RIVER SCHEME SUSTAINABILITY IN THE BAY OF PLENTY REGION

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ABSTRACT (200 WORDS MAXIMUM)

A River Scheme Sustainability Project has been developed for and by the Bay of Plenty Regional Council. Following the extensive flooding events in 2004, 2010 and 2011, questions were raised about whether the current levels of service (e.g. protection during a one-in-one-hundred year flood event), and escalating scheme funding requirements are sustainable in the long-term. The River Scheme Sustainability Project considers a number of 'big picture' questions to set direction for sustainable management of the five major river and drainage schemes in the Bay of Plenty for the next 100 years.

The goal is to reduce long-term risk of flood hazards while encouraging environmentally and economically sustainable land-use practices and raising awareness, changing attitudes and behaviour in the communities.

The project has seven current work streams: Economic Analysis, Flood Risk Gap Analysis, Rating Assessment, Communication Plan, Climate and Weather Cycle, Optioneering and Governance and Ownership.

In this paper we will present the problems we are facing in the Bay of Plenty, with regards to the long term sustainability of our River Schemes, and the strategy of addressing them.

KEYWORDS

Sustainability, River Management, River Schemes

PRESENTER PROFILE

Katalin Maltai has a degree in Environmental Engineering with experience working for Territorial Authorities as well as consultancies in both United Kingdom and New Zealand. Her main areas of expertise are in hydrological and hydraulic investigations and environmental impact studies.

David Boothway is the Engineering Manager at Bay of Plenty Regional Council, and has over 25 years experience across a wide range of environmental, water resource and infrastructure projects in South Africa and New Zealand.

1 INTRODUCTION

The significant cost of repair to infrastructure and property due to damage resulting from the floods in 2004, 2005 and 2011 in the Bay of Plenty area triggered the councillors at the Bay of Plenty Regional Council (BOPRC) to set in place an investigation to determine if current flood protection practice is sustainable in the long-term. For example, total flood damage to the Rangitaiki Scheme due to the 2004 floods exceeds $30M. It is deemed that ever increasing debt levels may become unaffordable to the scheme rate payers.

The aim of the project was to consider the long-term risks of flood hazard and provide a strategy and actions to manage the river schemes moving forward. Flood risk strategies may include retreat, adaption or defend. Flood management options in the longer term may or may not

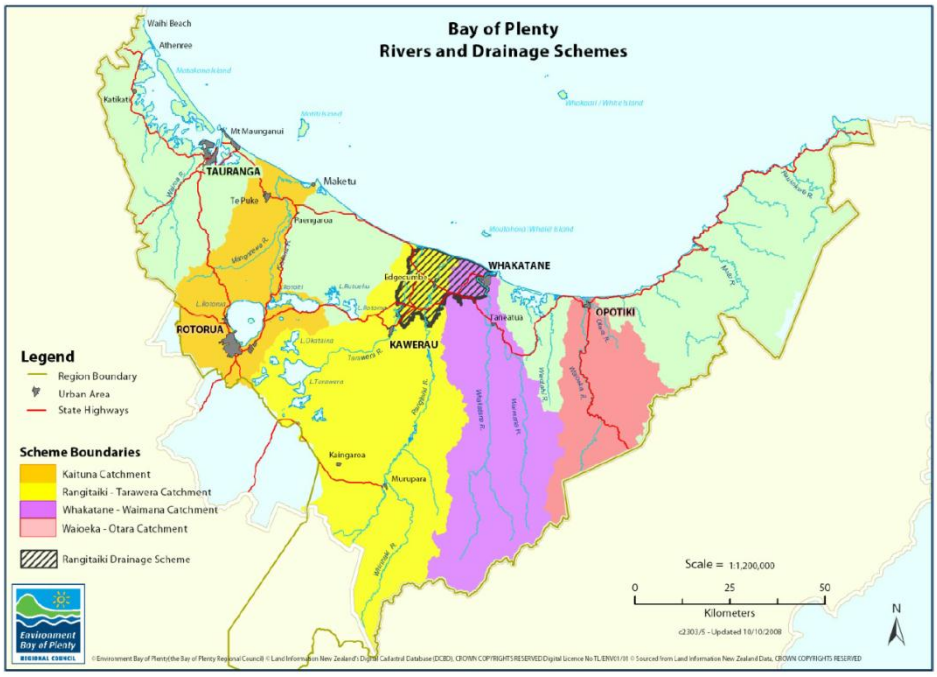
include the structural solutions currently employed. Non-structural and other alternative solutions will need to be evaluated.

