- 300mm - 500mm
- 150mm - 300mm
- 0mm - 150mm

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