

DISSEMINATION OF FLOOD HAZARD INFORMATION – LESSONS LEARNT FROM MANGAROA AND WAINUIOMATA RIVERS

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ABSTRACT

Greater Wellington Regional Council (GWRC) has policies relating to identifying, assessing and informing communities about flood risk under the Regional Policy Statement for the Wellington Region. This work is carried out through the GWRC Flood Protection Department investigating flood hazards and making the resulting information available to the people and communities of the region.

For many of the floodplains in the Western part of the Wellington Region, flood hazard assessments have been carried out as part of a Floodplain Management Planning (FMP) process. For the Mangaroa and Wainuiomata Rivers, flood hazard assessments have been carried out primarily to identify hazard areas so that the hazard can be avoided, or management measures implemented for future development. Consequently, the flood hazard assessments were not part of an FMP, and generally did not involve a wide consultation process.

This paper outlines our reflections on the experience of disseminating flood hazard information, the challenges encountered and the resulting process proposed for communication utilising the lessons learnt from the release of flood hazard information for the Mangaroa and Wainuiomata Rivers.

KEYWORDS

Flood; risk; hazard; communication

PRESENTER PROFILE

Sharyn Westlake is a Senior Engineer in the Flood Protection Department of GWRC. Sharyn has a broad range of experience in engineering processes and quality management, strategic planning, environmental and project management, public consultation and engagement in local government and the private sector. Sharyn's current role involves advising on development in flood hazard areas, resource consent applications and district plan and regional plan changes; developing policy advice and strategy; and floodplain management planning. Sharyn holds a BE (Civil) Hons, Dip HE and MSc IHE-Delft, and is a FIPENZ and CPEng.

1 INTRODUCTION

The Greater Wellington region covers the lower North Island and has a population of 471,315 (Statistics NZ 2013 Census). It covers a land area of 813,005 hectares and a maritime area of 786,700 hectares with 497 kilometres of coastline (GWRC website). Figure 1 shows the Greater Wellington Region with Local Government boundaries.

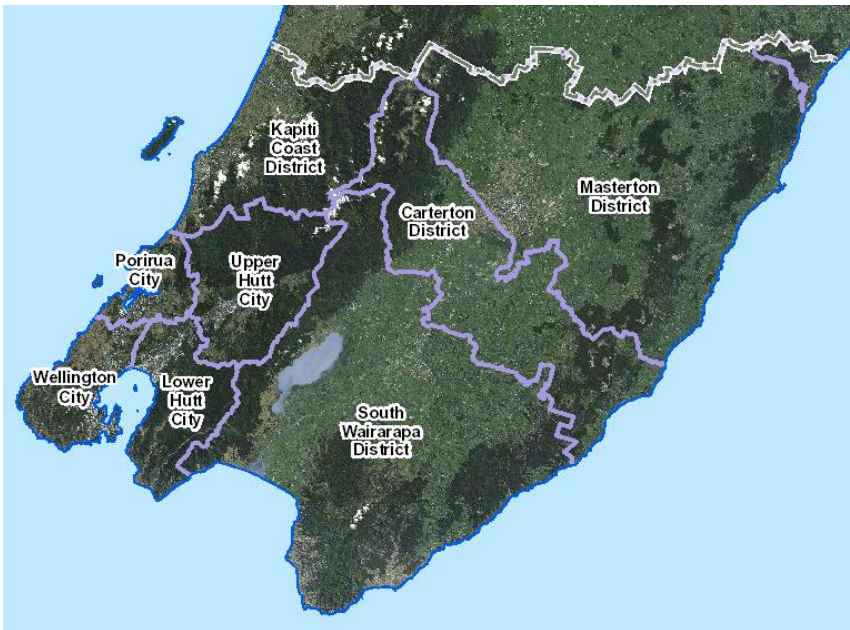


Figure 1: The Wellington Region showing Local Government boundaries

Development within the Wellington Region has historically concentrated on the floodplains of river and streams as these are generally flat and fertile. Unfortunately however they are also subject to flooding, which has resulted in increased impact of flood events.

Although floods are New Zealand's most frequent natural hazard, they claim few lives in comparison to other hazards such as earthquakes, with structural protection works, land use and emergency management planning, and monitoring and warning systems in place. However, they may have great adverse effects from damage to structures, infrastructure, and agriculture, while putting pressure on social and health systems.

GWRC's approach to flood risk management is to understand the complexity of flood risk and to provide a coordinated response through our floodplain management plans, in partnership with the community, to reduce the impact of flooding. To do this, communities need to understand the risk and have affordable and acceptable management solutions in place. We also want to ensure that inappropriate developments don't create new problems, increasing the risk to owners and the burden on ratepayers. We consider that there needs to be a balance between what is spent by the ratepayer on a regional basis to obtain hazard information and the further detailed information desired by private landowners.

Increasing development pressure within both the Wainuiomata and Mangaroa River floodplains required a greater understanding of the hazard to enable the provision of planning and advice for future development, especially when assessing specific development proposals.

Other high profile hazard information has recently been released in the Wellington Region, for example the Kapiti coastal hazard information. This information has also resulted in unhappiness and criticism from those whose properties are potentially affected by the hazard and who are worried about the implications for their potential property values and potential development considerations.

2 BACKGROUND

2.1 FLOOD RISK MANAGEMENT

2.1.1 FLOODPLAIN MANAGEMENT PLANNING

Flood risk management within the Wellington Region is carried out within a floodplain management planning framework (GWRC Flood Protection Department, 2013). This is the framework that sets out the foundation for implementing structural and non-structural flood risk management measures and an environmental strategy for enhancing the river environment.

The process for developing a Floodplain Management Plan (FMP) is set out in Figure 2.

