22. 4. 2004

REPORT OF THE MAYOR

PART A - MATTERS REQUIRING A COUNCIL DECISION

1. CLEAN AIR PROPOSAL

The purpose of this report, authored by Dr Leonid Itskovich, is to present to the Council a draft proposal for a new city-wide clean air initiative. The initiative is based on the Mayor's plan of action publicised recently in the media.

BACKGROUND: THE AIR QUALITY PROBLEM

Christchurch has a long history of poor air quality, largely related to increased ambient particulate levels during the winter months, measured variously over the years as "smoke", "total suspended particulates (tsp)", and more recently as "PM_{10}". The ambient air in Christchurch, specifically during the winter months has failed over a period of more than 60 years to comply with various air pollution guideline levels set to protect health and amenity. There have been changes in both the measurement methodology of ambient particulate levels and the guidelines or standards that have been applied. Despite some reductions in emissions over the period, there is still an apparent problem. In recent years, a guideline level of 50 $\mu g/m^3$ of PM_{10} has been accepted by Environment Canterbury as a comparative measure for compliance. This level was accepted by the Ministry for the Environment as the "action" level for undertaking controls over sources of pollution in an air shed. In the last decade this level has been exceeded, on average, 30 days per year.

Domestic home heating has consistently been shown to be the predominant wintertime source of suspended particulates. While emissions from such sources have decreased over the years due to increased use of electricity and LPG for home heating and the development of more efficient and less polluting solid fuel burners, the reduction of ambient levels has been slow. Environment Canterbury has published an Air Chapter of the Natural Resources Regional Plan, which is based on a goal of reducing the number of incidents per year on which the 50 $\mu g/m^3$ standard can be exceeded to one per year (on a three year rolling average) by 2012. This proposes a range of controls over domestic heating sources and is combined with programmes of partial or full subsidies to homeowners to change their heating and install measures to improve thermal efficiency of residential premises.

In recent years it has also become apparent that there is mounting evidence that many houses are inadequately insulated and heated to maintain recommended temperatures for healthy living (inadequate insulation means people heat streets rather than houses). This fact creates a situation, which has economic, health, and energy supply implications under the Health Act 1956 and possibly the Local Government Act 2002.

1. Ministry for the Environment: Proposed National Environmental Standards

The Ministry for the Environment in November 2003 released for comment and submissions the first package of national environmental standards under the Resource Management Act 1991. The purpose of these proposed standards is stated *to "create a level playing field across New Zealand; to provide certainty and consistency; guarantee a level of protection for the health of all New Zealanders; and drive effective regional and national policies to improve air quality"*.[1] The standard proposed for PM_{10} is a level of 50 $\mu g/m^3$ with a maximum of 5 days per year on which the standard can be exceeded. It also included a maximum limit of 120 $\mu g/m^3$, which was not to be exceeded. The expectation of the Ministry for the Environment is that the policies, plans, and strategies by local authorities to achieve the standards within four years of their coming into force must be in place. If the standards are implemented by the Government by way of regulation in 2004 they would be enforceable by 2008.

Considerable concern was expressed at the means of implementing such a standard. Christchurch would fail to comply with the MfE proposed standard as this is related to restricting the issue of resource consents for industrial or commercial premises. It was considered this did not take into account the matters local authorities must consider under the Local Government Act 2002 related to social, economic and environmental outcomes.

[1] Hon Marian L. Hobbs, Minister for the Environment, Foreword to *Proposed National Environmental Standards for Air Quality*, Ministry for the Environment, November 2003

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The legal basis for introducing national environmental standards is contained in sections 43 and 44 of the Resource Management Act 1991. The regulations would prevail over rules or resource consents if the latter permit prohibited or not authorised activities under the national standards. It was considered this could lead to a complete stop on economic development within the Christchurch area.

2. Christchurch clean air incentive programmes

Following submissions from citizens on the Annual Plan that the Council take some action to address the air pollution problem in Christchurch, the City Council decided in 1997 to allocate a sum of $2.42M over five years to encourage householders to replace the most polluting domestic heating appliances with cleaner heating alternatives. In considering the matter of making funds available, the City Council was somewhat constrained in a legal sense due to the fact the Regional Council at that time had not introduced any regional air quality plan setting out what heating appliances would be compliant in the future.

