

3. ENVIRONMENTAL COMPENSATION CASHMERE WORSLEYS VALLEY

Officer responsible
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The purpose of this report is to recommend that the Council accept somewhat in excess of 50ha of land in the valley floor between the Cashmere and Worsleys spurs. The Environment Court, as part of its decision on the rezoning of land of GA and JY McVicar and Christ's College Canterbury, requires the vesting of the above land in Council ownership, as environmental compensation to store water. It is not the purpose of this report to consider the merits of the subdivision.

INTRODUCTION

The landowners lodged a submission on the Proposed City Plan seeking that some of the 142 ha. of land in two valleys and a sub-spur between Cashmere and Worsleys spurs, be re-zoned from Rural to various Living (residential) zones. This was considered in July 2001 as below.

The Decision of the Council of 2 July 2001

That a deferred zoning for a maximum of 275 residential allotments be confirmed, subject to a number of specific requirements.

Of importance to this report the decision required;

1. The transfer of an area of land to the Council for stormwater storage and reserve.
2. The construction by the landowners of the ponding basin to hold 507,000 m³ of water in a 2% annual exceedance probability event (50 year return period storm event), and with an average side slope gradient of no more than 1 in 5. This was to include a 4 ha reserve for playing fields at a higher level at a 10 year return period (10% annual exceedance probability).
3. The planting and landscaping of the ponding area by the landowners and five years of maintenance.
4. That the reserve contribution for the development take into account the 4ha of playing fields required to be provided in the ponding basin.
5. That the Council will make a financial contribution towards the purchase of the land of the ponding basin and for the additional rights to store additional water.
6. A fence constructed by the Council and landowners on the boundary of the ponding basin area.
7. Vesting in the council a reserve with a minimum width of 20m between the Development Plan Area boundary and the southern-most LH Deferred Zone .

The Decision of the Environment Court Hearing 18 August 2003

The matter proceeded to the Environment Court and the Court has issued an interim decision allowing the re-zoning of a reduced area of approximately 44ha (shown as hatched on Plan G attached), on condition that a number of things occur. One of the requirements is that the landowner vest in excess of 50ha of land in the Council as reserve as "environmental compensation". This environmental compensation is compensation for the potential adverse landscape effects of allowing the reduced area of residential development. This environmental compensation is in addition to the normal reserve contribution that will have to be provided to the Council for the residential development. The court did not include the potential benefits from increased stormwater storage as part of the assessment of environmental compensation, because of uncertainties about that proposal.

The Court could not force the Council to accept the environmental compensation reserve and the associated financial obligations that would arise if the Council did not wish to take over ownership of the land. The Council has lodged an appeal in the High Court, in part to enable the Council to decide if it does wish to accept the land. However, it should be noted that **the issue for the Council at this stage is solely whether it wishes to accept ownership of the land**, having considered whether the land has the potential to be a beneficial resource for the community and that the costs of managing that resource are acceptable.

This is not an opportunity to consider whether the proposed residential development should occur.

There is some urgency in resolving this matter. As noted, the Council has lodged an appeal in the High Court to ensure that it has the opportunity to decide whether it wishes to accept the environmental compensation reserve. If the Council decides that it will accept the environmental compensation reserve, that aspect of the appeal can be withdrawn. The appeal also covered other matters, but these may also be able to be resolved by consent without the need for a hearing.

Discussion of benefits and costs of the reserve proposal

The purpose of this report is to outline the advantages and disadvantages of accepting the land as a reserve/ flood storage, and to make a recommendation on that basis. As is discussed below, Council staff have also discussed the potential reserve contribution for the development with the landowners, as the additional land that is proposed to be vested as reserve contribution has important implications for how successfully the environmental compensation land can be managed and its potential to act as a flood detention basin in accordance with the Waterways and Wetlands Natural Asset Management Strategy. The combined package of reserves from environmental compensation and reserve contribution is therefore discussed below.

The combined package is as follows:

- That the area identified on Plan G is to be vested in the Council as environmental compensation.
- The areas in white (two areas marked **I** and two areas marked **J**) are proposed to be vested in the Council as reserve contribution.