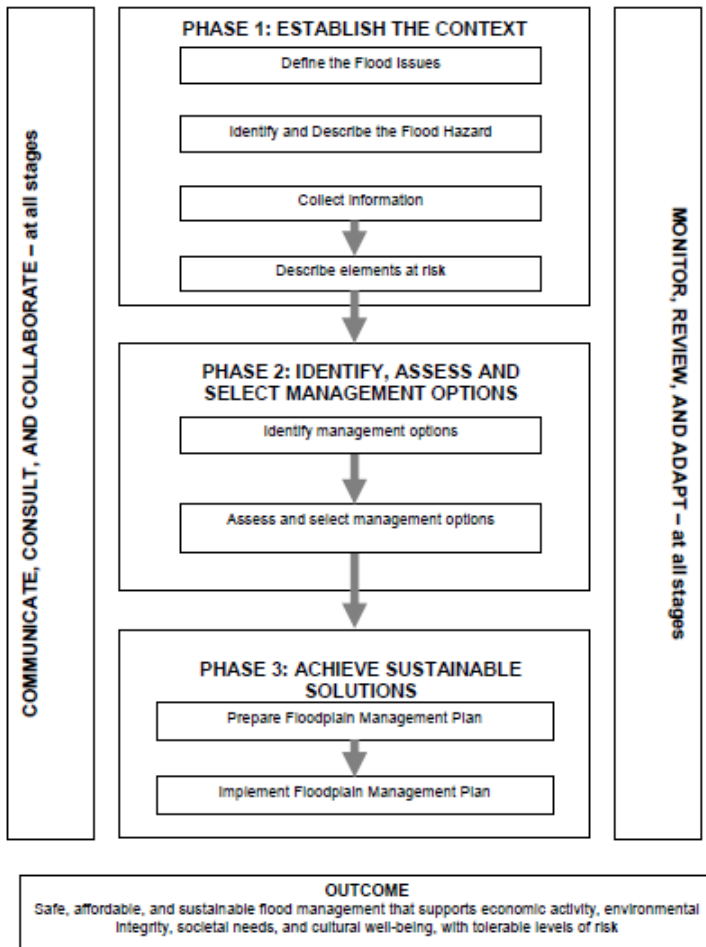


Figure 2 The Floodplain Management Planning Process (based on NZS 9401:2008)

It involves the three phases of:

- Establishing the context
- Identifying, assessing and selecting management options
- Treating the flood problem through preparing and implementing the FMP.

The FMP process is used to record how the various management options were developed and communication with the community throughout the process, along with how the options will be implemented to provide a comprehensive long-term strategy for managing flood risk. It is carried out to a level of detail appropriate to the location and circumstances of the community.

The FMP brings together the work and decisions made by:

- The community
- Greater Wellington Regional Council and the relevant local authorities
- Iwi
- Various interest groups, public agencies and businesses

2.1.2 LEGISLATIVE AND POLICY FRAMEWORK

Decisions about floodplain management need to be considered within the context of national, regional and local legislation, regulations and policy, and also need to align with best practice in floodplain management. Figure 3 sets out the relationship of an FMP to other statutory and non-statutory documents at the national, regional and local levels.