2 HISTORY

The rationale for the existing ownership of the river schemes is a result of the Local Government Act provisions whereby regional authorities are responsible for the provision and control of the asset. In common with other similar river schemes throughout New Zealand these schemes were established under the auspices of the Soil Conservation Rivers Control Act 1941. This legislation had its genesis earlier this century and was, for its time, far reaching; Government recognised that flooding and drainage problems were best dealt with on a large-scale (catchment) basis.

Major catchments frequently traversed more than one existing territorial authority. The magnitude of the problem was such that the authorities of the day determined special purpose (ad hoc) authorities, with specialist engineering and soil conservation skills, were required to administer these functions and hence the creation of catchment boards and catchment commissions. The Bay of Plenty region experienced extensive flooding in the 1960s and in The Eastern Bay of Plenty Catchment Commission was created in 1962 in response to flood problems in the region. In 1964 it became the Bay of Plenty Catchment Commission. In 1989 around 850 local bodies were consolidated into 86 multi-purpose local authorities, including regional councils with broad environmental responsibilities and that's when the Bay of Plenty Regional Council was established.

Bay of Plenty Regional Council currently manages five river and drainage schemes (stopbank schemes to protect farmland and towns). The flood protection schemes that were put in place during the 1970s, are structural in nature, and primarily designed to constrain the river to flow between its river banks. The drainage schemes drain wetlands situated behind the stopbanks to enable agricultural practices to farm the low land. The agricultural industry within these river catchments is predominantly dairy, with some ground levels being below mean sea level. The levels of flood protection range from 1:5 to 1:100 year.



3 VISION

The vision for the project is for Council to achieve a 100 year Sustainable River Management Strategy (for our current schemes) which achieves:

- A reduction in flood risk for Bay of Plenty region.
- Introduction of environmentally and economically sustainable land use practices.
- Adapting to climate change.
- Affordability.
- Community and key stakeholders support and engagement.

4 METHODOLOGY

The goal of the River Scheme Sustainability is to avoid or reduce flooding while encouraging environmentally, economically sustainable land-use practices and implement innovative methods for the assessment and management of flood risk. The project involves ongoing discussions with the wider community for re-evaluation of levels of service criteria and tolerance to acceptability of associated risk. Community and cultural input and participation will assist with the building of resilient communities.

The current agreed levels of service for flooding are possibly not sustainable and are effectively reducing as a result of climate change and land subsidence. The concept of inter-generational equity will be included in the RSS project to ensure decision-making undertaken now is not unfairly burdening future generations with unacceptable flood risk and costs.

Interdisciplinary collaboration is required to develop sustainable river management in the Bay of Plenty region.

5 PHASES AND WORKSTREAMS

The project started about a year ago and incorporates four phases; visioning, investigation, analysis and framework development. The project is currently in Phase 2 (2013/2014), the investigation phase during which foundations are being established. The four phases of the project are described in more detail below.

Phase 1: Vision Phase (2012/2013) was to set the philosophy and vision. A workshop was held on 23 February 2013 with councillors, staff and stakeholders attending. The outcome of this workshop set the philosophy and vision of the project as described above.

Phase 2: Investigation Phase (2013/2014) is the phase in which foundations are being established. As a result of the workshop during Phase 1 and further consideration from the project team, the following seven workstreams were developed:

1 Economic analysis

The aim of the economic analysis is to understand the economic benefits created by the river schemes for the region compared to the schemes running costs. The analysis includes all costs and benefits associated with the Schemes such as those both directly or indirectly impacting on affected parties, local and regional benefits and possible tipping points that may create negative returns. Affordability and possible new economics based on new agricultural practices will also be investigated.

The cost benefit analysis will be one if many tools used in future investigations related to flood management which may include the structural, non-structural and other alternative solutions. Further economic analysis will be carried out for alternative options investigated and ecosystem services approach will be fed into this work stream. The ecosystem services approach provides a common language for a more holistic understanding in science, policy making and management of the benefits provided by ecosystems for all sectors.

In order to facilitate a better understanding of long-term economic systems Dr Marjan van den Belt of Massey University facilitated an Economic Workshop for council planners, policy analysts and engineers. She is also assisting with reviewing and guiding the economic analysis.

The initial draft report is planned for delivery in May 2014.

2 Communication

One of the complexities of the project is to ensure people think of how society systems will operate in 100 years time. Public companies focus on quarterly and annual profits. Councils focus on three year political cycles, as does central government. A strong communication strategy is therefore key to facilitating a 100 year mind set of stakeholders and decision makers.

