

Date                      **Presentation to Tawa Community Board**  
                              9 November 2006  
File                       N/02/14/12

Author                   **Sharyn Westlake, Engineer**

## **Realignment of the Porirua Stream and House Relocation at Findlay Street**

### **1. Purpose**

To inform the Tawa Community Board about options for the realignment of the Porirua Stream and relocation of houses at Findlay Street, and seek their view of the options.

### **2. Executive Summary**

Greater Wellington Regional Council (GWRC) proposes to carry out works on the Porirua Stream at Findlay Street for flood mitigation purposes.

In 2002, options being considered were relocation of the stream channel and 3 houses, and widening of the stream in its present location and the relocation of one house (with the removal of the other two houses). Neither of these options was satisfactory for both GWRC and WCC, as the former did not meet the Wellington City Council 'Wet and Wild' Stream Policy, and the latter had high cost for GWRC. Consequently, in 2003/2004 a further option was developed that proposed relocation of the stream channel and 3 houses and construction of a bifurcation of the stream channel around an 'island'. Feasibility and costs of this option have been investigated, and this option appeared of sufficient merit to consult with interested parties with a view to further progress.

Prior to continuing progress on the project within the LTCCP and GWRC work programme, approval in principle was sought from Wellington City Council that the proposed bifurcation option work was consistent with WCC Outcomes and Policies. This approval has now been received.

As construction costs and property values have changed since the 2004, these will need to be updated to see if the cost relativity of options is maintained.

### **3. Background**

The Porirua Stream is administered by GWRC.

In the late 1980's and early 1990's, GWRC carried out extensive investigations into possible flood improvement works on the Porirua Stream. Stream widening was proposed through Tawa to improve the flood capacity of the

stream. In anticipation of this work, GWRC purchased three properties at Findlay Street, adjacent to Linden Park. It was proposed that the stream in this area be straightened and improved along the lines of the works undertaken in the lower reaches within Porirua City.

A programme of consultation undertaken with the Tawa community by GWRC in 1989 revealed that the community, while it wished to resolve flood management issues, wished to retain the natural character of the stream as much as possible. Economic evaluation in 1992 showed insufficient benefits for works in the Wellington City area. This meant that the cost of the works would not be offset by the benefits of flood mitigation that would result from the work.

In 2000-2002, GWRC reassessed its continued ownership of the properties and developed the proposal for a new stream channel at Findlay Street. It re-introduced the proposal to straighten the stream, improving the flood mitigation characteristics and allowing the houses to be sold.

GWRC approached WCC officers for pre-consent application comment on the proposed plans. WCC officers, guided by past community discussion and the new policy direction set in Wellington Wet and Wild: Bush and Streams Restoration Plan, indicated that they felt that the cost/benefit analysis needed to take account of the ecological impacts and WCC's streams management policy. They asked that alternative solutions be considered which sought to retain the existing stream system as much as possible. A bottom-line requirement was that any alternative solution should aim to achieve the same level of flood protection as the solution initially proposed.

As a consequence GWRC staff developed the floodway option on the basis that it was likely to be more ecologically sensitive and in keeping with WCC's policy to retain the natural character of the streams.

The GWRC Landcare Committee considered the options at their meeting in December 2001. They did not consider it appropriate to recommend that the GWRC forgo income from the sale of the surplus houses and requested that GWRC officers initiated further discussions with WCC.

### 3.1 Options

Options that have been developed for the Findlay Street reach of the Porirua Stream are listed in the following:

1. **Do Minimum – Retain Properties:** Undertake deferred property maintenance; Remedy footbridges; Continue to rent properties.
2. **Do Minimum – Sell Properties:** Undertake deferred property maintenance; Remedy footbridges; Sell properties.
3. **Minor Stream Realignment and House Raising:** Construct a minor stream realignment; Remedy footbridges; Raise houses at nos. 42 & 46; Undertake deferred property maintenance; Sell properties.

- 3a **Minor Stream Realignment without House Raising:** Construct a minor stream realignment; Remedy footbridges; Undertake deferred property maintenance; Sell properties.
4. **Full Stream Realignment and House Relocation:** Remove all footbridges; Construct a full stream realignment; Relocate all three houses forward on their sections, raising floor level above the 100 year return period flood; Undertake deferred property maintenance; Sell properties.
5. **Floodway:** Remove all footbridges; Houses 42 & 44 sold for relocation; Move house 44 to land on Findlay Street side of property, subdivide off and sell; Lower sections on railway side of the stream to create an overflow floodway.
- 5a **Floodway alternative:** (As for floodway, but with decreased radius of transition bends) Remove all footbridges; Houses 42 & 44 sold for relocation; Move house 44 to land on Findlay Street side of property, subdivide off and sell; Lower sections on railway side of the stream to create an overflow floodway.
6. **Stream Realignment with Bifurcation and House Relocation:** Remove all footbridges; Construct a full stream realignment from 30 Findlay St to meet existing channel about 50 m downstream from 46 Findlay Street, with a bifurcation at 44 Findlay St (adding a loop on the left bank with a low island between the two loops, and becoming a single channel about 60 m downstream); Relocate all three houses (42, 44 and 46) forward on their sections, raising floor level above the 100 year return period flood; Undertake deferred property maintenance; Sell properties.