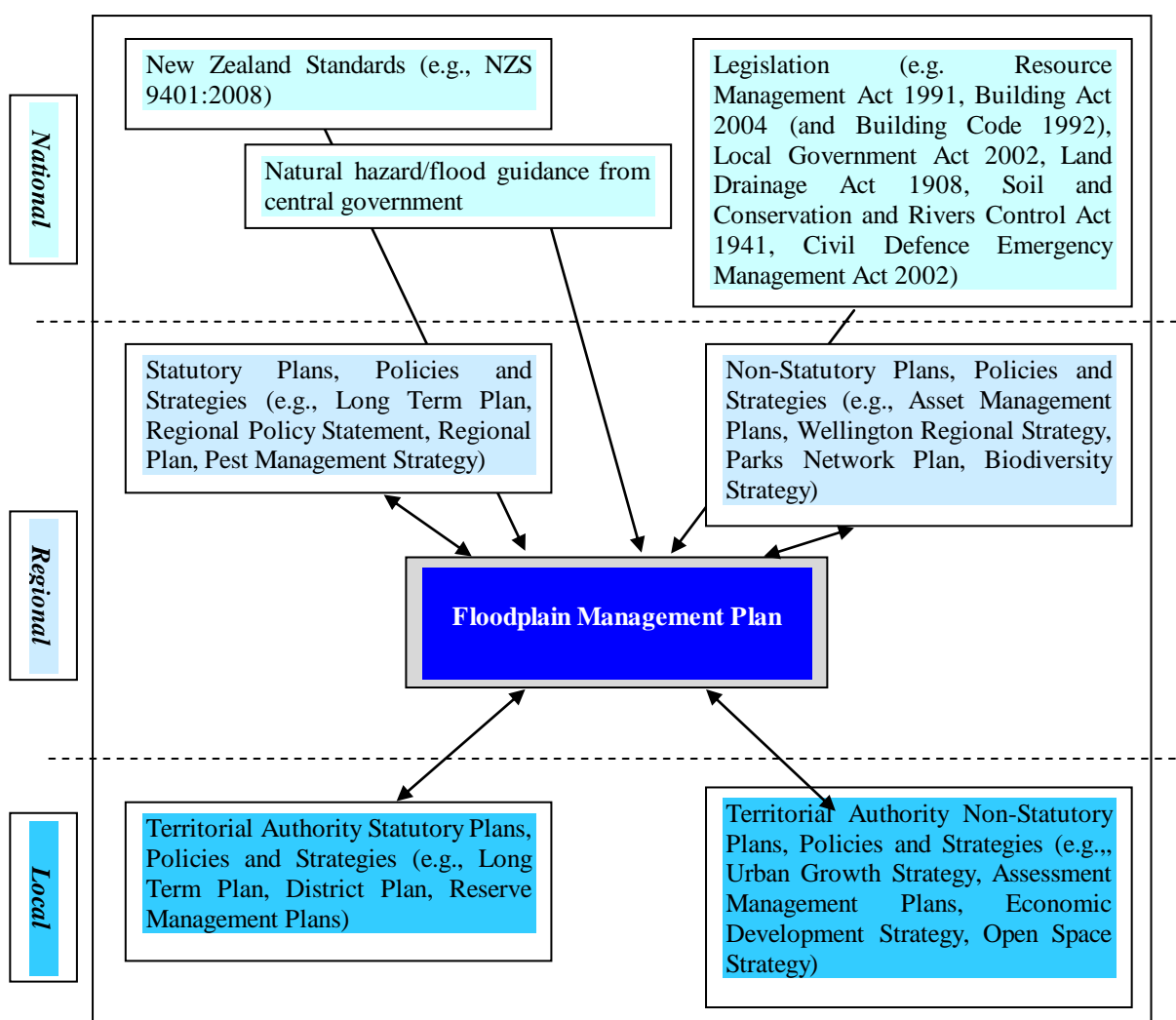


Figure 3 Relationship of FMP to Other Statutory and Non-Statutory Documents (GWRC Flood Protection Department, 2013)

NATIONAL

The seven statutes of specific relevance to floodplain management at a national level are listed in Figure 3 (top right-hand box). These cover a broad range of private property

and public good issues relating to land development and management, land use controls, flood risk management and its funding, flood emergency response and recovery, and flood protection insurance. (McSweeney, 2006). Each of these statutes performs a distinct and important role in managing flood risk and provides a range of legislative mechanisms to enable effective flood management across local and central government.

A number of additional statutes also influence flood risk management to a lesser degree, which include the: Public Works Act 1981, Local Government Official Information and Meetings Act 1987, Earthquake Commission Act 1993, Environment Act 1986, and Local Government (Rating) Act 2002.

This suite of statutes allows for a wide range of approaches to be applied to managing flood risk through:

- *Hazard Control measures* such as the provision of stopbanks, channel maintenance and clearance, dams, and provision of drainage schemes which also contribute to modifying flood events.
- *Flooding information and education* including scientific and practical information about flooding and ways to minimise the impacts of flood events. Specific mechanisms such as land information memoranda (LIMs) allow the public to access available site-specific flooding information from territorial authorities.
- *Flood hazard preparedness, response and recovery* measures which provide the framework for national, regional and local communities to prepare for, and respond to, flooding.
- *Flood loss insurance and financial assistance* - principally provided by the Earthquake Commission although central government can also provide disaster relief funding to assist local communities after large-scale flood (and natural disaster) events.

REGIONAL

In the Wellington Region, the Regional Policy Statement (RPS) provides the Objectives, Methods and Policies for the assessment of flood hazards, and the dissemination of flood hazard information. This is consistent with fulfilling the natural hazards objectives of the RPS, regarding reducing the risk and preparing for the consequences of natural hazards and comes under Objectives 19, 20 and 21:

Objective 19: The risks and consequences to people, communities, their businesses, property and infrastructure from natural hazards and climate change effects are reduced.

Objective 20: Hazard mitigation measures, structural works and other activities do not increase the risk and consequences of natural hazard events.

Objective 21: Communities are more resilient to natural hazards, including the impacts of climate change, and people are better prepared for the consequences of natural hazard events.

The RPS then provides for suitable policies and methods to help achieve these objectives. Policies relevant to the natural hazard objectives are 29, 51, 52 and 62, and relevant Methods are 1, 2, 4, 5, 14 and 23, the detail of which may be found in the RPS.

Method 14 specifically relates to the dissemination of the information about natural hazard and climate change effects and states that:

- The Wellington Regional Council, City and District councils, and Civil Defence Emergency Management Group will prepare and disseminate information about natural hazards and climate change effects in order to:
 - a) Guide local authority decision-making; and
 - b) Raise awareness and understanding of natural hazards.

Responsibility for implementing these policies is shared between the Regional Council and City/District Councils. Any Regional Plan or District Plan prepared under the RMA is required to put a RPS into practice. These plans help the respective regional and city/district councils to carry out their resource management functions, including managing natural hazards and their associated effects. Currently rules for land use sit with the City/District Councils and land use is generally controlled through District Plans.

The Regional Plan supports the Regional Council's development of FMPs and provides guidance for managing development in flood-prone areas, as well as the policies and rules to manage structural measures (e.g., river control works), which in relation to flooding states that flood hazard assessments will be completed for all major floodplains in the Region and that these assessments will include an analysis of the potential effects of flooding events. The Regional Freshwater Plan (1999) provides a comprehensive list of the flood hazard assessments that will be carried out.

Additionally, GWRC policy regarding dissemination of flood hazard information was set out in a paper to the GWRC Landcare Committee in 2006 (Purves, 2006). This paper noted that flood hazard information is disseminated to the community in 4 key ways:

- a) The provision of flood hazard maps to the territorial authorities, which they hold in their hazard registers and which may be reflected in their district plans.
- b) The provision of flood hazard advice when requested for resource consent applications or by members of the community seeking advice prior to purchase of a property.
- c) Through consultation undertaken as part of the preparation of floodplain management plans or scheme reviews. Consultation is generally extensive and is considered an effective way of advising the wider community of the flood risk.
- d) The provision of flood warnings to territorial authorities and directly to the community in certain circumstances.

2.1.3 FLOOD HAZARD ASSESSMENTS IN THE WELLINGTON REGION

Flood hazard assessments are carried out to establish the nature of the flood hazard in phase 1 of an FMP, as shown in Figure 1 above. They involve defining the extent, level and velocity of floodwater and the distribution of flood flows across various sections of the floodplain, for the full range of flood events up to and including the Probable Maximum Flood (PMF).

A regional scale assessment has been carried out to help prioritise where more detailed assessments should be undertaken. Flood hazard assessments have been carried out for the following floodplains in the Western part of the Wellington Region (refer to Figure 4):

- Hutt River.
- Waiwhetu Stream.