The areas marked **I** are the side slopes of the sub-spur, and would be important to enable the stock that will be grazed on the valley floor to be moved to higher ground when the valley floor floods and if it stays wet for longer periods. According to ground water monitoring in the area, flooding currently occurs approximately every two years. The areas marked **J** are the rest of the western most valley (Worsley's) that is not included in the environmental compensation reserve. These are important to enable additional flood storage to be provided in the area, as they may need to be flooded to a greater degree than currently occurs if increased flood storage is required. This would not be possible if it remained in private ownership, without some agreed compensation for the property owner.

An approximate estimate of the capital expenditure is listed below.

Fencing - 6200m	\$70,000
Planting – 7.5ha	\$270,000 (including 3 yrs maintenance)
Recreation Infrastructure, styles etc	\$10,000
Waterway reshaping	\$300,000 (mid range price)
Pathways –1500m	\$37,500

Maintenance would be by grazing which is likely to break even or make a profit.

Agreement Between Parties

Some indication as to the level of agreement between the two parties was required prior to this report going to Council. At a meeting on 3 September 2003 between council officers and consultants (Elliot Sinclair representing the land owners) the following position was taken by Council staff on the offer of environmental compensation, particularly in respect of the attached Plan G from Elliot Sinclair. At the time of writing we are still awaiting the landowners reply.

- A large area of the valley floor (50 ha) has been provided to the Council as environmental compensation by the Court decision. It is intended to be part of a "green edge" for the City, which also has potential for surface water detention. Currently during a significant storm event much of the valley floor will be flooded, with a large volume of water being detained that would otherwise enter the Heathcote River system. By further choking of the outlets and bunding where necessary, additional flood volume could be detained in this area, with only minor modification of the bulk of the existing valley floor (current grazing would be able to be maintained). The Council has yet to accept this environmental compensation, and that issue is currently subject to proceedings in the High Court. However, if the Council concludes that it will accept the environmental compensation, that aspect of the High Court proceedings may not be pursued.

- With regard to the area on the plan marked JJ for housing as proposed by the Judge, fill material could be excavated from within the detention basin area to raise the ground level to the required flood free level and to conform with an approved waterway and landscape plan. The resulting excavation would provide compensatory water storage capacity for that lost by the filling of area JJ. There is uncertainty that Area JJ can be zoned for residential development and that matter is subject to High Court proceedings. Likewise, areas AA, CC, E, EE, B and H will require some filling and the resulting excavation would provide compensatory water storage. Calculations done by Eliot Sinclair & Partners Ltd (not yet checked by Council staff) indicate that sufficient excavation could be undertaken above anticipated groundwater levels. Should excavation occur to a depth below groundwater levels, then an alternative management approach (ie possibly not grazing) and planting regime may be required for the ongoing maintenance of this area.
- To enable additional flood detention volume to be provided, without significant basin floor excavation, some additional area within the western most valley (ie. within the rural land that the decision leaves in the ownership of the College) will be subjected to increased flooding (ie increase in frequency and depth) on the valley floor.
- It is desirable that some silt trapping be undertaken (within, for example, small pond areas in the Cashmere Valley Stream above the McVicar house), and it may be best to use any material excavated for this purpose if required.
- An adjoining property may be more prone to surface flooding if the detention volume within the ponding area is increased significantly without large scale excavation. To compensate for this a land swap (lower land for higher land) has been postulated, although this has not yet been discussed with the potentially affected landowner who currently grows grapes on the low-lying ground.
- In terms of reserve contributions, Area I (the area marked white on the plan on the higher hillsides) would also be taken as reserve. This would allow the valley floor and the hill side ground to be grazed as one land unit plus give stock access to high ground. There is also the need for access tracks and walkways through the hillside to link the valley floor to the top of the spur.
- If area JJ was taken for housing and raised by an average of 1.0m (by filling), it is estimated that approximately 65,000m³ of storage volume would be lost from the basin as a result of this filling. Furthermore, the additional runoff volume generated from the change from rural to residential landuse would need to be accommodated. Should storage levels be raised (for example, due to choking of the outlets and bunding), then the amount of fill required for area JJ will also be increased.
- The most recent Eliot Sinclair plan based on the Environment Court decision, proposed that the residential development of Area CC extend somewhat more east than the existing farm buildings. It was agreed that this area needed to be pulled back to the farm buildings to retain as much of the visual link up the valley as possible and to accord more closely with the Court decision.
- A full topographic survey by Eliot Sinclair & Partners Ltd, together with an aerial survey on the hill areas have provided technical information for estimating storage capacity and final engineering details.
- Access tracks for walking and linkages to the reserves are required and should be indicated on the plan.
- The proposed planting strip on the upper subdivision land which surrounds the house lots would be best in more natural blocks of planting rather than a continuous line.
- Confirmation was required as to whether the 20m terminal reserve on the spur was to be part of the environmental compensation or reserve contribution. Confirmation was also required as to whether the landowner would undertake at their cost the landscape planting of that reserve and the planting around the housing on the upper spur.
- There are a number of minor matters that are not clear in the interim decision and need to be worked through between the landowners and the Council.