A detailed programme implementation plan based on the objectives was developed to encourage householders to replace their open fireplaces and coal burning appliances with cleaner heating appliances. The programme also developed incentives encouraging householders to install measures that would make their homes more energy efficient so they would need to burn less fuel to heat their homes. The programme was seen to be a community initiative, led by the Christchurch City Council, but largely operated in the community by the community. It was important that retailers and installers of heating equipment and energy saving measures were fully engaged in the programme implementation. Not only were there administrative advantages in this arrangement but it also enabled wider publicity to be given from more sources with minimal cost to the programme, and it promoted competition and choice for the customer.

The Christchurch Clean Air and Energy Efficiency Programme (known as the ***Helping Hand for Heating***) started in May 1998 and was planned for implementation over 4 to 5 years. In reality, the programme exceeded the anticipated uptake rates, so that its goal of converting 6,300 of the most polluting domestic heaters was achieved by early 2001.

With the view that the ***Helping Hand for Heating*** programme (above) may not have been sufficient to meet low-income homeowners' ability to fund the conversion to cleaner heating, the Council developed another clean air programme (known as *Warmer Homes*) and implemented it from February 2001. While the main objective of the ***Helping Hand for Heating*** programme was to reduce air pollution in Christchurch, the ***Warmer Homes*** programme for low-income homeowners had a different objective, being of a more social nature. It provided extended special monetary assistance to meet the capital costs of conversion from polluting and inefficient forms of home heating to cleaner efficient ones, and also help to achieve healthier living conditions. The ***Warmer Homes*** programme continued until June 2002 to ensure a smooth transition to the Environment Canterbury's ***Clean Heat Project***.

From the beginning of the ***Helping Hand for Heating*** and ***Warmer Homes*** programmes implementation in May 1998, a total of 6,800 open fires and coal burners were permanently closed or removed. The effect of these changes gave a calculated net reduction in emission levels from domestic heating of 26.1% compared with the 1998 benchmark.

Environment Canterbury's ***Clean Heat Project*** commenced in February 2003. It consists of three assistance programmes for general public, low-income households and tenanted dwellings. The programme is funded from rates at about an average of $3M per year out to 2014 and targets approximately 26,000 clean air conversions.

3. Clean air improvement progress to date and in the future

Previous incentive programmes such as the City Council's ***Helping Hand for Heating*** managed to achieve an average uptake rate of 2,000 clean air conversions per annum. The current Environment Canterbury's ***Clean Heat Project*** demonstrated so far (despite higher levels of incentives offered) an uptake rate in the order of 1,100 per year.

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In order to achieve the air quality standards required, within a relatively short timeframe (say, by 2010), it is necessary to attain a conversion rate of at least 6,000 per annum.

4. Feasibility of rapid transition

A question may arise whether a rapid (say, within five years) massive transition to cleaner home heating, at the scale of Christchurch City, is possible. The discussion below attempts to demonstrate that, in principle, such rapid improvement is possible provided that:

- sufficient funds are made available
- a different approach to financial incentives (which will attract participants) is developed and applied (to supplement ECan's existing grant schemes)
- rental dwellings and low income households are effectively targeted
- there is certainty about the rapid conversion programme
- there is certainty about the proposed Air Chapter of the Natural Resources Regional Plan.

5. Rental dwellings

Rental houses and flats represent approximately 32% of all housing stock in Christchurch. Of these, there are nearly 15,000 rental dwellings that rely on solid fuel appliances for heating. It is reasonable to assume that a vast majority of these dwellings belong to private landlords, as the two largest institutional landlords (Housing NZ and the City Council) have already eliminated open fires and older wood burners from their 7,300 rental properties.

Private landlords did participate in the previous clean air incentive programmes but their participation rate in the ***Helping Hand for Heating*** was only 6% (400 conversions), which was quite disproportionate to the rental dwellings' 32% representation of the housing stock. The current Environment Canterbury's ***Clean Heat Project*** has converted, over its first year of operation, about 300 rental properties. At such disproportionate uptake rates, it would take 50 years to phase out high-polluting solid fuel heaters from the city's rental dwellings.

As city-wide clean air programmes deal mostly with owner-occupied houses, the proportion of rental dwellings (which would fail to meet the standards) in the total target market increases even further.

A conclusion can be drawn from the 5-year local experience that the type of clean air and insulation grants offered are not attractive to the majority of private landlords. An argument may be raised that a higher level of subsidy (say, 70% of conversion costs rather than 40% at present) would be more attractive. Though it may to some extent increase the uptake rate, such a scenario would be unlikely to succeed as it would reduce the total number of participants (within the limits of total grant budget), it may be still unattractive to many landlords and it would be considered unfair (why should landlords receive a subsidy greater than that for other city citizens?).