- Pinehaven Stream.
- Waikanae River.
- Otaki River.
- Waitohu Stream.
- Mangaone Stream.
- Wainuiomata River.
- Mangaroa River.
- Porirua Stream.

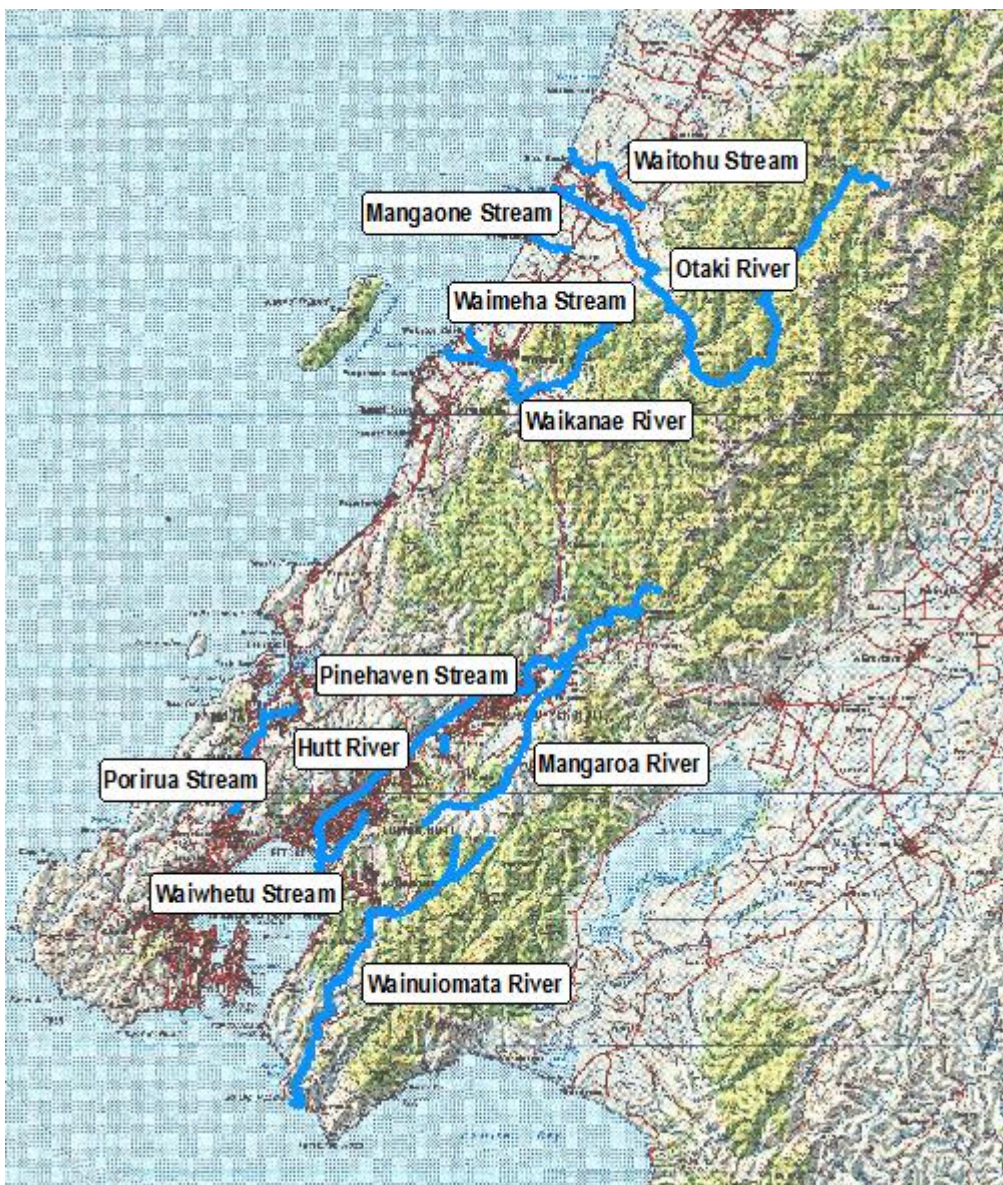


Figure 4: Watercourses in the Western Wellington Region

For some rivers (Hutt, Waikanae, Otaki), the flood hazard assessments have been carried out as part of an FMP. For other rivers, such as the Mangaroa and Wainuiomata, flood hazard assessments were carried out primarily to identify hazard areas so that these could be taken into account when advising on future development. Consequently,

these were not part of an FMP, and generally did not involve a wide consultation process.

2.2 THE WAINUIOMATA RIVER CATCHMENT

The Wainuiomata River is located in the southern Wellington region. The river catchment has an area of 133 square kilometres, and a river length of about 22 kilometres (as shown in Figure 5 below). The location and shape of the Wainuiomata catchment makes it more responsive to southerly-based rainstorm events.

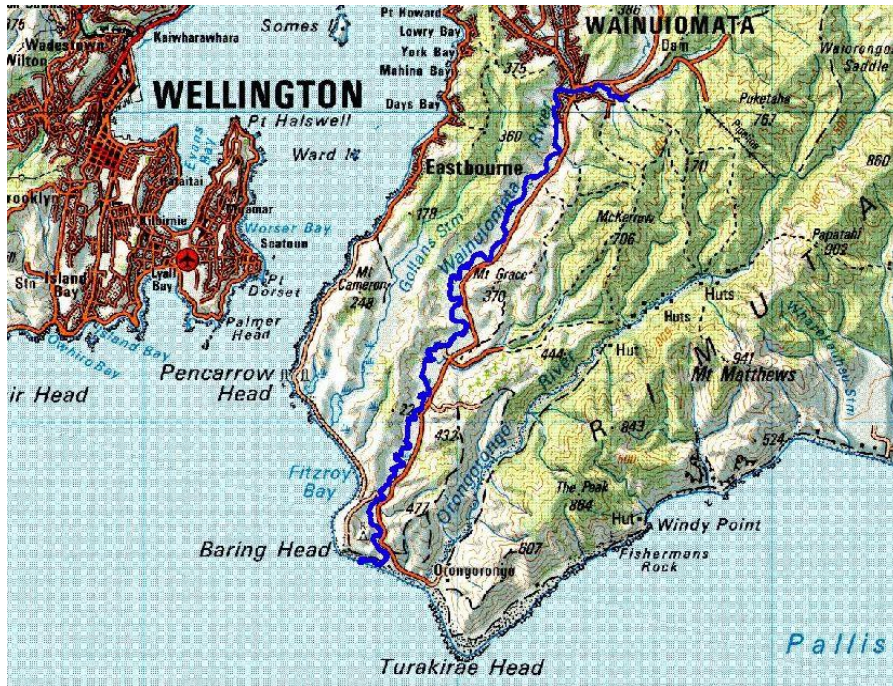


Figure 5: Location of the Wainuiomata River (in blue)

