greater WELLINGTON
THE REGIONAL COUNCIL

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Committee **Landcare**
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Hutt River Floodplain Management Plan
Stopbank strengthening works and Opahu Stream pumping at Ava Bridge

1. Purpose

The purpose of this report is to:

- advise the Landcare Committee that the preferred option (Option 1D) to improve the waterway capacity of the Ava Railway Bridge requires the construction of a stormwater pumping station at the Opahu Stream outlet to the Hutt River.
- advise the Committee that constructing a pumping station will provide substantial benefits to the community from both Opahu Stream and Hutt River flooding.
- recommend to the Committee that a cost sharing arrangement be negotiated with HCC for constructing the pumping station.
- advise the Committee of the current total project estimate for Option 1D.

2. Background

The Ava Railway Bridge is a severe restriction to the flood capacity of the Hutt River. The Opahu Stream channel and "training bank" that run under the bridge compound the problem. The training bank allows the Opahu Stream to continue to discharge to the Hutt River during Hutt River flood events up to 10-year return. Without the channel and training bank the threat from "stormwater flooding" in the Opahu catchment above the floodgates would increase significantly.

A replacement bridge with an acceptable waterway cannot at present be justified, although it is the only long-term solution to fully meet the HRFMP Design Standard. Tranz Rail currently has no programme for replacing the bridge. Report 01.614 to the 6 September 2001 Landcare Committee meeting confirmed Tranz Rail's likely position and received the Committee's endorsement for waterway improvement options based on stopbank strengthening.

Investigations for identifying a preferred stopbank strengthening option were completed by the end of 2001. At the June 2002 meeting, the Hutt River Advisory Committee was presented with the following draft programme (Report 02.341) for implementing the preferred stopbank strengthening works.

Item	2003/04	2004/05	2005/06	2006/07	2007/08
Pumping Station	Survey and Hydraulic Modelling (HCC)	Design and Consent application (HCC)	Construction (HCC)		
Stopbank strengthening works		Detailed Design (GW)	Construction of works required to complete the pumping station (GW)	Construction (GW)	Construction (GW)

The Advisory Committee subsequently adopted the following resolution:

(3) ***Request*** *the Landcare Committee and Hutt City Council consider the programme for implementing stopbank strengthening works and Opahu Stream pumping station at the Ava bridge.*

This report outlines the strengthening options considered to provide an acceptable bridge waterway, the merits of the preferred option and a proposed agreement with HCC for implementing the preferred option, including Opahu Stream pumping.

3. Hutt City Council (HCC) and Greater Wellington – The Regional Council (GWRC) responsibilities

Hutt City Council is responsible for operational and policy administration of the Opahu Stream. The stream discharges through floodgates above Ava railway bridge into the outlet channel contained within the Hutt River corridor.

In higher Hutt River levels, the floodgates close and stormwater ponds behind them, with the potential for severe flooding and damage in the Woburn area of Hutt City. Officers of both Councils were aware that a pumping station would ultimately be required to reduce flooding in the Opahu catchment and jointly investigated the various options for, and benefits from, pumping.

GWRC has full responsibility for the administration and management of the Hutt River flood protection system. As part of this responsibility GWRC designed (originally by the Hutt River Board), constructed and now maintains the Opahu training bank and outlet channel, downstream of the floodgates in the Hutt River corridor.

The present culvert and floodgate replacements were constructed in 1984 and were jointly funded by HCC and GWRC. They are managed and maintained by GWRC.

4. Ava railway bridge: waterway improvement options

Extensive investigations including detailed hydraulic modelling of the bridge waterway indicated that removing the Opahu training bank, or reconstructing the training bank with erodible material, could provide acceptable interim bridge capacity until a new bridge is constructed. Two viable options, Option 1C and Option 1D, emerged for strengthening the flood defences.

Option 1C – sheet pile strengthening

Option 1C retains the Opahu channel and training bank within the Hutt River corridor and requires heavy sheet piling in the eastern stopbank. To achieve acceptable interim waterway capacity the training bank would be designed and reconstructed, so that it would erode in large events.

While this option meets basic waterway requirements during a large flood there is some uncertainty about the erosion mechanism, and the training bank must then be reconstructed after eroding. The Opahu Stream will not discharge against high Hutt River levels until the training bank is reconstructed, so there is a subsequent risk of flooding in the Opahu catchment, upstream of the floodgates.