The communications strategy aims to ensure that, through increased and coordinated communications:

- The wider project team, councillors, ratepayers, and council staff understand the importance and value of well-maintained river schemes to the region's environment and economy and to ensure that there is engagement with and support for river scheme work.
- River schemes gain adequate funding and resourcing within Council and to ensure that key stakeholders understand the benefits and costs of flood management and the cost of maintaining levels of services in light of large scale changes (i.e. climate change).
- Stakeholders can make informed decisions regarding future practices by asking whether the current medium-term plan is taking the community to where it needs to be in the future.
- Regional Council will relate more effectively with the river scheme liaison groups and River Forums resulting from co-governance structures established by treaty settlements and make better use of the knowledge and expertise of these groups.

Where appropriate, the communication plan integrates findings from other related projects to provide consistent messaging and to strengthen the River Scheme story.

The communication plan has had an initial focus on internal workshops with staff, councillors and scheme liaison groups. The feedback from these sessions will be fed into the optioneering workstream in Phase 3. We are in the process of developing a website/knowledge portal where key information can be easily seen by all parties.

3 Rating assessment

The goal of the rating assessment is to assess whether or not the existing targeted differential rating systems still provide appropriate mechanisms by which to fund the river schemes. Currently the schemes are funded from 80% targeted rates and 20% general rates.

The draft rating assessment has indicated that improvements can be made. This was expected as land use changes have taken place, and society dynamics bring about change on a continuous basis. The Council is monitoring when the most appropriate time would be to undertake a rating review, as these are costly processes.

4 Flood risk gap analysis

Flood risk gap analysis summarises the current status of floodplain management strategies across the four river schemes. Part of gap analysis investigation has been completed and actions developed to address gaps in the process, which feed into the council Ten Year Plan process to be systematically closed.

The gap analysis has identified over $2M of modelling and planning work needs to be undertaken before a true maintenance regime is reached. The team is currently undertaking a risk review to determine which work is critical to minimise the risk and liability to Council.

5 Climate effects

The climate effects workstream will provide a better understanding of the impact of climatic change and weather cycles on the river schemes. Long-term climate change and medium term weather cycles are key drivers that affect the future level of service that these schemes can provide. Our goal is to maximise the success of adapting to climate changes while developing a pathway into the future in collaboration with the stakeholders and communities. Future land use change due to climate effects will also be investigated. No work has been undertaken in this workstream at the time of writing the paper.

6 Optioneering

The optioneering work stream investigates and provides catchment wide alternative options for managing the rivers to ensure the sustainability of the river systems. Ideas from staff, key stakeholders, councillors and consultants will be elicited through workshops and study groups.

The information collated through this work stream will be joined together with other projects within BOPRC such as spacial plans, Invest BOP project and other regional projects. The costs, benefits and trigger points for change will be investigated.

Internal workshops have been undertaken within Council to elicit optioneering suggestions from staff, councillors and scheme representatives. In addition, four consultants, with international offices, are currently working on identifying optioneering suggestions for four schemes that could be implemented over the next 100 years. They will also be advising us of example successes and failures from schemes around the world.

This brainstorm of internal and external ideas and examples will be consolidated into a project report and the favoured options will be analysed in Phase 3.

7 Ownership and governance

This work stream investigates, which entity is best positioned to effectively run and manage the schemes. Issues around financial management, funding mechanisms, flooding liabilities and others will be investigated New Zealand and worldwide practices will be reviewed.

An investigatory study is currently underway with initial findings with the draft report due May 2014.

Phase 3: Analysis Phase (2014/2015) will interrogate the investigatory work streams to a higher level of confidence as required. In addition new work streams will be initiated as needed.

This phase will add rigour and substance to enable future decisions to be made with confidence. Cost estimates of alternative capital works and economic evaluation of future scenarios will highlight possible dead-end traps that society should stay out of. Understanding the key tipping points of scheme/agricultural/industrial practice over the next 100 years will enable decision makers to change track before systems collapse or fail. Our great-grandchildren will thus inherit a strong sustainable society.

Phase 4: Framework Phase (2015/2016) will develop a framework of actions including processes and links between the Regional Water and Land Plan, spatial planning, district plans, and the Regional Policy Statement that align with achieving the 100 year sustainable vision for the river schemes. The framework will guide the management of river schemes, and hence provide robust systems to provide sound input into the Rivers and Drainage Schemes Asset Management Plan, Ten Year Plan, annual works programmes and management programmes. It will provide guidance on the decision-making process following large floods, variances, effects of climate change and associated risks. It will help set up the trigger points for changing tack to keep the schemes sustainable.

6 CONCLUSIONS

The River Scheme Sustainability Project is a strategic project in that it develops pathways which will guide us from today to the desired future for the management of the four River Schemes in the region. Keeping in mind that “The future is not someplace we are going to, it is a place we are creating. The path to the future is not found, it is made” (Peter Ellyard).

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