A Flood Hazard Assessment was completed in 2000 for the Wainuiomata River using internal GWRC resources. The modelling comprised the most up-to-date modelling techniques of the time, utilising Mike11 1D modelling.

The Wainuiomata River Flood Hazard Assessment comprised:

- A hydraulic model construct with one main channel to represent the active river channel and parallel channels to represent floodplain overflow. Survey of 137 river cross sections. Routing of various runoff hydrographs through the river system to represent flood levels.
- Flood hazard modelling for the 50 and 100 year return period flood events, and consideration of the extreme flood event (for rural and urban reaches)
- Consideration of the severity of flooding (velocity and momentum of floodwaters) through the rural floodplain to delineate a structural damage area. This is where proposed development could be subject to potential damage.
- Analysis of historic channel movement along the rural reach of the river and consideration of other channel forming factors to show where the river channel could move to determine an erosion hazard area.
- Comment on other hazards associated with flooding on the Wainuiomata River floodplain.

The flood hazard assessment was carried out in recognition of the increased flood hazard that was considered likely to result from further development of the lower Wainuiomata

River floodplain, through the subdivision of rural properties into smaller rural-residential allotments. The reduction in minimum size allotment in the rural area from 40ha to 15ha enabled more intensive floodplain development and the potential for increasing flood risks and increasing damages. Although the urban section of the Wainuiomata River is managed under a scheme plan, GWRC does not currently, and has no future intent to put in place flood and erosion protection works in the rural section of the Wainuiomata River and channel migration can be expected to continue in the future.

The results of the Wainuiomata River Flood Hazard Assessment were used for planning and advice about future development on the Wainuiomata River floodplain, especially when assessing specific development proposals. In guiding the location of development within the rural section of the Wainuiomata River floodplain, it has provided useful information for proactively saving flood damages for future development.

The decision was made to write to every property owner on whose property the 100 year return period flood and erosion hazard had been identified in the Wainuiomata River Flood Hazard Assessment, and these letters and accompanying Flood and Erosion hazard Information Sheets were sent out in January 2010. This information was greeted with considerable consternation by some property owners, who were very concerned about the accuracy of the information and how the hazards were portrayed. While GWRC and HCC endeavoured to clarify that the flood and erosion hazard information was based on surveyed cross sections and limited topographical information (through the Hutt City Council LIM information) and also that the flood depths shown on the Information Sheet maps should be interpreted as indicative and actual water depths will depend on the local topography; the information was still viewed as inaccurate by property owners who sought through HCC and GWRC council processes to have the hazard information updated.

In 2011 the Wainuiomata River flood hazard was updated to take into account: the further 13 years of hydrological data (since 1998); the latest LiDAR aerial survey information; and flood data from landowners, to get refined and recalibrated flood extents and depths. A 50-100 year return period flood was experienced in February 2004 which provided relevant flooding information – see photograph 1. The flood data and discussions with landowners sharing their on-site observations, especially of the 2004 flood, were used to calibrate and refine the updated hydraulic model.



Photograph 1: The lower Wainuiomata Valley - 16 February 2004

The draft updated flood hazard information was compiled into draft Information Sheets and was sent to all people within the flood and erosion hazard area with an invitation to a drop-in session (held in February 2012). This meeting was followed by further discussions with individuals and specific investigations of flood hazard, including site survey at a few locations. Further discussions were also held with Hutt City Council (HCC) officers, and an engineer engaged by residents to undertake site-specific assessments of the erosion hazard on their properties.

Further e-mail feedback suggesting additional changes to the draft Information Sheets and the suggested HCC LIM (Land Information Memorandum) statement was also received.

Following the February 2012 public meeting, and an analysis of comments received and specific feedback, the second revision of the draft Flood Hazard Information Sheets and suggested LIM statement were mailed out to attendees of the public meeting, the resident's engineer and HCC, with an opportunity to provide further feedback before May 2012. Discussions were held with individuals and additional feedback was also received regarding erosion hazard lines and the proposed LIM statement.

Following finalisation of the flood and erosion hazard information, changes were made to the flood hazard information sheets, including adding the site-specific erosion hazard information as shown in Figure 6. A method of including further information as it comes available was also agreed with HCC.

