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Corporate Plan Output: Traffic Signs and Markings	

The purpose of this report is to report on the progress of investigations into potential improvements to Opawa Road/Port Hills Road.

BACKGROUND

The sections of Opawa Road and Port Hills Road between the ring road (Garlands Road) and the Tunnel Road interchange are designated as State Highway 74. Transit New Zealand ('Transit') therefore have (primary) responsibility for the management and operation of these sections.

In 1996, Transit commissioned (jointly with the Council) a comprehensive study from consultants into potential improvements to Opawa Road/Port Hills Road.

The study has been conducted in two stages.

Stage 1

Stage 1 of the study, reported in October 1997, looked at 17 options for improvement. Options examined included reconstruction of the existing carriageway, widening the existing carriageway (either to provide a flush median or a new 2 or 4-lane road parallel to the existing road), as well as a variety of options to realign the State Highway route to the north of the existing road corridor. The study looked not only at purely economic factors (such as whether the improvement would receive financial assistance from the national funding authority Transfund New Zealand), but also looked at environmental factors such as road noise, vibration, local and global air pollution, community severance and psychological stress.

Given a need to prioritise limited national roading funds, Transfund requires that the present value of 'ranking' benefits has to be not just greater than the costs, but (currently) 4.0 x greater than the costs before they will provide financial assistance. Transit New Zealand's only source of funding is financial assistance from Transfund, who thus contribute 100% to viable State Highway projects.

This is in contrast to works promoted by the City Council on other roads, which can be partially or completely funded by rates. If the improvement meets Transfund's current criteria (ranking benefits = 4.0 x costs) then financial assistance is provided to the Council by Transfund at the rate of 48% (in other words ratepayers directly contribute 52%). If however the improvement does not meet Transfund's criteria then no financial assistance is received and the improvement has to be fully-funded by ratepayers.

It was concluded from Stage 1 of the study that all of the realignment options had a '*tangible*' benefit-cost ratio (BCR) of less than 1.0 - in other words the costs would outweigh the tangible benefits. 'Tangible' benefits are those that can be relatively easily valued, such as savings in travel time costs, vehicle operating costs and accidents. The ranking benefits include the tangible benefits and additionally place a value on less-tangible ('*intangible*') benefits (such as relief from traffic noise etc).

Given the very low tangible BCRs of all options, Stage 1 of the study identified that the additional intangible benefits required would have to be so high that even a very detailed study of the actual value of intangible benefits of each of the options would not result in obtaining ranking BCRs sufficiently high to meet current criteria for funding from Transfund.

It was also concluded that, given their reliance on Transfund for funding, the only realistic potential improvement option for Transit New Zealand at this time would be rehabilitation/reconstruction of the existing pavement (although it should be noted that this would offer significant reductions in terms of traffic noise and vibration).

Transit New Zealand have however indicated a willingness to consider improvements above and beyond those economically justified, as part of the total project. If such an improvement was acceptable to Transit, then they could apply to Transfund for funding of the improvements that can be justified (at best, rehabilitation/reconstruction), with the balance of the funding required being 100% funded through ratepayers by Christchurch City Council.

Stage 2

Since this update, the consultant has been busy producing the 'Stage 2' reports. Progress has been rather slow, and this has generated some adverse comment. Reasons for the delays include a change in consultants, the time taken for assessment of the alternative schemes for the Opawa Road/Garlands Road intersection, as well as acceptable finalisation of reports.

The results of the study, including Stage 2, are reported in the consultant's Executive Summary (copies of this, or the seven individual reports on specific issues, are available on request). The salient points are:

- The analysis has shown that a *stand-alone* traffic signal improvement at the **Opawa Rd/Garlands Rd intersection** can be justified for funding now, despite a cost of \$1.5m plus. Note that, being a State Highway, Transit would be responsible for this. Transit's preferred signals option, developed with the assistance of City Design, (see attached plan) offers greater protection for cyclists and crossing opportunities for pedestrians. Transit have funds allocated for detailed design (which will include appropriate consultation) to commence in this financial year, with construction likely to commence over the winter period next year (2000). The improvement would include full reconstruction of the Opawa Road carriageway to about No. 226, thereby substantially improving any adverse noise/vibration effects from the existing pavement.
- Transit NZ could receive funding for **rehabilitation of the existing pavement** over most of Opawa Road/Port Hills Road state highway section. This work would cost approximately \$465,000 (BCR=4.8) and would provide a much-improved road structure and surface and include correction of deficiencies such as proud manholes. These potential improvements would substantially reduce noise experienced by adjacent residents. Indeed the reduction achieved by this rehabilitation is likely to be more than would be achieved by a (much more expensive) new road discussed below. The rehabilitation work could be carried out as part of Transit's normal maintenance programme next year.
- Analysis indicates that improvement (in the form of signalisation) at the **Opawa Rd/Port Hills Rd/Curries Rd intersection** is not likely to be required for approximately 10 years (or rather it would take this long before the benefits exceeded 4 times the costs). This situation however needs to be monitored and reviewed to see whether the traffic islands and signs installed a couple of years ago do continue to effect their apparent safety improvement. The potential lowering of Transfund's BCR threshold below 4.0 could also bring forward the time when signalisation could be justified, as would funding for the improvement which might be provided by the Council.
- More limited improvements could however be justified now on the remainder of the Port Hills Road route eg at the "**rock bluff**" opposite the Old Orchard (minor widening); at the **Avoca Valley Curve** (widening and shape correction to provide superelevation) and *minor* changes at the **Tunnel Road interchange**.