Taking into account the significant number of rental dwellings to deal with, and lessons learnt from the operation of the Council's and Environment Canterbury's programmes as it relates to low landlord participation rates, it is reasonable to suggest that:

(a) further clean air programmes would be unlikely to succeed without giving special attention to the rental sector;

(b) financial incentives in the form of partial grants do not work well in relation to the rental sector;

(c) a new form of financial incentive needs to be developed and implemented in order to achieve substantially faster uptake rates.

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6. Low-income households

The City Council's ***Warmer Homes*** programme, over a period from February 2001 to June 2002, assisted 525 low-income households to install thermal insulation and convert from open fires to cleaner forms of heating. The average amount of grant under the programme was approximately $1,000.

Environment Canterbury's ***Clean Heat Project*** has a provision for low-income homeowners, and approximately 700 converted their high-pollution solid fuel heaters over the first year of the project. The average amount of grant was $2,733.

While these programmes substantially address those low-income households owning their homes, the majority of low-income households live in rental accommodation.

Low-income tenants are more likely to occupy older rental properties - those that have older solid fuel heaters. It is reasonable to suggest that the majority of the 15,000 rental dwellings relying on solid fuel heating are occupied by low-income householders. To address heating needs of these households and associated PM_{10} emissions, it is necessary to deal with their landlords. If the proposed programme addresses rental dwellings effectively, then it is likely to provide benefits to low-income households.

7. Other households relying on solid fuel heating

Statistical data shows that there are about 40,000 homes owned by residents who use solid fuel heaters. Of these heaters, about 20,000 ("high-polluting" pre-1992 wood burners and open fires) contribute disproportionately higher level of pollution.

While Environment Canterbury's *Clean Heat Project* provides clean air and insulation grants to these homeowners under the "partial assistance" programme, the uptake rate over the first year was extremely slow at only 150 conversions.

In order to ensure substantially accelerated conversion rates, a new approach seems to be required for this sector, to supplement ECan's existing grant schemes. The new programme based on interest free loans (rather than grants) would be more attractive for a number of homeowners who are not prepared to pay a relatively large amount (even after receiving a partial subsidy by way of a grant) for a clean air conversion but who would consider an interest free loan repayable on the sale of their property.

8. Fuel poverty issues

It should be noted that while many UK and European cities have solved their clean air problems in the past, they still struggle to solve the social problem of fuel poverty.

The common definition of fuel poor is where a household needs to spend in excess of 10% of the household income on fuel to maintain a satisfactory heating regime. In practice, fuel poverty results in cold houses as people choose to spend their limited budget on things that they perceive to be more important than heating.

Fuel poverty issues often arise when people lose access to relatively cheap sources of energy and have to purchase alternative energy sources at a higher price. At current retail prices for various energy sources in Christchurch, there are clearly two groups of energy sources: (a) lower range 7-10 cents per kWh and (b) higher range 14-21 cents per kWh. The "lower range" group includes firewood, wood pellets, diesel oil, night electricity and heat pumps. The "higher range" includes on-demand electricity and LPG.

If a household that used to buy firewood changes to electricity or gas, there is a risk of this household becoming fuel poor (even with an insulation component included in the conversion) as the price of heating energy may double or triple.

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Therefore, it is important that any further clean air programme:

(a) includes incentives for thermal insulation

(b) retains freedom of choice of heating energy source for participants

(c) supports low-emission solid fuel burners (both wood burners and pellet fires)

(d) aims at a whole house heating solution (rather than a living room only heating).

9. Industry capacity

If funds for a rapid transition to cleaner home heating become available, will the industry be capable of delivering materials and services at an accelerated rate?

The Council's previous experience shows that suppliers and installers can do it. In February 2001, when the programme administrator announced the end of the *Helping Hand for Heating* programme, registered retailers and installers responded with unprecedented sales promotion activities. This resulted in over 900 installations completed or booked within one month, which was equal to what would normally happen over a 6-month period. Conversion rates peaked at around 400 per month during that period.

This example suggests that the industry would be capable of delivering the goods and services required under the proposed rapid transition programme, provided that:

- commitment to seeing the programme through over the term of the programme is assured (businesses are more likely to invest in a 5-year programme than in a short-term project)
- the programme is based on the industry's broad involvement and open market competition
- the industry has sufficient time to train more skilled tradesmen and prepare stocks of materials
- standards for clean air approved heaters and levels of thermal insulation are clearly defined and remain unchanged over the term of the programme.