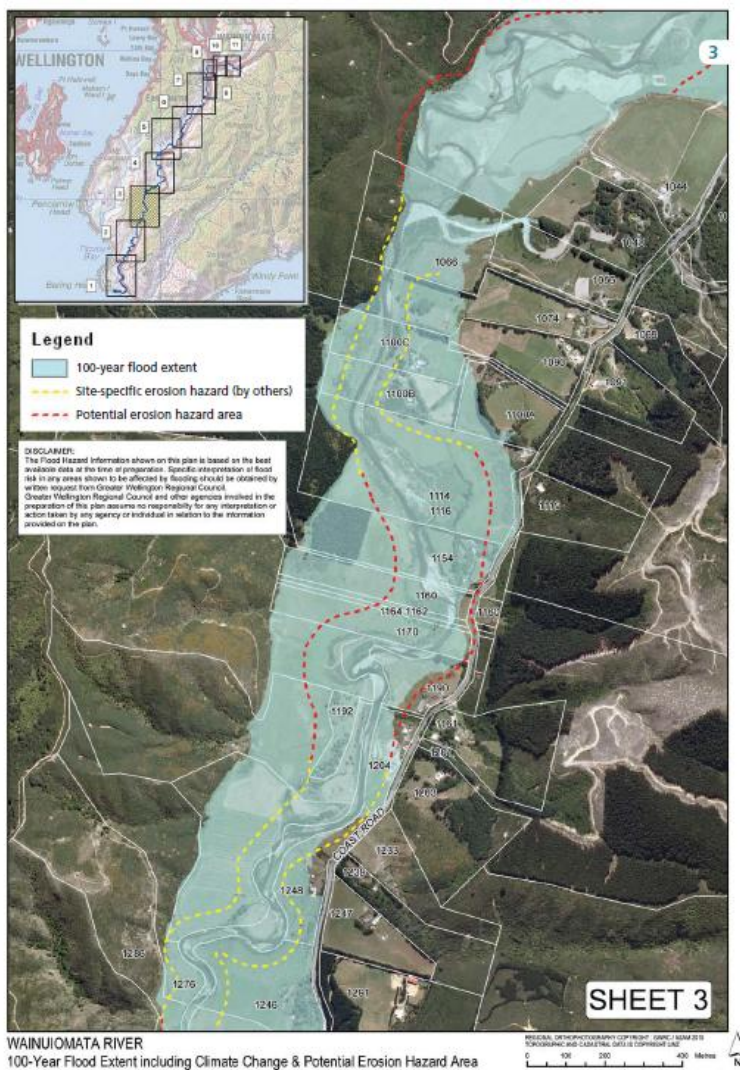


Figure 6: Flood and erosion hazard map for the Wainuiomata River

In September 2012, the new hazard information was published on information data sheets, mailed out to all affected landowners, and made available for HCC to include on LIMs.

2.3 THE MANGAROA RIVER CATCHMENT

The Mangaroa River is one of the four major tributaries of the Hutt River, discharging into the Hutt River at Te Marua. Its catchment covers 10,310ha which includes Whitemans Valley and the Mangaroa Valley, as shown in Figure 7. It is a predominantly rural catchment with a dispersed population. Photograph 2 shows a view of the valley, looking upriver at about the 'Mangaroa' label above 'Upper Hutt' in Figure 6.

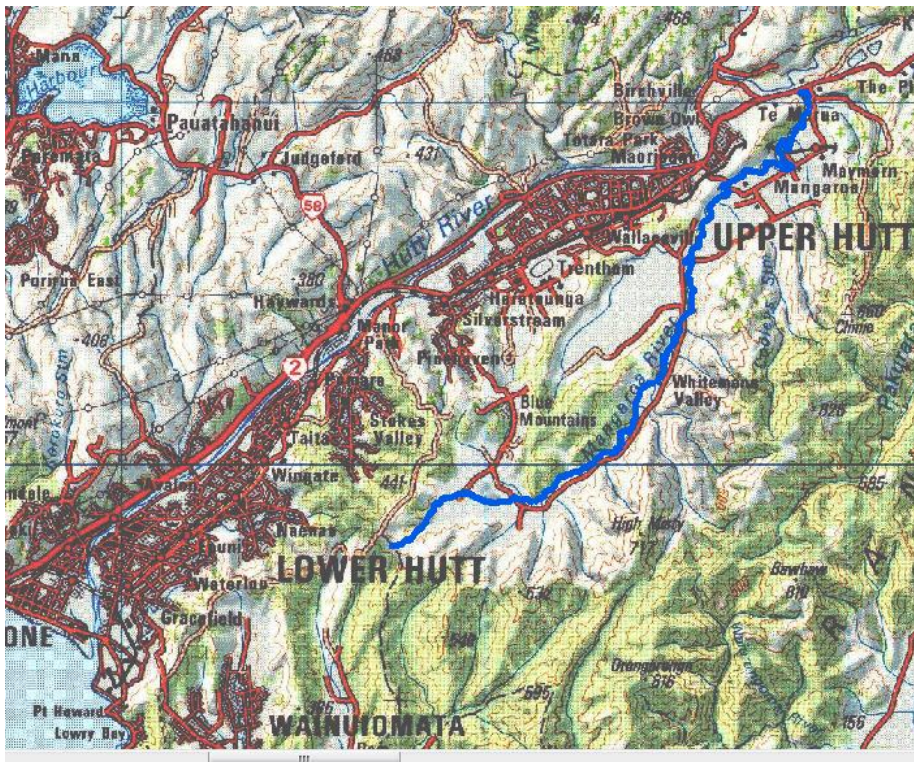


Figure 7: Location of the Mangaroa River (in blue)



Photograph 2: Mangaroa River upstream from Parkes Road loop – January 2002

In June 2006, the Mangaroa River Flood and Erosion Hazard Assessment was completed by consultants Sinclair Knight Merz. The flood hazard assessment used a coupled Mike one and two dimensional hydraulic model of the major channels and floodplain in the valley to predict and quantify the flooding hazards. The model was also used as part of a geological and morphology study to identify areas of the floodplain at risk of erosion by the river. Where these hazards have a high impact on property or endanger life a damage assessment was carried out to provide an indication of the levels of risk associated with the river. The investigation identified extents and depths of flooding for a range of storm events and established recommended building levels based on the 100 year flood. An "erosion hazard corridor" was developed from the setbacks determined for each "at risk" area in the geomorphology and erosion investigation. Figure 8 shows a sample flood and erosion hazard map for the Mangaroa River.