The Avoca Valley Curve widening would provide for flush-median turning bays at the Avoca Valley Road and Vega Place intersections. Transit have indicated their intention to progress this project, which would cost around \$180,000 (BCR=4.8), as part of their 2000/01 Annual Plan process.

- Given existing and projected traffic volumes and the reported accident records, Transit NZ cannot justify widening of the existing Opawa Road/Port Hills Road, even to their designated width (which would just provide a flush median). Despite this, Transit have acknowledged the fact that at it's narrowest point, Port Hills Road is only 9m wide and carries some 9,000 vehicles per day, 12% of which are heavy vehicles servicing the Port, and that is a significant (potential) safety concern to them.

OPTIONS FOR THE CITY COUNCIL TO CONSIDER

As indicated above, the study has confirmed that Transit cannot justify widening of the existing road. Nor can it justify the more expensive option of constructing a new 2 lane road to the north of the existing road (whilst using the existing Opawa Road & parts of Port Hills Rd as a service lane). Plans are tabled.

If the Council is minded to pursue this option, the Council would have to provide the vast majority of funding and this would not be eligible for funding by Transfund.

The cost of the potential options is shown below in Table 1.

Table 1: Option Costs

Section	Option 1 New 2-lane road with service road	Option 2 New 2-lane road with service road but with sufficient land for future 4-laning	Option 3 Flush median widening of existing road
Gross Costs ¹ .	\$6.34m	\$7.97m	\$2.95m
Costs Net of CCC-owned Property ² .	\$4.91m	\$6.59m	\$2.71m
Min. 'Up-front' Costs to CCC	\$4.41m	\$6.10m	\$2.7m

1. This includes the value of land already owned by the City Council and Transit and is the cost which Transfund takes into account in Benefit-Cost calculations
2. This is the actual cost which the City Council would be faced with before any contribution from Transit and ignores the 'sunk-cost' value of land already owned by the Council.
3. This is the approximate 'up-front' cost to the City Council (net of property already owned), *if* Transit contribute the funds which they could justify for rehabilitation of the existing pavement

Transit have indicated their willingness to consider contributing the funds which they would otherwise put into rehabilitating the existing road. This would result in a fairly modest effective subsidy for the project. It can be seen however that the costs remain substantial.

Option 3 indicates a minimum investment of \$2.7m, which would provide for a 2.5m widening (and reconstruction) of the existing pavement. The reconstruction would benefit existing houses on the south side of the road by a significant reduction in noise and vibration. However, for houses on the north side of the road, these benefits would be reduced because the carriageway would be closer to their homes.

Option 1 indicates that the City Council would have to subsidise the project to the tune of approximately \$4.4m in order to provide for a new 2-lane road (including flush median) to the north of the existing road. The existing road would be used to provide a buffer zone and service road for properties on the south side of the road, over those sections where there is housing. Elsewhere (eg on parts of Port Hills Road), the project would be restricted to widening the existing road to provide a 2.5m flush median. If this option were pursued however it is likely that development would encroach up to the new north side of the roading corridor and make future expansion of the road to 4-lanes most unlikely to be viable.

Option 2 shows the cost of a comprehensive long-term solution. This provides for a new 2-lane road, with service lane as in Option 1, but also sufficient funding to acquire the land which would be required in the future if the new road was to be widening to provide 4-lanes (and a solid median but note no parking on the main carriageway). The Council would be faced investment amounting to over \$6m to build a 2-lane road now and ensure that the road corridor is wide enough to eventually take a 4-lane road (and the service lane). This would arguably be the best long-term planning option. It should be noted however that projected traffic volumes are insufficient to justify a requirement for 4-laning within the next 25 years or so.

Table 2 compares the value of benefits (discounted over a 25 year period) with the present value of costs for the two cheaper options (1 and 3). These are given for each of the Opawa Road section and for the Port Hills Road section (the latter being in brackets). It may be seen that in order to generate a BCR of 4.0, Option 1, which provides for a new 2-lane road and service road, would have to have annual 'intangible' benefits equating to between \$21,200 and \$34,500 per house which would remain fronting Opawa Road and Port Hills Road respectively.

