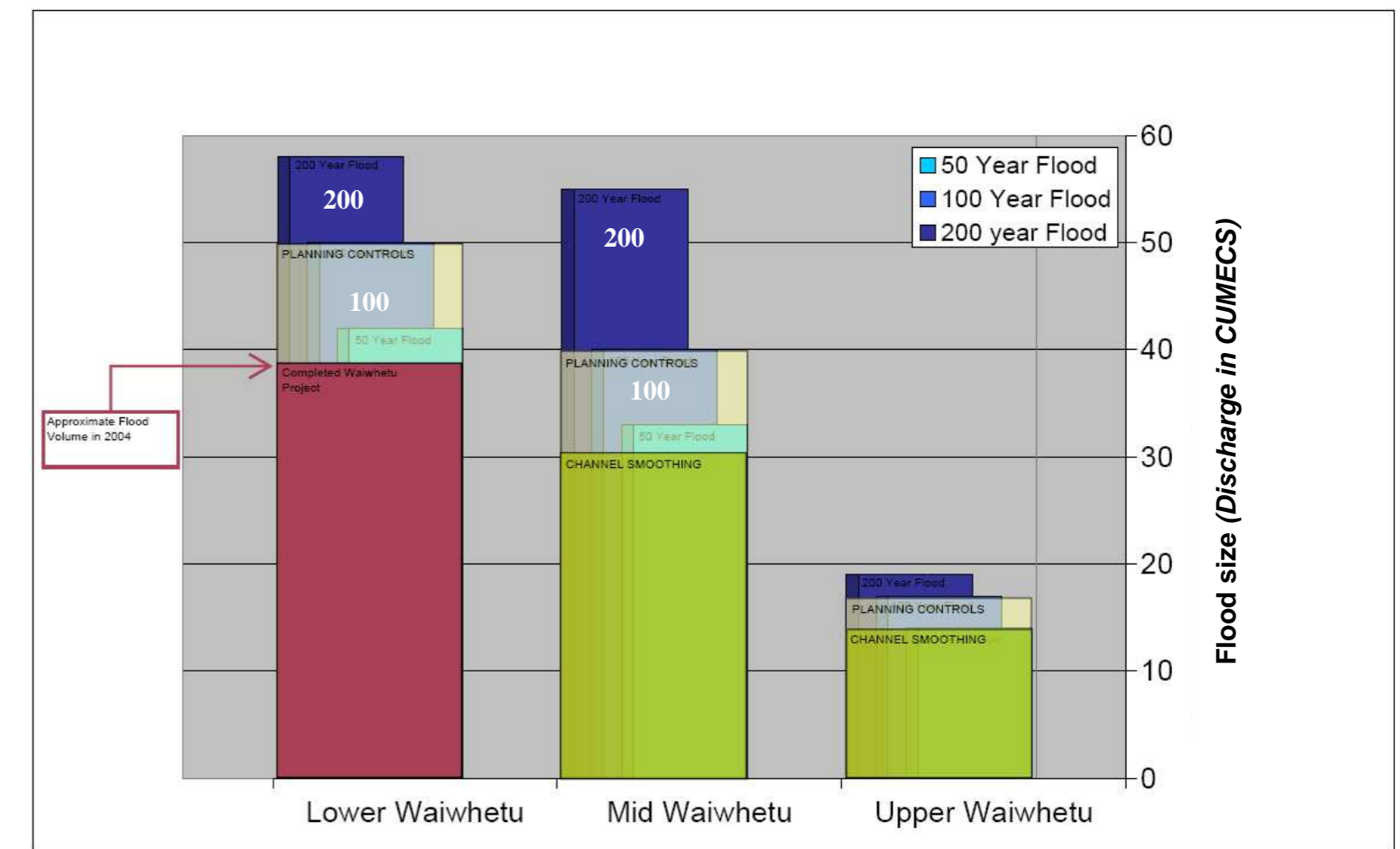
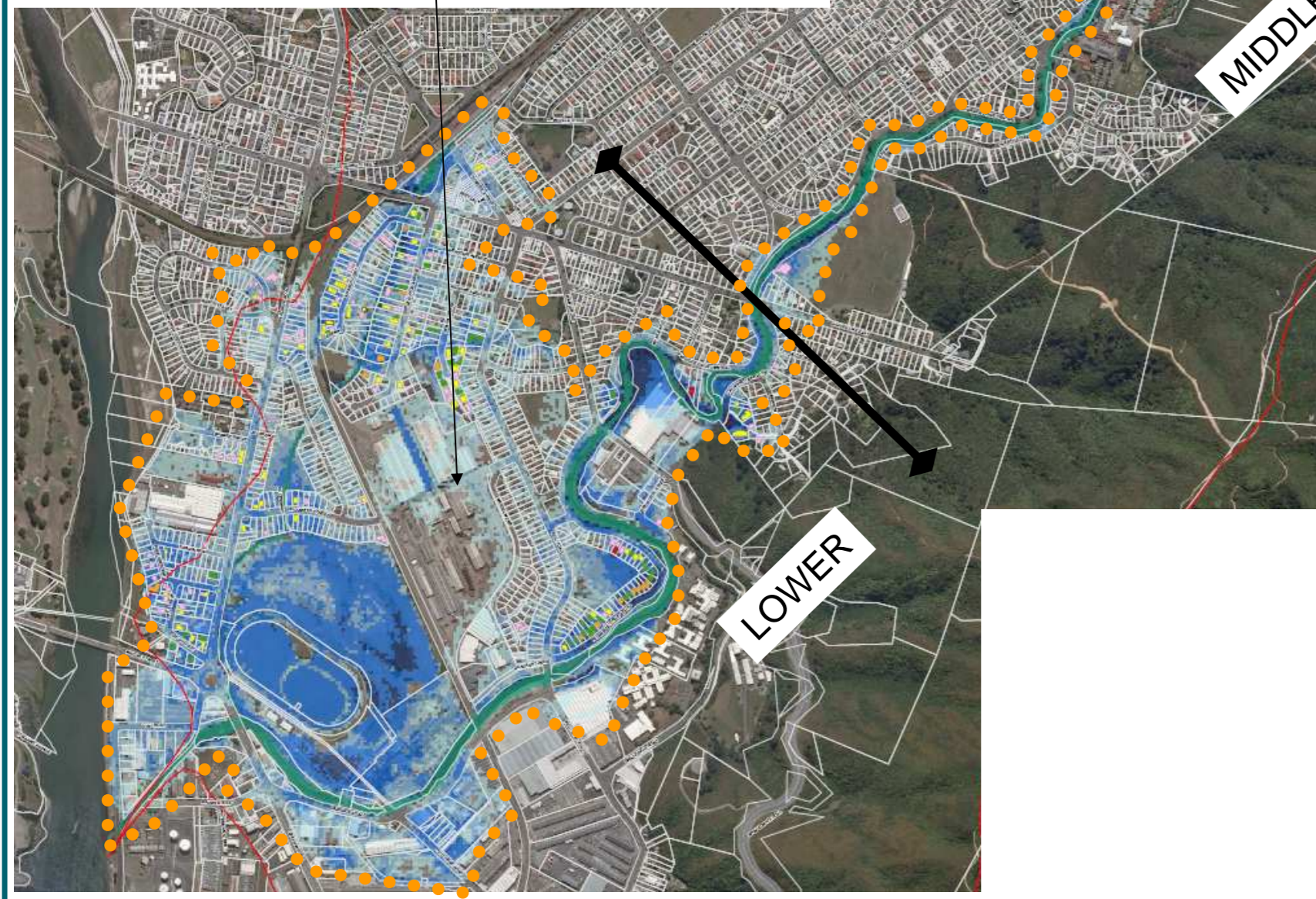