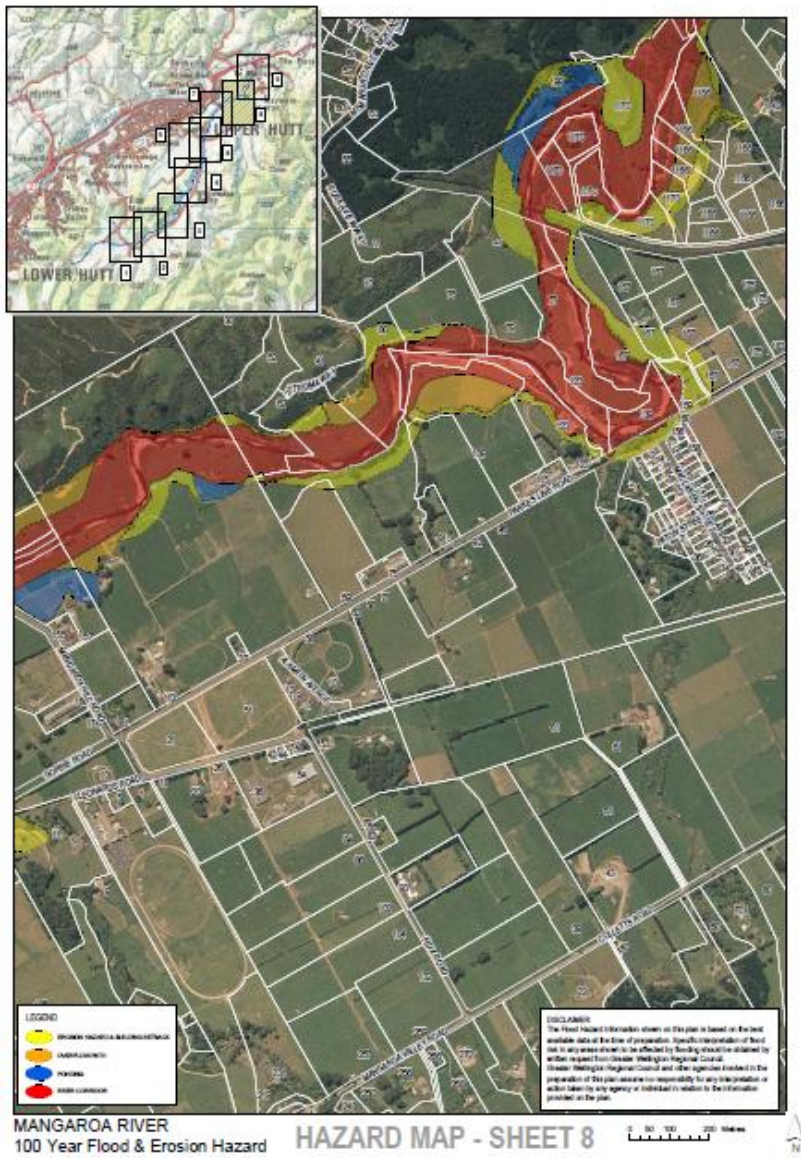


Figure 8: Flood and Erosion Hazard Map for the Mangaroa River

The results of the flood and erosion hazard assessment were forwarded to Upper Hutt City Council (UHCC), followed by discussions between officers regarding the use of the information. GWRC intended that this information be used for planning purposes, to ensure that any future development in the valley takes account of flood and erosion hazards. UHCC used this information to inform applications for building and resource consent, and disclosed it in LIM reports.

Public meetings were held in September and November 2008 to discuss the hazard information. A key outcome from these meetings was that residents wanted the flood and erosion hazard to be put into the Upper Hutt City Council District Plan.

In January 2010, all property owners with properties affected by flood and erosion hazard from the Mangaroa River were sent letters with attached maps of the Draft Mangaroa River Flood and Erosion Hazard Mapping and Design River Channel Alignment Plans specific to their property, for consultation. The Flood and Erosion Hazard Maps have the flood extent divided into hazard areas defined as river corridor, overflow path, erosion hazard and building setback, and ponding. The Design River Channel Alignment Plans have a design river channel alignment for the information of landowners to guide any future river management measures. This information was drawn up for planning purposes, to ensure that the development of the Mangaroa and Whitemans Valleys takes into account the flood and erosion hazards of the Mangaroa River, and was used to inform Plan Change 15 to the Upper Hutt City Council District Plan.

At the UHCC meeting of 25 September 2013, UHCC resolved that the decision to approve Plan Change 15 was deferred, pending the completion of an independent review into the accuracy of the model and data used for the Hutt and Mangaroa Rivers. The decision was modified in December 2013 to focus the review on the Mangaroa River, with the expectation that with any points raised, the consequences to the Hutt River model would be considered.

3 DISCUSSION

3.1 REFLECTIONS ON THE PROCESS OF DISSEMINATING FLOOD HAZARD INFORMATION FOR WAINUIOMATA AND MANGAROA RIVERS

Dissemination of the flood hazard information for the Wainuiomata and Mangaroa Rivers was not carried out as part of an FMP, and generally the flood hazard information for these watercourses was provided to the respective City Councils. This information was then used by the City Councils on informing new development, and also placed on LIMS. Note that this process was the GWRC policy, as noted in Section 2.1.2 above.

Feedback about this process for Wainuiomata and Mangaroa Rivers is that this dissemination process had shortcomings. Similarly to the recent release of other high-profile hazard information, those affected in the community were unhappy with the information, the communication process around this information and what they considered to be the potential effect on their development prospects and property values. Some of the feedback received is highlighted below.

3.1.1 COMMUNITY FEEDBACK

Community feedback was received during the processes set out in sections 2.2 and 2.3 above. Comments relating to the dissemination of flood hazard information are:

- The community should be informed before any work is carried out, and invited to participate – they may have information, photographs etc. they wish to make available.
- If a property is identified as having a flood hazard through flood modelling, then the respective owners want to know about this before anyone else. For example, when trying to sell property, people don't like finding out from a potential buyer that they have a hazard noted on the LIM – especially when they are unaware of this themselves. Equally the owners do not want to read such information in the newspaper. It was this comment that resulted in the decision to write to every affected property owner in the Mangaroa and Wainuiomata flood hazard areas to inform them directly that their property was affected by the hazard.