Involvement of local tertiary institutions, community and trade organisations (such as Christchurch Polytechnic Institute of Technology, Community Energy Action, New Zealand Home Heating Association, Community Law Centre and other) would assist in the training of skilled installers, conducting energy and installation audits, doing legal work associated with the proposed loan programme.

PROPOSED SOLUTION

The purpose of the proposed programme is to assist in achieving the clean air targets within a short timeframe. It is envisaged that the programme would be completed within five years.

It is proposed that the new programme will provide homeowners with loans to cover the costs of clean heating conversion and that the loan is a lien on the property title and to be repaid at the sale (or any change of ownership) of the property.

It is envisaged that funds to cover the full costs of the conversions would come from a lending institution, and that Central Government would undertake payment of interest on the borrowings.

The Council and Environment Canterbury would contribute to the programme funding by covering the "public good" components of the total cost of the project, which are programme management, marketing/education and legal costs associated with processing of the loans.

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The essence of the proposal is that:

(a) it would improve the city's air quality within a short period of time;

(b) neither Central Government nor local authorities would have to pay the full cost of cleaning the air in the city (as the homeowners will eventually repay the loans). Instead, Government commitment would be limited to the cost of interest, which would be spread over a substantially longer period of time and would amount (depending on interest rates) to less than a half of the project capital cost.

1. Estimated costs

Based on experience from past and current city-wide programmes and current market prices, the total cost of an average clean heating conversion is estimated at $3,650. This includes the installed costs of a new low-emission heater (electric, LPG, diesel, pellet fire, wood burner), building consent (if needed) and thermal insulation to ceiling and under floor of the house. The loan amount would be capped at a certain maximum level. Should the homeowner decide to install a more expensive model of heater or a superior insulating material, then any additional costs of such installations would be funded by the homeowner.

The total capital cost of conversions is estimated at $115M. This would be spread over the 5-year period of the programme implementation. The accumulated borrowings would peak at the end of Year 5 at $91.4M. Interest cost totalling $46.2M would be spread over a 14-year period.

The additional costs (programme management, marketing/education, legal) are estimated at $313 per average participating household and would amount to $9.5M spread mostly over the initial 5-year period of the programme implementation, with relatively low administration costs spread over the loan repayment period from Year 6 to Year 20.

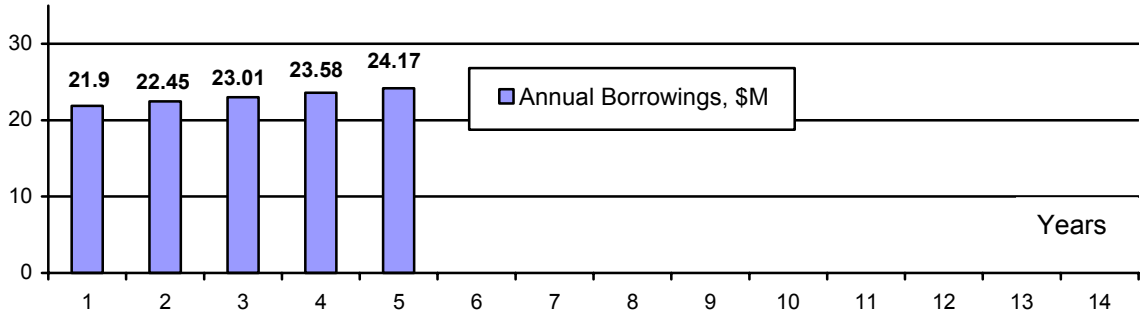
The proposed programme cost model is illustrated by the graphs below.

The model is based on the following assumptions:

- an average uptake rate of 6,000 per annum
- annual inflation rate of 2.5%
- average interest rate on borrowing at 7.5%
- 9-year statistical period between house consecutive sales
- rate of residual debt of 5%.

It should be noted that the timing of actual uptake of the proposed programme is likely to be more sporadic (with possible peaks at the beginning and the end) but for the purpose of this initial consideration it was assumed to be evenly spread over the 5-year implementation period.