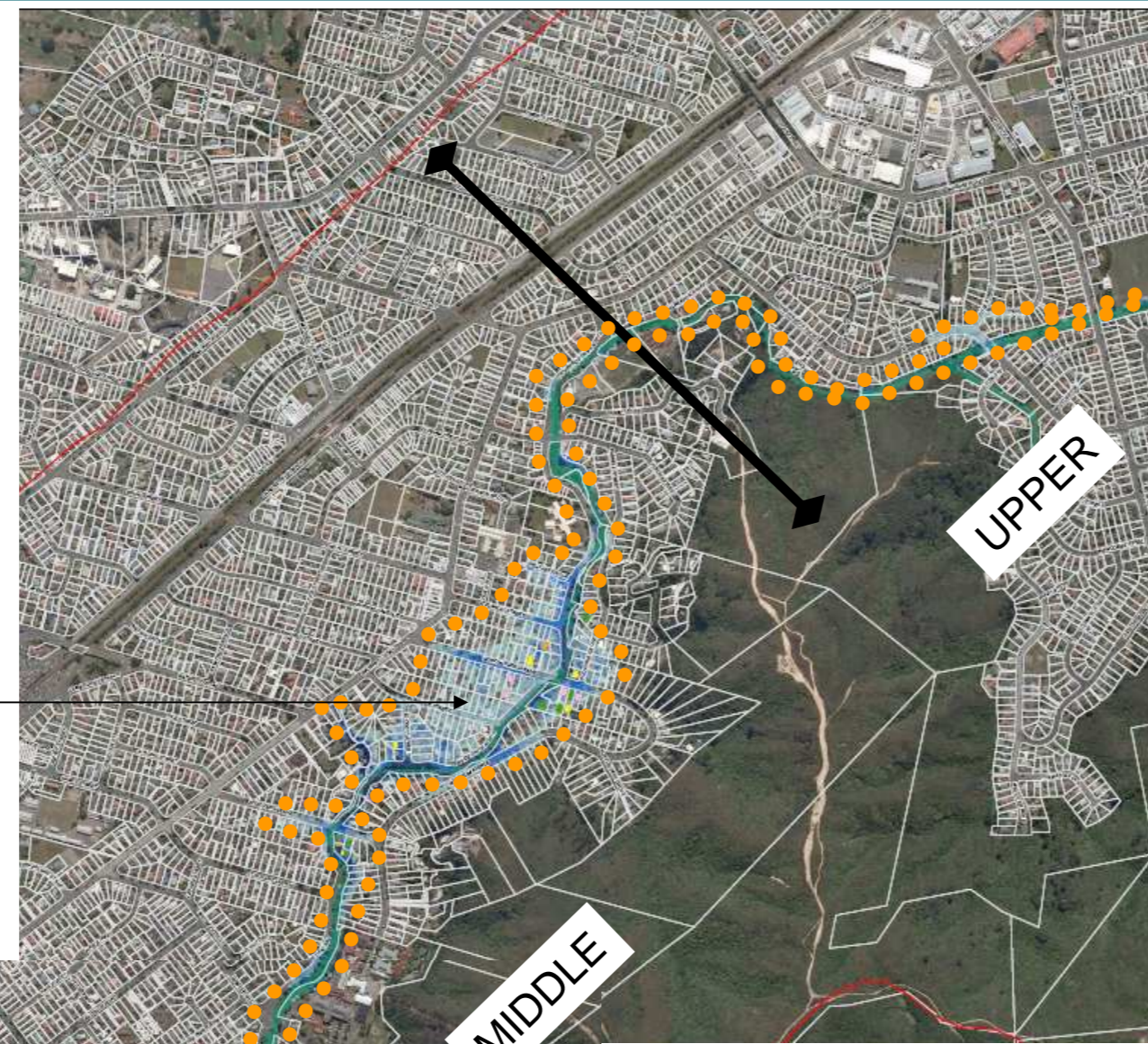