Table 2: Economic Analysis: Opawa Road Section (Port Hills Road Section)

Section	Option 1 2-lane service road	Option 3 Flush median
Benefit-Cost Ratio	0.3 (0.0)	0.7 (0.1)
Intangible BCR required to meet BCR=4.0	3.7 (4.0)	3.3 (3.9)
Option Cost ¹	\$3.35m (\$2.26m)	\$0.96m (\$1.51m)
NPV Benefits Required to meet BCR=4.0	\$12.40m (\$9.04m)	\$3.17m (\$5.89m)
Annual Benefit Required to meet BCR=4.0	\$1.38m (\$1.00m)	\$0.35m (\$0.65m)
Equivalent Annual Benefit per House	\$21,200 - 69hh (\$34,500) - 29hh	\$5,400 - 69hh (\$22,400) - 29hh

1. This is the value of gross costs for each section at 'Time Zero'. This is less than the gross costs given in Table 1 because of discounting.

BUDGET PROVISION

There is currently no budget provision made for a contribution towards improvements on Opawa Road/Port Hills Road to be made by the City Council. The City Streets Unit's Transport Improvements Team have determined that, given current budget levels there could be sufficient funding, and priority to allow for funding of Option 2 (a new 2-lane road and service road, plus obtaining land for future 4-laning) in 2004/05 and 2005/06.

However, it should be noted that, whilst there is a long-standing designation for widening in the Transitional District Plan(s) which cover this area, the City Plan does not include any Council designation. Transit applied to reduce their widening designation to 2.5m. Decisions have yet to be released on the designation, but given the results of this study it is considered certain that Transit could not justify anything more than this 2.5m designation. Accordingly, if the Council wish to safeguard a wider corridor for road improvements then it would have to seek a new designation over and above that which would be required and justifiable by Transit. Realistically, if it were to impose this designation, then it would have to make allowance for property purchase within the designation.

If the Council was not to impose a designation over and above that of Transit fairly shortly, then, given decisions released by Council with respect to zoning north of Opawa Road, it is considered likely that development would take place on non-City Council and redundant Transit-owned land, up to the road reserve boundary. This would then make the future likelihood of providing a wider road reserve even more remote, as costs would escalate even higher than those quoted in Table 1.

Therefore, practically speaking, the time for decision is now, not in 2004/05. Another factor which reinforces this is the need for improvement at the Opawa Road/Garlands Road intersection. As noted above, this can be justified now and Transit could pursue construction within a year. However, it would be unwise for Transit to spend money on an intersection improvement which did not suit any proposed realignment of Opawa Road. Transit are therefore also keen to know whether and when Council is minded to (financially) support construction of a new road located alongside the existing State Highway.

Council would therefore have to seek a designation to allow for a comprehensive long-term solution and effectively would have to be prepared to commit funds, at least towards land purchase, almost immediately.

Under current Transfund 'rules', the cold fact is that reconstruction of Opawa Rd is the best option rather than building a new parallel road. The latter would involve substantial expenditure to benefit relatively few houses. The investment by the Council would equate to the equivalent benefit of over \$20,000 per house *per year* to match other competing projects where benefits exceed 4 x costs.

That said, taking the long-term view, it would seem to be common sense to ensure that roading authorities *do* plan to provide a decent road (with service lane) in this corridor at some point in the future. The road is a strategic link to the Port and traffic volumes eventually are likely to justify four-laning, even if this isn't for 30 years. Unfortunately, Transit is very constrained with respect to funding, and there is virtually no likelihood, under the current funding regime, that it could justify anything more than widening for a flush median over the next 25 years (unless the BCR cut-off were to fall close to 1.0 which is most unlikely). Similarly, the Council is constrained in its funding and there is no current budget provision of the magnitude needed. Given the projected Council budget for road improvements, a number of already committed projects would have to be deferred if Options 1 or 2 were pursued, even to the point of land purchase, prior to 2004/05.

NEXT STEPS

At this stage, it is intended that the consultant's reports will be presented to the Project Steering Committee (which consists of the Regional State Highway Manager, the Land Transport subcommittee of the Council's City Services Standing Committee and representatives from the Opawa/Hillsborough Residents Association).

A meeting is envisaged with this group in late November (date still to be set) to receive feedback. Recommendations to City Services and the Council will then follow taking account of this consultation.

The Committee has referred the issue of consultation to the Committee's Land Transport Subcommittee (Councillors O'Rourke, Close, Howell, Thompson and Wright). The consultant's report will be submitted to the Steering Group.

- Recommendation:**
1. That the Council indicate its willingness to pursue option 1 (a new two lane road with service lane and buffer strip).
 2. That urgent discussions be held with Transit New Zealand to investigate:
 - (a) Transit New Zealand funding its costs indicated in all of the points set out under "stage 2" in this report.
 - (b) The project being a special case for joint funding in terms of Transfund's recent letter to the Council inviting such proposals.
 3. That other options for funding such as a regional road user charge be pursued with the new government.
 4. That urgency be given to taking appropriate action to implement option 1.