Option 1D – remove training bank and construct a pumping station

Option 1D removes the training bank and channel but requires a pumping station to discharge Opahu floodwaters when the Hutt River is in flood. The width made available by removing the training bank allows the reconstructed stopbank to be protected against scour using (lower cost) rock rip rap rather than sheet piling.

Option 1D provides greater certainty for waterway capacity and is a cleaner overall Hutt River flood protection solution.

5. Comparison of options 1C and 1D

The table below shows a comparison of Options 1C and 1D.

Description	Option 1C	Option 1D
Total estimated cost	$6.70 million	$6.40 million Includes total pumping station costs of $1.44 million
Waterway Capacity	Can pass 2300 cumecs with bridge soffit submerged. However, the mechanism to achieve the capacity is less certain	Can pass 2300 cumecs with bridge soffit submerged
Stormwater flooding in Opahu Catchment	Existing flood risk will remain and may increase until training bank is re-instated after flood damage	The flood risk will be greatly reduced
Stopbank strengthening	Involves expensive sheet piling	Conventional rock rip-rap

The pumping station is economically viable in its own right, and more so when total project benefits are taken into account. Based on saved damages, the pumping station gives a benefit cost ratio (BCR) of 1.8 (reasonable for a stormwater project).

Until the opportunity for joint involvement arose, HCC's programme for constructing the Opahu pumping station was perhaps five to ten years out. HCC have now considered constructing the pumping station, to the programme endorsed by the Advisory Committee. However, their decision to construct to this programme ultimately depends on satisfactory arrangements with GWRC.

By co-ordinating the respective stormwater and flood protection construction activities at the Opahu outlet and railway bridge area, both HCC and GWRC will (through Option 1D):

- Provide substantial reductions in flood risk to the community from both Hutt River and internal Opahu Stream flooding
- Provide more effective and integrated stormwater and river flood mitigation solutions
- Secure economic advantages to both councils.

The alternative Option 1C is for GWRC a more expensive, and a less satisfactory, flood protection solution. Option 1C will not contribute to the medium term needs of HCC for a pumping station. Option 1D is the preferred and most cost-effective option.

6. Proposed Opahu pumping cost share agreement

The treatment of responsibilities, funding, ownership of assets and operational management on the Opahu, and its discharge into the Hutt River, has over the years been inconsistent and contentious. In the late 1940s the Hutt Borough Council and the Hutt River Board pursued litigation and subsequently arbitration to resolve their differences on Opahu Stream management. Many of the arrangements set up then are still in place, but are now outdated.

An approach to sharing the cost of pumping, based on existing arrangements and precedent, is fraught with difficulty and was considered by officers to be inappropriate.

The best overall solution requires construction of a pumping station, and there can be a win-win for both councils. Officers considered that a pragmatic approach based on a reasonable sharing of cost savings was the best way forward. A further objective of the proposed agreement is to clarify and simplify ownership, management and funding responsibilities for the various assets that will result from Option 1D.

Our recommendation is that GWRC make a significant contribution to constructing the pumping station including a capped cash contribution to Hutt City Council of up to $495,000. The table below shows the details.

Proposed GWRC Contribution for Pumping Improvements	
Cost of proposed GWRC assets (culvert extension and outlet channel to be funded by GWRC)	$227,000
Proposed GWRC cash contribution (up to)	$495,000
Total GWRC contribution	**$722,000**

Because the new outlet channel will be located in the Hutt River corridor, and the culvert extension is a key part of the Hutt River flood defences, it is appropriate that they are funded, constructed and owned by GWRC. If GWRC contributes $495,000 directly to Hutt City to the cost of constructing the pumping station, its total contribution to pumping is $722,000, or 50% of the total estimated $1.44 million cost for pumping.

The table below shows the GWRC budget required for constructing Option 1D.

GWRC Budget	
Stopbank works	$4,965,000
Culvert extension and outlet channel	$227,000
Proposed cash contribution for the pumping station	$495,000
Total GWRC budget required based on feasibility estimates	**$5,687,000**

The estimated cost of Option 1C is $6.70 million so the saving to GWRC by constructing Option 1D is $1.01 million (a saving of approximately 15%).

The guiding principles of an agreement for managing Opahu Stream and sharing the cost of a pumping station are set out in **Attachment 1**. It is proposed that Hutt City meets the full costs of running, maintaining and depreciating the pumping station.

The proposed outlet channel and the culvert extension are shown on **Attachment 2**.

