

## 6. BARNETT PARK DRAINAGE COST SHARING SCHEME

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The purpose of this report is for the Council to adopt subject to consultation:

- (a) The proposed flood detention basin in Barnett Park for flood mitigation and stormwater control.
- (b) The establishment of a formal drainage cost sharing scheme to finance the works on a fair and equitable basis.

### RECENT DEVELOPMENTS

At its meeting on 24 July 2003, the Council approved in principle the location of a flood detention basin in Barnett Park and accepted the offer of 40 odd hectares of land west of Barnett Park from the Rutherford Family Trust for reserve as environmental compensation for future urban development below Moncks Spur.

This report represents the next step in approval of the flood detention basin scheme and establishment of a formal drainage cost sharing scheme to finance its construction.

### THE NEED FOR DRAINAGE IMPROVEMENTS

#### Existing Flooding

Barnett Park and its hinterland drains to the estuary in Moncks Bay via Rifle Range Drain and an overflow swale through Barnett Park (see attached plan). There is a history of drain overflows and backflow during storm events and/or very high tide events resulting in flood damage to low-lying residential properties in Wakatu Avenue, Bay View Road, Cliff Street and Main Road. For example, floodwater was reported to have entered eight houses and 24 garages during the October 2000 storm.

Many minor improvements have been made to the drainage system over the years to reduce flood risk to a level that is acceptable in comparison with other parts of Christchurch where flood risks exist.

Major system improvements including a flood detention basin in Barnett Park have been identified in the past. However, to date available funds have been committed to other capital projects of higher priority.

#### Future Growth

In the long-term there is the potential for approximately 160 new residential lots within the overall Barnett Park catchment. Up to 70 of these could result from a recent interim decision by the Environment Court in respect of hill land west of Barnett Park.

The decision allows approximately 12 hectares of new residential modified LHA zoning on the upper slopes of Moncks Spur subject to many stringent conditions. In addition, the developer is required to provide 40 hectares of reserve land to Barnett Park which the Council has accepted as environmental compensation.

A stormwater management system is required to service this and other vacant urban land below Moncks Spur. Options include stand-alone schemes for this land only or schemes such as a flood detention basin that benefit the entire catchment. The advantage of a scheme that benefits the entire catchment is that costs can be shared between the Council and developers to the advantage of both.

### IMPROVEMENT OPTIONS

Three stormwater disposal options for new urban development below Moncks Spur west of Barnett Park have been considered (see Table 1 below). These costs would need to be funded in full by developers:

**TABLE 1: OPTIONS FOR MONCKS SPUR DEVELOPMENT**

Option	Capital Cost (\$)	Stormwater Treatment	Notes
1. Stormwater tanks for individual new lots	578,000	Sediment collection in bottom of tanks	High maintenance and replacement costs. Uncertain reliability
2. Pressure pipeline to the estuary	675,000	No treatment	Likely to be unacceptable to Environment Canterbury
3. Discharge to a shared facility on the valley floor	134,000 plus cost share (equals \$448,400)	Treatment on the valley floor funded by cost share	

The cost share for new urban development within the catchment recommended later in this report (see “Cost Sharing Scheme”) is \$2,620 per lot. For 120 lots below Moncks Spur, the total cost to the developer including \$134,000 above is \$448,400. Joining the cost sharing scheme is the cheapest option for the developer.

Three options have also been considered for catchment-wide water quality and quantity control (see Table 2 below). These costs would need to be shared between developers and the Council in a fair and equitable manner (see “Cost Estimate and Funding”):

**TABLE 2: OPTIONS FOR CATCHMENT-WIDE SCHEME**

Option	Capital Cost (\$)	Stormwater Treatment	Notes
1. Flood detention basin	822,000	Wet pond and “first flush” detention	Enhances other values in Barnett Park
2. Playing fields bunds	-	Wet pond and “first flush” detention	Flood storage insufficient. Adverse effects on use of playing fields
3. New outlet pipe to the Estuary	810,000	Wet pond and “first flush” detention	Pipeline route through private property

Option 2 above is not feasible because the flood storage capacity behind L- shaped bunds located down the playing fields in Barnett Park is insufficient to provide significant reduction in flood risk to private property.

The cost of option 3 above is less than option 1. However, the flood detention basin includes an additional sum of \$57,000 for the “lease” of the underlying land occupied by the basin which Council has already provided and \$51,700 for additional planting of native species that enhance landscape and ecological values in Barnett Park. The net capital cost of option 1 is, therefore, approximately \$706,800.

The “do nothing” option also needs to be considered.

A range of flood mitigation options was investigated in 2000. The flood detention basin was identified as the preferred option, but was not proceeded with because other projects elsewhere were considered higher priority at the time. Once again flood mitigation works could be postponed in the short-term. However, if so, the opportunity to install a multi-purpose detention basin of benefit to both existing and new urban development at a lower cost than separate Council and developer schemes would be lost forever. Inevitably, the cumulative effect of future urban development in the catchment will be to exacerbate the risk of flood damage to existing properties on the valley floor.

