

3. BARNETT PARK DRAINAGE COST SHARING SCHEME

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PURPOSE

The purpose of this report is for the Board to consider and give feedback on:

- 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.

The proposal and Board feedback is then to be considered by the Parks, Gardens and Waterways Committee.

RECENT DEVELOPMENTS

At its meeting on 2 July 2003, the Board approved in principle the location of a flood detention basin in Barnett Park subject to community consultation.

Community views were sought. Forty responses to the "Have Your Say" leaflet and information on the Council's website were received. Most of the responses including one from Redcliffs Residents' Association were in favour of the proposal. A number of suggestions were made that will be incorporated into the design of the basin if possible (see the attached summary of community views).

Since the Board's July 2003 meeting, the Council has 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.

Flood mitigation measures for existing development within the catchment have been reviewed and stormwater disposal options for new development have been investigated. A flood detention basin has been confirmed as the preferred option for both purposes.

This report represents the first 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 of 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.

DRAINAGE IMPROVEMENT OPTIONS

Five stormwater disposal options for new urban development have been investigated (see Table 1 below). Options 1 and 2 serve new urban development below Moncks Spur west of Barnett Park only. Options 3 to 5 provide catchment-wide benefits.

TABLE 1: DRAINAGE OPTIONS

Option	Area Served	Approximately Capital Cost (\$)	Stormwater Treatment	Other Considerations
1. Stormwater tanks for individual new lots	New development below Moncks Spur	550,000	Sediment collection in bottom of tanks	High maintenance and replacement costs. Uncertain reliability
2. Pressure pipeline to the estuary	New development below Moncks Spur	700,000	No treatment	Likely to be unacceptable to Environment Canterbury
3. Flood detention basin	Full catchment	790,000	Wet pond and "first flush" detention	Enhances other values in Barnett Park
4. Playing fields bunds	Full catchment	-	Wet pond and "first flush" detention	Flood storage insufficient. Adverse effects on use of playing fields
5. New outlet pipe to the Estuary	Full catchment	790,000	Wet pond and "first flush" detention	Pipeline route through private property

The estimated capital costs of options 1 and 2 are less than for options 3 and 5. However, options 1 and 2 benefit new development below Moncks Spur only, therefore would need to be funded in full by developers. It would be less costly for developers to participate in a scheme with catchment-wide benefit funded jointly with the Council.

Option 4 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 estimated total capital costs of options 3 and 5 are the same. However, the flood detention basin includes an additional sum of \$50,000 for the "lease" of the underlying land occupied by the basin and \$100,000 for additional planting of native species that enhance landscape and ecological values in Barnett Park. The net capital cost of option 3 is, therefore, approximately \$630,000.

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.

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 Financial 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 and complies with the new Local Government Act.

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. Any person who objects to the charges can appeal to the Environment Court at the time of subdivision development.

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:

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|---|----------------------------|
| • 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 is \$790,000 broken down as follows:

Table 2: Cost Estimate

Component	Total Cost (\$)	Drainage Cost (\$)
1. Earthworks	390,000	390,000
2. Planting	127,000	63,500
3. Wildlife Pond	25,000	0
4. Structures	155,000	155,000
5. Rifle Range Drain Controls	10,000	10,000
6. Land "lease"	57,000	28,500
7. Erosion Control	<u>26,000</u>	<u>26,000</u>
	\$790,000	\$673,000

The cost of drainage components to be shared between the Council and developers is \$673,000. 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 Council's capital budget will be largely driven by private development. The first stage of the basin (providing water quality treatment and sediment control) should be in place once the first 30 new lots have been developed on Moncks Spur. The expected demand on Council's capital expenditure budget (to be offset by private cost share contributions) is estimated in Table 3.

Table 3: Budget Demand

Year	2003/2004	2	3	4	5	6-10
Amount (\$)	40,000	50,000	50,000	120,000	50,000	473,000

The total amount in Table 3 above does not include item 6 in Table 2 because the Council already owns the land that the basin will be located on.

Capital expenditure will be funded from the Port Hills line item within the budget output Waterways and Wetlands Protection. Budget substitution within this output will be necessary once the cost sharing scheme has been adopted.

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 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 approximately \$144,000.

For approximately 160 potential new lots within the catchment, the unit cost share contribution for each lot is approximately \$2,550.

Cost Sharing Scheme

The Barnett Park Drainage Cost Sharing proposal is:

- (a) Total developer capital contribution of approximately \$408,000.
- (b) Cost share levy per new lot is approximately \$2,550.
- (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 at 1 July each year.

Consultation and Consents

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

- (a) Presentation to the Board and Parks, Gardens and Waterways Committee.
- (b) A brief 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.
- (e) Public notification 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.

DRAFT RECOMMENDATIONS TO COUNCIL

1. That the Council approve the construction of a flood detention basin in Barnett Park (total estimated capital cost \$790,000) 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 to finance the upgrading of the Rifle Range Drain system by way of a flood detention basin in Barnett Park.
3. That the Council approve the areas shown on the plan (attached) called Barnett Park Drainage Cost Sharing Scheme.
4. That the Council sets as a condition of all future subdivision consents, and building consents for dwellings and other premises within existing subdivisions a requirement for cost contribution as described in the agenda report.
5. That the developers within the catchment area be advised of the Council's decision.
6. That a consultation period be provided of at least one month during which developer and landowner feedback will be received and assessed.

7. 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.

Staff

Recommendation: That the Board convey its views on the proposed Barnett Park Drainage Cost Sharing Scheme to the Parks, Gardens and Waterways Committee.

Chairperson's

Recommendation: For discussion.