7. Cost sharing agreement: comment and implications

HCC pumping station costs may be higher if a more sophisticated outlet arrangement is required, however it is intended that this will not affect the proposed GWRC maximum contribution. The objective was to agree a proposal that gives up front certainty to both councils in terms of their commitment. The total contribution from GWRC can be looked on as an incentive to Hutt City to make the preferred project happen.

From a bargaining perspective Hutt City is in a strong position in that the training bank and channel cannot be removed without its consent. On the other hand GWRC could postpone its work until Hutt City decides to construct the pumping station. In doing this, the community would not receive improved Hutt River flood protection, nor would the Woburn residents receive earlier protection from Opahu flooding. GWRC probably has no legal obligation to make a contribution to a pumping station constructed in isolation in the future.

By bringing forward construction of the pumping station, Hutt City will incur debt servicing on its share of the costs sooner than anticipated. However it also provides Hutt City an opportunity to benefit from the GWRC contribution and achieve earlier flood mitigation improvements.

The proposed agreement contains a requirement for Hutt City to construct the pumping in the 2005/06 financial year. The purpose is to allow Hutt River stopbank strengthening to follow to programme.

The current GWRC contribution (approximately $12,000 each year) to Opahu Stream maintenance will be terminated. GWRC will however carry the costs for maintaining the new outlet channel, including flood damage, and for the outlet culvert and floodgates. A duplicate set of floodgates (required to allow maintenance to be regularly scheduled) is an impending cost. New GWRC responsibilities will be approximately financially equivalent to previous.

In our view the cost sharing arrangement represents a fair and reasonable outcome for both HCC and GWRC.

8. Financial considerations and asset ownership

The total GWRC budget estimate for Option 1D, inclusive of a contribution for the pumping station, is $5.69 million. The provision in the Proposed Flood Protection 2003–2013 Operating Plan is $5.45 million. We will make every effort to complete the proposed Option 1D works within the existing budget of $5.45 million. Accordingly we do not recommend any changes to the proposed Operating Plan, at this stage.

We expect the agreement will need to address the mechanism for funding the proposed cash contribution to HCC. In normal circumstances a payment, which contributes to an asset that will not be owned by GWRC has to be cash, rather than loan, funded. We are working to address that issue.

9. Communication

This report concludes more than two years of joint investigation and discussions between officers of GWRC, HCC and Tranz Rail. At this stage no further communication is necessary. However, a joint press release would be appropriate once the agreement with HCC is finalised. This press release should emphasise this excellent example of collaborative working.

10. Recommendations

That the Committee:

1. ***receive*** *the report.*
2. ***note*** *the contents of the report.*
3. ***note*** *that Option 1D is the preferred, and most cost effective, option to improve the waterway capacity of the Ava Railway Bridge, and that provision has been made in the proposed Flood Protection 2003–2013 Operating Plan for the construction of these improvements (years 2004/05 to 2007/08).*

4. ***note*** *that an integral component of Option 1D is a pumping station to pump stormwater from upstream of the Opahu floodgates to the Hutt River.*

5. ***note*** *that the construction of the pumping station by Hutt City Council (HCC), and the construction of the stopbank improvements and removal of the existing Opahu Stream training bank by Greater Wellington – The Regional Council (GWRC), needs to be co-ordinated.*

6. ***approve*** *in principle a cost sharing arrangement between GWRC and the HCC to fund the proposed Opahu Stream pumping improvements.*

7. ***note*** *that the proposed cost share agreement includes a payment of up to $495,000 to HCC for constructing the pumping station. The mechanism for such payment is still to be determined.*

8. ***request*** *that officers prepare a formal Agreement (GWRC and HCC) for the proposed Opahu Pumping capital improvements, their subsequent operation, and for the future management of the Opahu Stream, based on the Guiding Principals contained in Attachment 1. Such Agreement to be approved by GWRC before being formally offered to the HCC.*

9. ***note*** *that the current total estimated cost of Option 1D, including the proposed GWRC contribution to the proposed Opahu pumping station, is $5,690,000, which is greater than the $5,450,000 provision in the proposed Flood Protection 2003–2013 Operating Plan. However no change to the proposed Flood Protection Operating Plan is recommended at present.*

10. ***request*** *that the HCC be advised of the Committee's resolutions once adopted by Council.*

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Attachment 1: Guiding principles for agreement on Opahu Stream and pumping
Attachment 2: Project area plan