- Even though property owners may know that their property may be affected by a potential hazard (i.e. because it has been flooded), they don't necessarily want the hazard information available so others will know about it.
- There is an expectation that the modelling is very precise and has only a minimal margin of error. An industry best practice is the minimum expectation. People also tend to expect that the modelling will be at the standard of current best practice, with no real acknowledgement of the fast pace of progress and development of the computer modelling technology over the last 10 years – and that not every study can be at the level of current best practice as the standard depends on when the work was carried out.
- People consider that having a hazard noted on the LIM will lower the property value.
- Opinions vary on the best way to show the flood hazard information – whether this should be standardised for all hazard maps, or detailed indicating water depth.

3.1.2 COUNCIL OFFICER FEEDBACK

Feedback from council officers was received in a discussion between officers of GWRC, Hutt City Council and Upper Hutt City Council in November 2012¹.

Points were raised during this discussion relating to the hazard information and dissemination of this information as follows:

HYDRAULIC MODELLING

- Version control for the flood hazard information is important to make sure Councils are using the same, and correct, information.
- Preparing accurate hazard information can be challenging, especially when there is a lack of records or data for model calibration, including hydrological records, flood gauging data and flood pegging records.
- The hydraulic model information should be peer reviewed before release. The Mangaroa River information was changed after initial release which caused confusion. (Note: GWRC Flood Protection Department policy has changed and now includes review of all hydraulic models, by internal or external appointed party, before information is released.)

COMMUNICATION AND RELEASE OF INFORMATION

- How the flood spread is shown on the data sheets needs to be consistent between different flood hazard studies.
- The community needs to be given the opportunity to comment on the draft hazard maps so they can have any information they hold taken into account. This can also narrow down potential issues before a Plan Change, if this is what the information is to be used for.
- Release of the information needs to be four-fold: at Regional Council and Local Authority Officer level, to Regional Council and Local Authority Councillors, to landowners and affected parties, and to the wider community.
- Need to assume the community has no knowledge about the hazard or flood risk (or don't want to know), so the information needs to be released as if from 'scratch'.

¹ **Greater Wellington Regional Council's Flood Protection Department:** Graeme Campbell (Manager, Flood Protection); Jan van der Vliet (Team Leader, Investigations, Strategy and Planning); Sharyn Westlake (Senior Engineer, Strategy and Advisory Specialist); Matt Gardner (Engineer, Modelling)

Hutt City Council: Helen Oram (Divisional Manager Environmental Consents); Sarah Firth (née Fleet) (Eco Design Advisor & LIM Supervisor)

Upper Hutt City Council: Richard Harbord (Director, Planning and Regulatory Services)

- Information about public meetings needs to be advertised in the local paper and face-to face meetings are required, where appropriate.
- Drop-in sessions, with presentations, have worked well. These are best if the opportunity is given for one-to-one discussion rather than longer question-times, as these may be dominated by a few and not give everyone the opportunity to contribute.
- The 'GP surgery' approach was suggested, where an officer was available in the community for say one day a fortnight so people can drop in and discuss issues. The officer could be working from the local library for example.
- Joint Council letters have worked well, and having people in Councils informed and up-to-date regarding who to talk to about which watercourse – as flood hazard mapping may be being carried out over a number of watercourses at any one time.
- Informed Councillors who are able to respond to community questions has been valuable in some cases as it shows a united approach.
- Informed Building Officers and Resource Consent Planners are required, who know what the hazard information means and how to use it (with regard to building and land use consents).
- There is a risk with delaying putting flood hazard information in District Plans as the default standard of a 50 year return period event may be used for recommended building floor levels (as per the Building Act), instead of a wider range of flood events.

3.2 COMMUNICATION PROCESS

All of the issues raised in section 3.1 above will be taken into account when preparing for the release of future flood hazard information by GWRC. Our experience has been that informing the community that they are affected by a hazard was an important but difficult step as it generally resulted in a furore! Following on from this, the following process is proposed for future release of flood hazard information that is not part of a FMP (as FMPs have a broader process for engagement):

- Advise the community before you start the process, and invite them to participate.
- Prepare a Communication Strategy, including a joint process with the TA's and GWRC, for information release.
- Develop a clear programme for the release of information allowing for the staged release, including to officers, Councillors, land owners and the wider community.
- Release of draft information for community input, with opportunity for feedback.
- Provide opportunities for community drop-in session/public meeting.
- Prepare information sheets with a standard presentation of the flood hazard, and what information is to be put on the LIM and advice for new development.

The flood hazard information for the Porirua Stream is the next candidate for this process.

4 CONCLUSIONS

GWRC provides advice on flood hazards to the public and local authorities using flood hazard mapping information. This advice is provided in part to fulfil GW's obligations under the Resource Management Act 1991 (RMA) to control the use of land for the purpose of the avoidance or mitigation of natural hazards. The RMA also requires a duty

to gather information, monitor, and keep records of natural hazards to the extent that GW considers appropriate for the effective discharge of its functions under the RMA to avoid or mitigate natural hazards.

GWRC's policies relating to identifying, assessing and informing communities about flood risk generally relate to the situation when the work is carried out as part of an FMP. However when flood hazard assessments are carried out primarily to identify hazard areas so that these could be taken into account for future development these have not involved a wide consultation process as the FMP process has not been followed. There also needs to be a balance between the cost spent by the regional ratepayer to obtain hazard information and the further detail desired for the benefit of private landowners.

Release of the flood hazard information for the Mangaroa and Wainuiomata Rivers has been contentious at times, with members of the community unhappy with the information and the resulting potential effects on their property. Feedback received from members of the community and council officers from community meetings and discussions about flood hazard information for the Mangaroa and Wainuiomata Rivers has resulted in a communication process which is to be used for the future release of flood hazard information, where this is not part of a FMP.

ACKNOWLEDGEMENTS

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