### 3.2 Options 4 and 5a

On 8 August 2002 a report from Maria Archer (WCC) and Geoff Dick (GWRC) presented options 4 and 5a (full realignment and floodway alternative) to the Tawa Community Board. The options both offered the same flood protection benefits. Option 4 however, did not meet WCC's "Wet and Wild" Bush and Stream Restoration Plan, and would not be supported by WCC Officers at the Resource Consent Stage. This Option had an expected cash benefit to GWRC of some \$112,000 once the houses had been sold. Option 5a complied with WCC's Policy and retained future potential for the site. It had, however, a small associated net cost of \$6,000 even after the houses had been sold.

It was agreed that an ecological report would be commissioned examining both options, which has now been carried out by Kingett Mitchell Ltd (May 2003). The ecological report concluded that "The effect of the proposed realignment on the Porirua Stream have the potential to impact on the fishery and aquatic habitat values, but is not expected to result in any significant change to the macroinvertebrate and algal fauna. Mitigation measures aimed at recreating the preferred inanga habitat are proposed that will minimise effects of realignment."

### **3.3 Option 6**

Option 6 has been developed by GWRC as a variation to option 4. It has the objective of meeting the WCC policy requirements of option 5a, while providing some of the cost benefits to GWRC of option 4. It also meets some of the objectives of the Wellington Regional Freshwater plan in seeking the restoration and rehabilitation of freshwater resources in providing extensive riparian planting, and maintaining the stream ecology in providing a pool and riffle stream pattern and the bifurcated channel. Comment has been received by Kingett Mitchell that Option 6 will have benefits for aquatic ecology above those of Option 4.

### **3.4 Investigation and Costing for Option 6 & Revised Costing for Options 4 and 5a**

In April 2004, AC Consulting carried out an investigation of the feasibility of constructing Option 6, together with a revised cost analysis of Option 4, 5a and 6. The revised cost analysis (in \$ 2004) takes into account predicted changes in construction costs and the revised Capital Value of the properties.

Their investigation found that is feasible to construct Option 6: Stream Realignment with Bifurcation and House Relocation.

The total cost of Option 6, for the design and construction of the works was \$511,206. The total project cost was \$128,794 surplus.

Estimated costs for Options 4 and 5a were updated.

The updated estimated cost for option 4 for the design and construction of the works was \$479,015. The total project cost was \$160,985 surplus.

The updated estimated cost for option 5a for the design and construction of the works was \$242,677. The total project cost was \$7,323 surplus.

## **4. Conclusion**

All three options (4, 5a and 6) offer the same flood protection benefits.

Option 4 (new channel) does not fit WCC's "Wet and Wild" bush and Stream Restoration Plan, and would therefore not be supported by WCC at the Resource Consent Stage. This option has a projected cash benefit to the GWRC of some \$161,000 (2004) once the houses have been sold.

Option 5a (floodway widening) retains and enhances the environmental and riparian values of this site and provides for future riparian and community enhancement of the site. It has projected net benefit of about \$7,300 (2004) after the houses have been sold.

Option 6 (bifurcation option) proposes benefits for the aquatic ecology above those of option 4, to mitigate against the effects of the realignment. It meets some of the objectives of WCC's "Wet and Wild" Bush and Stream

Restoration Plan, and the Wellington Regional Freshwater Plan. It has a projected net benefit of about \$128,000 (2004) after the houses have been sold.

Table 1 (attached) gives a summary of the advantages, disadvantages and net project costs for Options 4, 5a and 6.

As construction costs and property values have changed since the 2004, these will obviously need to be updated to see if the cost relativity of options is maintained.

OPTION 4 (NEW CHANNEL)	OPTION 5A (FLOODWAY WIDENING)	OPTION 6 (BIFURCATION OPTION)
<b>Advantages</b>	<b>Advantages</b>	<b>Advantages</b>
Flood benefits – significant reduction in flood risk to properties in lower Findlay Street	Flood benefits – significant reduction in flood risk to properties in lower Findlay Street	Flood benefits – significant reduction in flood risk to properties in lower Findlay Street
Maximises sale value of existing properties. Lowest net project cost.	Retains natural stream alignment and ecological values and provides for future riparian and community enhancement of the site.	Proposes benefits for the aquatic ecology above those of option 4, to mitigate against the effects of the realignment.
Retains three houses with adequate flood protection and improved access.	Consistent with WCC’s “Wet and Wild” Bush and Stream Restoration Plan.	It meets some of the objectives of WCC’s “Wet and Wild” Bush and Stream Restoration Plan, and the Wellington Regional Freshwater Plan
Property access agreements were in place in October 2002 (but these will need to be updated).	Retains one house (existing No. 42) with adequate flood protection and improved access.	Retains three houses with adequate flood protection and improved access.
Was (in 2004) the preferred option of adjacent landowners as it provides for increased subdivision potential.		Sewer pump can be removed.
Sewer pump can be removed.		
<b>Disadvantages</b>	<b>Disadvantages</b>	<b>Disadvantages</b>
Silt impact on stream during diversion.	Stream crossing required for maintenance vehicles.	Silt impact on stream during diversion.
Resource consent process potentially more involved than that for Options 5a and 6.		Resource consent process potentially more involved than that for Option 5a (but less than that for Option 4).
Does not fit WCC’s “Wet and Wild” bush and Stream Restoration Plan.		
Loss of natural and environmental values (partially offset by landscaping and planting included in the proposal).		
Reduction of in-stream ecological values.		
<b>Net Project Cost (2004)</b>	<b>Net Project Cost (2004)</b>	<b>Net Project Cost (2004)</b>
-\$161,000 (i.e. net return once the houses have been sold).	-\$7,300 (i.e. net return once the house has been sold).	-\$128,000 (i.e. net return once the house has been sold).