Graph 1: borrowings to cover the costs of clean air conversions



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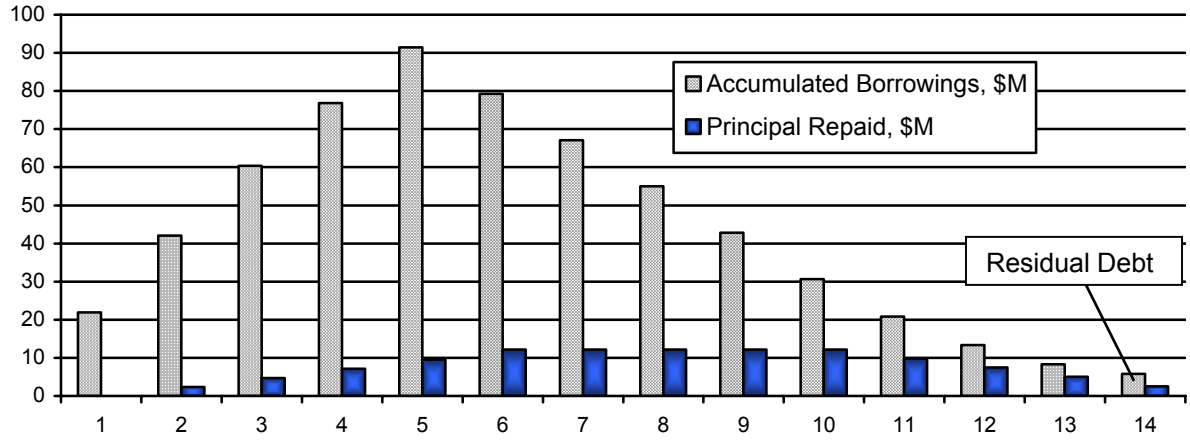
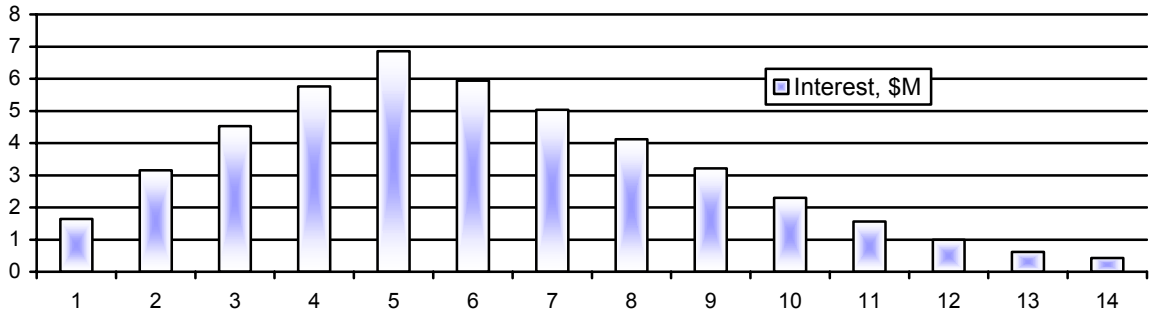
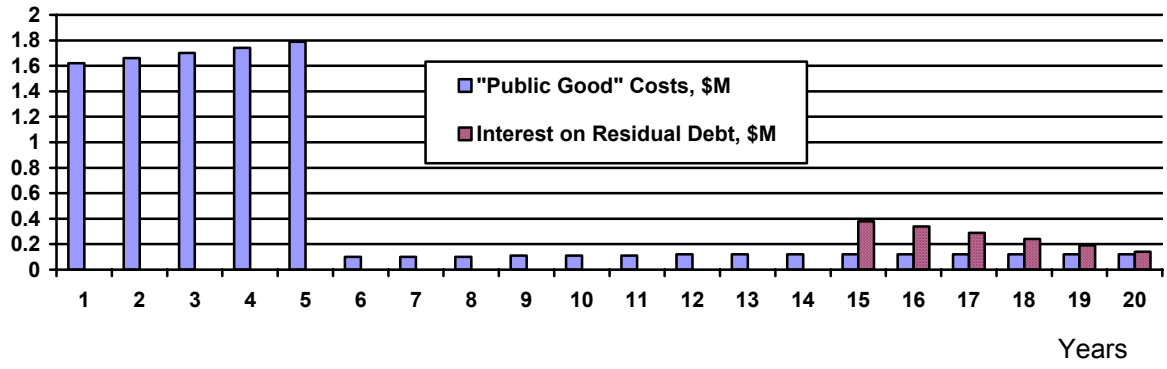
Graph 2: accumulated borrowings reduced by amount of principal repaid



Graph 3: interest on borrowings



Graph 4: "public good" components of project cost (management, marketing, education, legal) and costs of taking over residual debt



2. Benefits

Substantial and quantifiable environmental, health, social and economic benefits can be produced as a result of phasing out high-pollution domestic heaters and installing insulation in 30,000 Christchurch homes. The environmental benefits would derive mostly from a significant reduction in PM_{10} emissions from domestic heating. Public health benefits include reductions in seasonal mortality and morbidity statistics that would derive from both warmer indoor air temperature and improved (cleaner) outdoor air quality.