A total of 221 Houses could be expected to have flood water above floor level in this scenario

**Option 4 Planning Control Implications**

- Density** - Planning controls how small a section can be in flood prone areas
- Floor Levels** – Control to make minimum floor levels 1-in-100 year flood level for new development
- Access** – Controls to require new developments have safe access in a 1-in-100 year flood event



Option	Description	Estimated Cost
Weir modifications	Modify weirs to allow ease of water passage	\$0.3 Million
Increased maintenance budget	Increase maintenance budgets to allow for greater scope of works designed to smooth channel over 10 years [additional \$100,000 p.a.]	\$1 Million
Targeted bank strengthening works	Install edge protection to hold steep angle banks close to assets (close to roads, pipelines etc)	\$1 Million
Service crossing relocations	Relocate service crossings that impede flood flows (estimated 10 critical services at \$100k each)	\$1 Million
<b>Total costs</b>		<b>\$3.3 Million</b>

<b>Total cost</b>	\$3.3 Million
<b>Direct damages saved (in a single 1-in-100 year event)</b>	\$56 Million
<b>Individual ratepayer cost per year \$100,000 of property value (HCC ratepayers over a 20 year loan funded works repayment schedule)</b>	<b>\$1.77 p.a./\$100,000</b>

**Disclaimer;**

All dollar values used are approximations and may change during further detailed investigation; Calculations use the 2007 dollar value; Direct damages saved only consider one occurrence of a 1-in-100 year flood event; Individual rate payer cost is a guideline only and may not reflect final rating values.

## Option 4 – Channel Smoothing

**Description** – Carrying out channel works to ease corners, remove potential for blockages, and generally allow consistent through flow of water.

**Strengths** - Low cost. Easy to stage works over a number of years. Can be adapted to future changes. Can work well with environmental goals. Can be implemented through increased maintenance budgets. Huge amenity and environmental benefit potential.

**Weaknesses** - Will have negative effects in lower catchment due to faster flow through of water. Will take time to take effect. Cannot be used alone to solve 100 year flood event. Requires long term commitment.

# Waiwhetu Stream Floodplain Management Plan – Options Development



**greater WELLINGTON**  
REGIONAL COUNCIL  
Te Pane Matua Taiao