Heathcote River Floodplain Strategy

The Heathcote River Flood Management Strategy was adopted jointly by Environment Canterbury and Christchurch City Council in 1998, with the purpose being:

- “to achieve an acceptable level of flood damage on the floodplain of the Heathcote River by integrating the management of the use, development and protection of natural and physical resources.”

The strategy is non-statutory and provides guidance on policy and operational decisions from Environment Canterbury and Christchurch City Council.

One of the objectives of the strategy is to mitigate the effects of future development in the greater Heathcote River catchment. Of particular significance in this regard are the areas in the Cashmere Stream catchment, as well as the Upper and Middle Heathcote catchments. Soakage and temporary detention of runoff resulting from increased development can mitigate the adverse effects, although such systems require space and are therefore competing demands with other development. In the Middle Heathcote catchment area, space limitations severely restrict the options for soakage and detention purposes.



Ponding in Cashmere-Worsleys Basin October 2000

The Flood Management Strategy identifies enhancement of the storage capacity within the Cashmere-Worsleys ponding area as one of the measures used to address the effects of anticipated development. This basin area is immediately upstream of the flood-prone reaches of Cashmere Stream and the Heathcote River, and is therefore ideally situated for enhancement to reduce flood risk in these areas. Specifically, this has been examined in the strategy under the scenario of controlling (throttling) the outlets of the Cashmere-Worsleys basin. This will further reduce the combined capacity of the outlets, resulting in further attenuation of flood flows.

Currently the Cashmere-Worsleys ponding area has a capacity of up to 296,750 cubic metres in a 50-year rainfall event. By choking the outlets of the Worsleys and Cashmere Valley Streams, ponding to a greater depth will be enabled with consequent increases in storage volume and in area of land flooded. The estimated effects of choking the outlets are summarised in Table 1.

Table 1: Pond Volumes and Levels within the Cashmere-Worsleys Basin

Event Average Recurrence Interval	Flood Level	Storage Volume - existing valley unchanged	Storage Volume - proposed Environment Court decision with some residential development	Storage Volume - with small bunding and choke outlets
10 yr	17.88 m	170,000 m ³	212,000 m ³	
50 yr	18.23 m	296,000 m ³	332,000 m ³	
200 yr	18.60 m	449,000 m ³	467,000 m ³	
500 yr (extreme)	18.85 m	560,000 m ³	562,000 m ³	
	19.00 m			617,000 m ³
	19.10 m			654,600 m ³
	19.20 m			692,132 m ³
	19.30 m			731,826 m ³

Note: (18.89 m is level of the crown of Worsleys Valley Road)



Ponding in Cashmere-Worsleys Basin July 1994

As can be seen from the above table the Environment Court Judge's decision has achieved the same amount of storage as occurs currently in the valley floor in significant flood events. The major benefit of this decision to the Council is the increased opportunity for enhanced flood storage. To increase the volume of this storage the outlets to Cashmere Stream will need to be choked, with a small bund being formed along Worsleys Rd.

Current flood water storage for a 50-year storm event is 296,000m³, and this can be increased to 332,324m³ with some swale development as proposed (by excavation) with the housing development. This additional storage mitigates the additional 25,000m³ storm water run off from rural to residential development, although it could result in a greater area of land being flooded more frequently, the maintenance of which might need further consideration. Following an extreme rainfall event, up to 731,826m³ of runoff could be stored as long as proposed bunding and choking the outlet occurred. If the land is held in public ownership this is far easier to achieve.

