**Planning Zones – Mixed Colours**
These (coloured dot) outlined areas show possible planning scenarios which may apply if the option is used. There may be several different planning zones which overlap each other.

In addition there is a matching coloured box describing what planning controls each coloured zone represents.

Planning controls would be applied through district or regional plan rules.

**Flood Maps - Blue**
This shows information about the predicted flood spread as a result of using this option.

The blue shading maps give an indication of how deep the water will be

Coloured square in the flooded areas give an indication of properties which may experience flooding inside their houses with this option being used *(this is not present on all maps).*

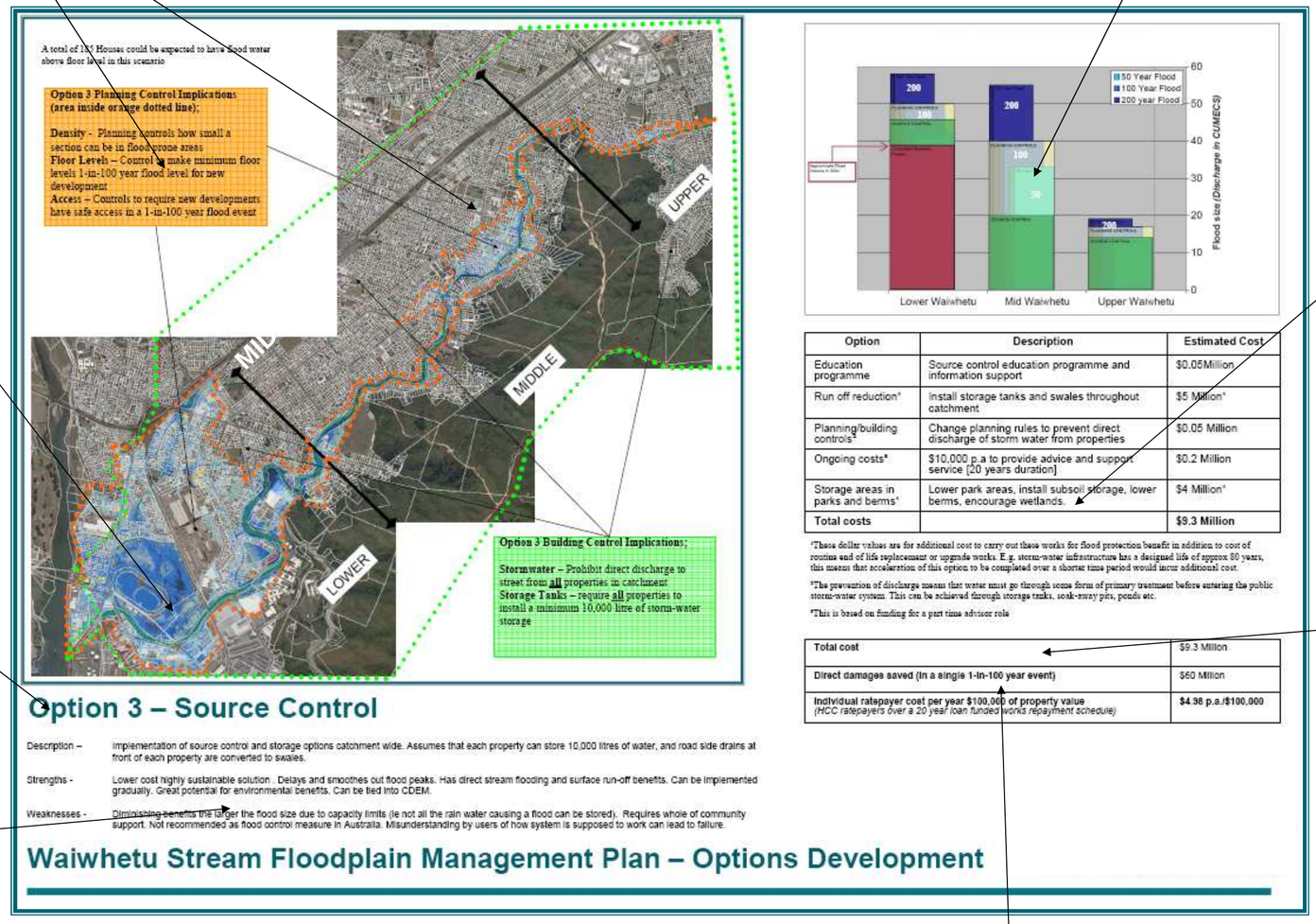
**Title**
The name of the option, and a number to help identify the option if you want to discuss it with neighbours or council officers

**Description**
This section of text gives a brief description of what this option is. It also summarises what are the possible strengths of this option and possible weaknesses. Some of these are intangible and therefore difficult to assign a $ value.