A cost/benefit analysis undertaken at the Commerce Division of Lincoln University estimated the total benefits-to-cost ratio at over 4 to 1. Other benefits from the proposed programme include the creation of 1,700 (estimated number) new jobs.

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TREATMENT OF RESIDUAL DEBT

The amount of residual debt at the end of Year 14 is estimated at $5.8M (see Graph 2). The residual debt would exist due to a number of reasons, with the main reason being that the homeowner simply doesn't sell the property within the first 14 years of the programme.

It is envisaged that the Council would then take over the residual debt. The cost of interest to the Council with regards to the residual debt is estimated at $380,000 in Year 15, which then reduces to $140,000 in Year 20 (see Graph 4), and would diminish further in the following years until the houses that participated in the programme get actually sold and the loans are repaid.

LEGAL OPINION

In the course of considering this proposal, the following issues have been raised:

(a) Does the Council have the power to make such loans under the Local Government Act 2002.

(b) The procedural issues that may arise, in particular the Council's obligations so far as its Long-Term Council Community Plan is concerned.

(c) The documentation necessary to record the advance made by the Council.

The Council's Solicitor, Mr Ian Thomson, summarises the legal opinion on these issues as follows:

(a) The Council has the power under Sections 10-14 of the Local Government Act 2002 to make interest-free advances available to householders replacing non-complying heat sources with appliances that meet the Environment Canterbury's emission standards, and installing energy efficiency measures.

(b) If the Council is funding the advances, or is borrowing the money to do so, then the Council should follow the special consultative procedure set out in Section 83 of the Act either as well as or in conjunction with the procedures required to be followed so far as the Council's Long-Term Council Community Plan is concerned. This may not be necessary should the scheme be financed by a third party, such as Central Government.

(c) If the Council proceeds with the scheme, the appropriate documentation for recording advances to householders is an Agreement to Mortgage supported by a Caveat registered over a Certificate of Title.

COMPLIANCE WITH COUNCIL'S INVESTMENT POLICY

The Funds & Financial Policy Manager, Mr Geoff Barnes, comments that the investment policy contemplates loans by Council to homeowners, typically in the past for drainage loans. Loans can be made under this scheme provided there is a Council resolution granting authority, either individually or by class. The resolution will specify the lending rules and delegated authority to act.

As far as the Council's exposure to financial risks and possible impact on rates are concerned, Mr Barnes comments as follows:

I have assumed that it is the City Council who borrows and on lends to the homeowners.

The scheme as presented presents several uncertainties for the Council. That translates into risks for the ratepayers at large. The impact will depend on future take up of the loans, the lending rules imposed by Council, and repayment certainty by homeowners. The risks to the Council include:

- Any shortfall in the Government undertaking to pay the Council's net debt servicing costs for the duration of the outstanding loans. The housing loans may not be repaid at the same rate as the Government interest grant.
- The Council's borrowing ratios limits will be impacted, net debt will increase by $100M over give years. However net interest costs will unlikely to change.

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- Administration costs incurred by the Council continue until all loans are repaid. In addition to loan advances, each year there will be repayments, agreements to accept priority and deeds management. This will be a charge on rates as incurred.
- There will be some defaulting loans where, for instance mortgagee sales generate insufficient proceeds to meet prior charges. The Council will not recover all the loans. Defaulting loans will add directly to the cost to ratepayers if not recoverable from the Crown.

The outcomes of the scheme are covered elsewhere in the report. There are real risks for ratepayers at large. Essentially, there is a balance between cost minimisation, successful take up of the scheme and future unfunded cost exposure.

Recommendation:

1. That the new clean air initiative as outlined in the report be adopted as the basis for the Council's formal proposal to Central Government.

2. That officers seek input from Environment Canterbury to this proposal in order to achieve alignment with current clean air incentive programme and proposed legislative measures.

3. That the Council prepare an assessment of options under section 77 of the Local Government Act 2002 and, if this option is adopted, initiate a special consultative procedure under section 83 of the Act.

CONSIDERED THIS 22ND DAY OF APRIL 2004

MAYOR