The original Council Hearing Committee required the ponding basin to hold 507,000m³ of water in a 50-year return period storm event. This volume was to have been achieved by lowering the bottom of the valley floor. A combination of bunding and throttling of outlets (with consequent increase in area flooded – possibly more than that forming the environmental compensation area) without excavation is estimated to result in a storage volume within the ponding area of up to 490,000m³ in a 50-year event. However, the building platforms within proposed residential area JJ will need to be filled to satisfactory flood-free levels, and this will result in a decrease in storage volume available within the basin. This can be offset by ensuring that all fill material be excavated from the valley floor within the ponding basin area, provided that no excavation be carried out to below anticipated groundwater levels.

Provision of the proposed additional storage within the Cashmere-Worsleys ponding area will not on its own mitigate all of the anticipated adverse effects of further development and intensification of land use within the Cashmere Stream and Heathcote River catchments. However without achieving this current and additional storage volume in this area the feasibility of achieving the required mitigation is diminished since the availability of similar flood basins cannot be assured. The Council ownership of the 50 ha of land will allow flood levels to be engineered without approval or compensation to the owners.

Summary of issues related to owning the land

Council does not approve ownership	Landscape values of valley basin retained as defined by the Court. Land remains rural. No development on the spur.
	296,750m ³ minimum flood storage volume retained (resource consent required to reduce existing capacity) for 50-year event.
	No potential to achieve desirable 731,826 m ³ flood storage volume without agreement from land owners (compensation likely).
Council approves ownership	Flexibility of land management for hydrological purposes
	Possibility to increase flood storage capacity without requirement for agreement/compensation to achieve desirable 731,826 m ³ flood storage volume.
	Enhancement of landscape possible; ecological enhancement, planting etc
	Creation of an off road walkway system.
	Potential costs to Council of development of recreation facilities, planting and maintenance (majority of capital costs are likely to be covered by reserve contribution of the subdivision)
	Opportunity to achieve a large naturalistic recreation area on the flat, close to residential areas.
	Opportunity to provide a public recreation corridor between the urban area and the Upper Cashmere Valley (Port Hills)

Executive Summary

- The major benefit to the Council is the potential opportunity for enhanced flood storage. The other benefits are not considered sufficient to amount to environmental compensation within the meaning of the City Plan, and if accepted on that basis could set an undesirable precedent. Other environmental compensation cases have resulted in considerably greater packages of benefits to the Council. However if satisfactory flood storage can be achieved, then the proposal would qualify under the City Plan.
- Total available flood storage volume with the proposed peripheral housing development is the same as for the current state of the Cashmere Worsleys Ponding Basin. This can be achieved with some excavation along the line of the Cashmere and Worsleys streams through the valley floor. Excavated material will be used as fill to elevate a housing platform 19.5 metres, which allows freeboard above a possible future flood level of 19.3 metres when some low bunding and choking of the outlet has occurred.
- Additional flood storage up to 731,826m³ can be achieved which is a 30% increase above the current storage level by forming a bund and choking the outlet.

- The availability of similar flood basins cannot be assured and having the valley floor in Council ownership will enable flood storage development to occur without compensation and approval of the owners.
- Additional run-off from the development of the housing areas on currently rural land has been estimated at 25,000m³. This can be accommodated within the excavation proposed as part of this development.
- Council ownership of 50 ha of land in the lower Cashmere Valley could have significant recreation, environmental and landscape enhancement benefits. This was suggested in the Court decision which signalled the importance of open space, trees and green fields that the flats and lower slopes provided as part of the green edge of the City.

Staff

- Recommendation:**
1. That the Council support the landowner vesting approximately 50 ha. of land in the Council as “environmental compensation” for enhanced flood storage. This is inaccordance with the Environment Court decision but places the emphasis on the need to use the valley floor as a flood water storage pond rather than for green edge open space.
 2. That negotiations with the landowner be completed to the Council’s satisfaction as outlined. The area marked **I** and **J** on the plan proposed to be vested in the Council as reserve contribution.

Chairman’s

- Recommendation:** That delegated authority be granted to the Greenspace Manager (Anne Greenup) and the City Plan Team Leader (David Mountfort) to satisfactorily conclude negotiations with the landowner.