**Flood Graph**
This graph shows approximate flood volumes for different sizes of floods. We have shown 3 floods here; 1-in-50 year flood – Light blue; 1-in-100 year flood – Medium Blue; 1-in-100 year flood – Dark Blue;

At the end of the option selection process we wish to have a graph which manages the flood problem up to the suggested 100 year flood. The graph below shows what this would look like if source control and planning controls are used. The planning control (transparent yellow bit) on the graph is see through because it doesn't eliminate flooding. It just stops damages increasing.

The lower Waiwhetu area has a red bar covering a lot of the flooding, this shows the effect of the completed Waiwhetu Project to widen the stream from Port Road to Bell Road Bridge







| Option | Description | Estimated Cost |
|---|---|---|
| Education programme | Source control education programme and information support | $0.05Million |
| Run off reduction* | Install storage tanks and swales throughout catchment | $5 Million* |
| Planning/building controls* | Change planning rules to prevent direct discharge of storm water from properties | $0.05 Million |
| Ongoing costs# | $10,000 p.a to provide advice and support service [20 years duration] | $0.2 Million |
| Storage areas in parks and berms* | Lower park areas, install subsoil storage, lower berms, encourage wetlands. | $4 Million* |
| **Total costs** | | **$9.3 Million** |

*These dollar values are for additional cost to carry out these works for flood protection benefit in addition to cost of routine end of life replacement or upgrade works. E.g. storm-water infrastructure has a designed life of approx 80 years, this means that acceleration of this option to be completed over a shorter time period would incur additional cost.

#The prevention of discharge means that water must go through some form of primary treatment before entering the public storm-water system. This can be achieved through storage tanks, soak-away pits, ponds etc.

^This is based on finding for a part time advisor role

| | |
|---|---|
| Total cost | $9.3 Million |
| Direct damages saved (in a single 1-in-100 year event) | $60 Million |
| Individual ratepayer cost per year $100,000 of property value *(HCC ratepayers over a 20 year loan funded works repayment schedule)* | **$4.98 p.a./$100,000** |

**Option Breakdown**
This table breaks down into smaller pieces what makes up each option, a brief description of each, and approximately how much each piece of the option is estimated to cost, and some assumptions that have been necessary to work out these costs.

These costs have been worked out using 2007 dollar values.

In some cases these dollar values account only for additional costs to add flood management benefits to scheduled maintenance or upgrade works. If maintenance or upgrades are accelerated and brought forward, additional costs may be created.

**Costs**
This table gives an estimate of the total costs, cost per year per $100,000 of property value and the damage prevented in one occurrence of a 1-in-100 year flood event.

The rate payer costs are very rough estimates, worked out using the combined value of all property in Hutt City, which includes both residential, industrial and rural in one category. It has been provided to give a meaningful dollar value to an individual, rather than expressing project costs only in millions of dollars, which give little indication to a ratepayer of the range of effect that this may have on them.

**Damages**
Damages calculations used to asses cost against benefit use a method known as Average Annualised Damages or AAD's. This includes all damages over an infinite period of time, with all flood events occurring at their predicted frequency, and then converted into what this would mean each year if these damages were evenly distributed year by year. We have not done this calculation at this stage.

# How to read the options posters

The option posters show information about 6 different flood management methods. There is no need to understand every part of a poster to make a decision on what you like or dislike about an option, much of the information is the same but is presented differently. If you understand just one piece of a poster you will have a pretty good idea of what the rest of it means. We hope that this will make you feel comfortable enough with some of this information to guide us creating the plan.

If you would like assistance with any of the posters, please contact the project team at Greater Wellington Regional Council – 04 830 4084 or alistair.allan@gw.govt.nz

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Te Pane Matua Taiao

# Waiwhetu Stream Floodplain Management Plan – Options Development