The “do nothing” option or further postponement of flood mitigation works is not recommended.

To summarise, the recommended option for drainage improvements within the Barnett Park catchment is a flood detention basin that provides both catchment flood mitigation and stormwater control for new development.

## **DRAINAGE COST SHARING SCHEME**

### **Scheme Justification**

A new Local Government Act was passed in December 2002. To comply with the new Act a Development Contributions Policy is being prepared for adoption by 1 July 2004. New initiatives can be made before 1 July 2004 provided appropriate community consultation is carried out. The Barnett Park drainage cost sharing proposal recognises the new Local Government Act and complies with the draft policy.

In the meantime, the Council may constitute a formal cost-sharing scheme pursuant to sections 407 and 409 of the Resource Management Act 1991 (incorporating section 283 of the Local Government Act 1974 which has been repealed) to fund the cost of upgrading public infrastructure such as a drainage system necessary to serve new development. The requirement to contribute financially is set as a condition of subdivision consent or building consent. The Council can recover all or part of the costs relating to the upgrading of drainage works in a manner it considers fair and reasonable.

The Barnett Park catchment is already served by the existing Rifle Range Drain stormwater drainage system.

There is a history of drain overflows and backflow during storm events and/or very high tide events resulting in flood damage to low-lying residential properties in Wakatu Avenue, Bay View Road, Cliff Street and Main Road. Many minor improvements have been made to the drainage system over the years to reduce flood risk to a level that is acceptable in comparison with other parts of Christchurch where flood risks exist.

Without further urban development the existing system would be acceptable for the foreseeable future. With further development it is necessary to upgrade this system to better manage the increased volumes of stormwater and the increased flows in significant events, and to maintain or improve the water quality of the discharge to the estuary. The upgrading comprises construction of a flood detention basin and associated works. Since there is an existing system the charge for upgrading will be made pursuant to section 409 of the Resource Management Act 1991.

A drainage cost-sharing scheme of this type for the catchment was recommended at the City Plan hearing on urban growth on Moncks Spur.

### **Detention Basin Description**

The design of the basin is preliminary only, but features could include:

- A twin compartment water quality/flood detention basin system
- A small permanent pond within the basin for water fowl
- Extensive planting of native grasses, shrubs and trees along Rifle Range Drain and around the pond
- Possibly an additional junior playing field located within a normally dry compartment of the basin

The likely dimensions of a twin basin system are expected to be no greater than the following:

- |   |                            |
|---|----------------------------|
| • Flood ponding area when full (once on average every 20 years) | 2.7 hectares               |
| • Permanent wet pond area                                       | 0.75 hectares              |
| • Maximum water depth when full                                 | 2.5 metres                 |
| • Height of downstream embankment                               | 3.5 metres                 |
| • Embankment side slope   | 1 vertical to 4 horizontal |

It should be noted that for storm events greater than a 20 year return period, flooding would still occur over the existing flood-prone residential area. However, flood damage incurred will be reduced significantly. The potential for tidal flooding will also still remain.

### **Cost Estimate and Funding**

The estimated cost of Barnett Park catchment drainage upgrading can be broken down as follows:

**Table 3: Cost Estimate**

Component	Total Cost (\$)	Drainage Cost (\$)
1. Earthworks	391,000	391,000
2. Planting	127,000	63,500
3. Wildlife Pond	25,000	0
4. Structures	155,000	147,000
5. Rifle Range Drain Controls	10,000	10,000
6. Land "lease"	57,000	57,000
7. Discharge permit	30,000	30,000
8. Erosion Control	<u>27,000</u>	<u>27,000</u>
	\$822,000	\$725,500

The cost of drainage components to be shared between the Council and developers is \$725,500. The cost of non-drainage components such as the wildlife pond and some of the planting will be met by the Council.

New development within the catchment is expected to continue for the next 10 to 20 years. The demand made on the Council's capital budget will be largely driven by private development. The first stage of the basin (providing water quality treatment and sediment control) will be in place once the first 30 new lots have been developed on Moncks Spur. The expected demand on the Council's capital expenditure budget (to be offset by private cost share contributions) is estimated in Table 4.

**Table 4: Budget Demand**

Year	2003/04	2004/05	2005/06	2006/07	2007/08	Years 6 to 10
Amount (\$)	40,000	50,000	50,000	120,000	50,000	455,000

Note that the total amount in Table 4 above does not include item 6 in Table 3 because the Council already owns the land that the basin will be located on.

Capital expenditure will be funded from the Port Hills category within the budget output Waterways and Wetlands Protection. Budget substitution within this output will be necessary once the cost sharing scheme has been adopted. The current budget for Port Hills Protection is shown in Table 5 below.

**Table 5: Current Budget**

Year	2003/04	2004/05	2005/06	2006/07	2007/08
Amount (\$)	200,000	130,000	270,000	300,000	250,000

Operating costs for Barnett Park will increase. Some additional channel maintenance, mowing, controlled grazing, and shrub replacement will be required. However, the revenue from drainage rates levied on new residential development should more than meet additional operating costs.

### Cost Share Contributions

Throughout the Barnett Park catchment the fundamental benefit gained by developers from the proposed drainage cost sharing scheme is the ability to develop irrespective of their location within the catchment. For example, the capture, flood attenuation and treatment of runoff in the detention basin from an upstream development may allow a downstream development to discharge directly to the drainage system rather than having to provide water quality and quantity control on-site.

A uniform unit cost contribution throughout the catchment reflects this common benefit.

Without further development, the existing drainage system would just meet acceptable level of service in comparison with other parts of Christchurch where flood risks exist. However, the proposed scheme not only mitigates the marginal flood risk new development poses to existing low-lying development, but also reduces flooding from the existing catchment. Both the Council and developers should meet the cost of flood detention. A 50/50 split between the Council and developers is considered fair (and cheaper for developers on Moncks Spur than going-it-alone).

Sediment control (especially during construction) and stormwater treatment provided by the detention basin is for the benefit of new development. Developers, therefore, should meet the cost of these features estimated at \$113,000.

For 160 potential new lots within the catchment, the unit cost share contribution for each lot is \$2,620.

### **Cost Sharing Scheme**

The Barnett Park Drainage Cost Sharing proposal is:

- (a) Total developer capital contribution of approximately \$419,200.
- (b) Cost share levy per new lot is \$2,620.
- (c) The first dwelling on any lot existing at the time the cost sharing scheme is adopted by the Council will not be liable for the levy. However, the second and subsequent dwellings on the same lot will each attract the levy.
- (d) Calculations have been based on estimates. The estimates will be updated regularly to actual costs upon completion of each phase of the scheme upgrading.
- (e) Annual adjustments will be made for the value of money over time. Historical expenditure will be adjusted in accordance with the Consumers Price Index.

### **Consultation and Consents**

To comply with the Local Government Act 2002, consultation "*to the extent the local authority considers reasonable*" is required. The communication and notification steps for the cost sharing scheme are:

- (a) Presentation to the Community Board and Parks, Gardens and Waterways Committee.
- (b) A mailout circular to affected landowners within the scheme area inviting feedback on the proposed scheme.
- (c) A consultation period of at least one month during which landowner feedback received will be assessed.
- (d) Presentation of the scheme to the Council for adoption.

The proposal was presented to the Hagley-Ferrymead Community Board at its meeting on 29 October 2003. The Board decided to recommend to the Parks, Gardens and Waterways Committee that developers should contribute 60% of the cost of the scheme. Under the cost sharing scheme proposed developers are expected to meet 58% of the drainage cost and 51% of the total cost of the scheme.

Environment Canterbury requires that subdivisions of 30 lots or more obtain a discharge permit for the discharge of stormwater to natural water. In the past, each developer has been responsible for obtaining any consents necessary from Environment Canterbury. However, in this instance it is intended that the Council lodge an application for a comprehensive consent that covers all stormwater discharges within the catchment and activities associated with the construction of the flood detention basin. This approach is consistent with the protocol on surface water management that Parks and Waterways Unit planning staff are developing with Environment Canterbury.

A comprehensive catchment-wide consent application is expected to be lodged during 2004.

- Recommendation:**
1. That the Council approve the construction of a flood detention basin in Barnett Park (total estimated capital cost \$822,000 in December 2003 dollars) for stormwater control for new development and overall flood mitigation within the Barnett Park catchment.
  2. That the Council establish the Barnett Park Drainage Cost Sharing Scheme pursuant to Sections 407 and 409 of the Resource Management Act 1991 (which saves the otherwise repealed provisions of Section 283 of the Local Government Act 1974) to finance the upgrading of the Rifle Range Drain system by way of a flood detention basin in Barnett Park (subject to consultation).
  3. That the Council approve the areas shown on the plan (attached) called Barnett Park Drainage Cost Sharing Scheme.
  4.
    - (a) That the unit charge be \$2,620 adjusted annually for inflation measured by the CPI index from June 2004 until the date of charge and any variation for the actual construction cost as they come to charge.
    - (b) That the unit cost be imposed at the time of subdivision or building consent whichever is earlier:
      - On each lot created in the event of a subdivision in the cost sharing area excluding lots passed to Council for public good purposes or
      - For existing lots in the cost sharing area, on each new dwelling or other principal building (as defined in the Valuer General rules under the Rating Valuation Act 1998) for which a building is issued subject to an exemption for the first dwelling unit or principal building on each lot built before or after the commencement of the cost sharing scheme.
    - (c) That the unit cost be a condition of such subdivision or building consent.
  5. That the affected owners within the catchment area be advised of the Council's decision.
  6. That the Council apply to Environment Canterbury for a comprehensive resource consent that will authorise construction of the basin and stormwater discharge for development within the catchment.