

4 March 2003

SUSTAINABLE WATER MANAGEMENT STRATEGY & ACTION PLAN

Division Sustainable Development & Strategy

Presenter Geoff Lawler, Director Sustainable Development & Strategy

Purpose

To report back to Committee on the results of community consultation on the *Draft Sustainable Water Management Strategy* and to seek approval of water reduction targets (by 2020) for inclusion in the final version of the *Sustainable Water Management Strategy*. A costed action plan for the next four years is also tabled.

Time Frame

The Draft Strategy was released for consultation on 12 November 2002 and was open for feedback until 18 December 2002. Consultation sessions have been conducted with the public, external stakeholders and internal stakeholders. The Strategy has been reworked in response to feedback with a full revision of water consumption data and targets undertaken. An Action Plan with associated budget has been developed in consultation with internal stakeholders. The data, targets and action plan are presented for Council's consideration.

The final *Sustainable Water Management Strategy* will be presented to the April meeting of Council. It will incorporate the water consumption details in this report, and will provide analysis and targets relating to stormwater quality.

Finance

The proposed Action Plan identifies 7 Key Actions which are estimated to cost a total of \$1.6 million over the next 4 financial years (see table below).

2003/04	2004/05	2005/06	2006/07	Total
\$	\$	\$	\$	\$
423,450	426,900	424,775	326,000	1,601,125

The implementation of the Strategy will result in a 30% reduction in water consumption across the municipality by 2020 (based on 1999 population). With population increase, Council's water bill will rise, however the water savings will bring about some cost savings to Council, as well as bringing benefits to the community and to resource conservation.

The Strategy advocates a reduction in water consumption by Council facilities of 21% by 2020, constituting a saving of \$247,647.00 in 2020 (based on current water costs) and a good proportion of this saving every year up to 2020 as the water consumption gradually meets its target. The saving is likely to be considerably higher due to an increase in the cost of water that is to be expected over the next 20 years.

Legal

No direct legal issues arise from the recommendation in the report.

Sustainability

Connected and Accessible City

The Water Strategy is unlikely to have significant implications for this City Plan theme.

Inclusive and Engaging City

The sustainable management of water will ensure Melbourne's heritage trees, tree lined streets and parks and gardens in general will have access to a consistent water supply.

Innovative and Vital Business City

The Strategy and the State Government water management plans may stimulate increased investment in of water management research and development and the development of local sustainable water management businesses with expertise or technologies that could be exported internationally.

Additionally, addressing the issue of sustainable water management may assist Melbourne to grow its reputation as a "knowledge city" and may lead to the creation of jobs in the environmental management sector. However, the direct impacts are uncertain at this stage.

Environmentally Responsible City

Melbourne has been in drought since 1998 and at the time of writing Melbourne's reservoir capacity is at 46 per cent. Results of a recent National Land and Water Resource Audit concluded that Victoria's water resources are heavily committed. This means that throughout Victoria, water will become an increasingly precious commodity requiring more careful and efficient use by all consumers. The City of Melbourne, along with other municipalities, needs to consider its long-term water use, particularly in light of the forecast increase in population.

The stormwater quality component of the Strategy will support Council's Stormwater Management Plan and help improve the quality of stormwater run-off in the City.

Recommendation

That the Environment, Community and Cultural Development Committee:

- approve the revised data analysis and water reduction targets for inclusion in the revised *Sustainable Water Management Strategy*;
- approve the attached Action Plan in principle and refer it to the 2003/2004 budget process;
- require a further report with a fully revised *Sustainable Water Management Strategy* in April 2003 (associated projects will be subject to the budget process); and
- note that this decision is being made by the Committee under delegation from the Council and is subject to the referral notice process.

Attachments:

1. Setting Targets for Residential Water Saving
2. Water Saving Targets for All Sectors
3. Water Action Plan

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Purpose

1. To report back to Committee on the results of community consultation on the *Draft Sustainable Water Management Strategy* and to seek approval of water reduction targets (by 2020) for inclusion in the final version of the *Sustainable Water Management Strategy*. A costed action plan for the next four years is also tabled.

Background

2. Melbourne has been in drought since 1998 and at the time of writing Melbourne's reservoir capacity is at 46 per cent. Results of a recent National Land and Water Resource Audit concluded that Victoria's water resources are heavily committed. This means that throughout Victoria, water will become an increasingly precious commodity requiring more careful and efficient use by all consumers. The City of Melbourne, along with other municipalities, needs to consider its long-term water use, particularly in light of the forecast increase in population.
3. In November 2001, Council endorsed participation in the International Council for Local Environmental Initiatives (ICLEI) Water Campaign and agreed to the development of a *Sustainable Water Management Strategy* for the City of Melbourne in partnership with Melbourne Water and ICLEI.
4. The *Draft Sustainable Water Management Strategy* was prepared and released for public comment in November and December 2002.
5. The development of the Strategy marks Council's participation as one of five pilot Councils trialing ICLEI's international Water Campaign in this country. The City of Melbourne has made significant progress and will be the program leader on endorsement of the final Strategy.
6. This report presents a summary of the public comments received about the *Sustainable Water Management Strategy*. The report then outlines key revisions that will be recommended for inclusion in the water saving component of the final Strategy, which will be presented to Council in April 2003. The report provides a brief analysis of stormwater priorities, and is then followed by a recommended Water Action Plan for implementation of the Strategy.

Issues

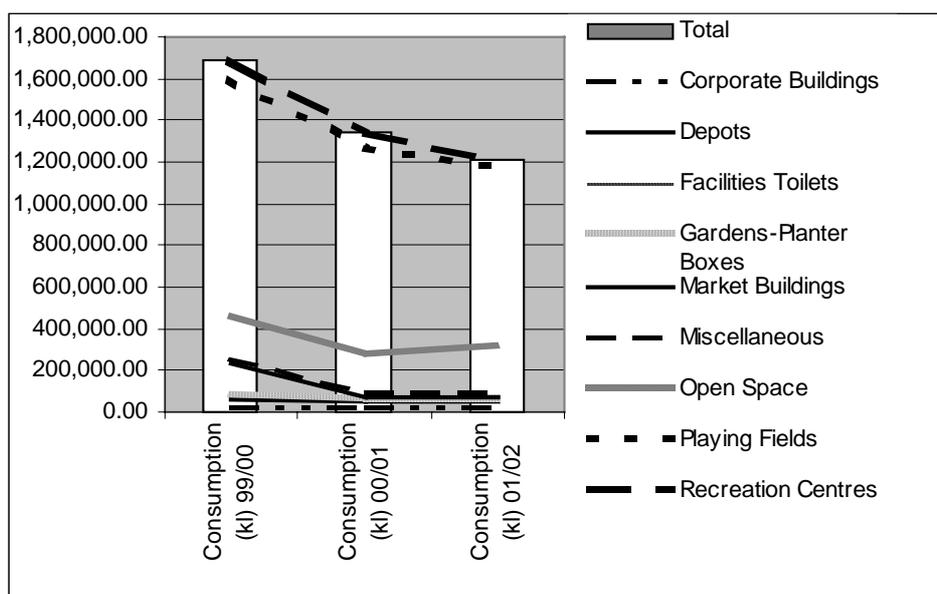
Public Feedback

7. Council received ten written submissions in response to the *Draft Sustainable Water Management Strategy*. Feedback was also received from discussions at a small public forum and at workshops with internal and external stakeholders. Public consultation took place from 12 November to 18 December 2002.

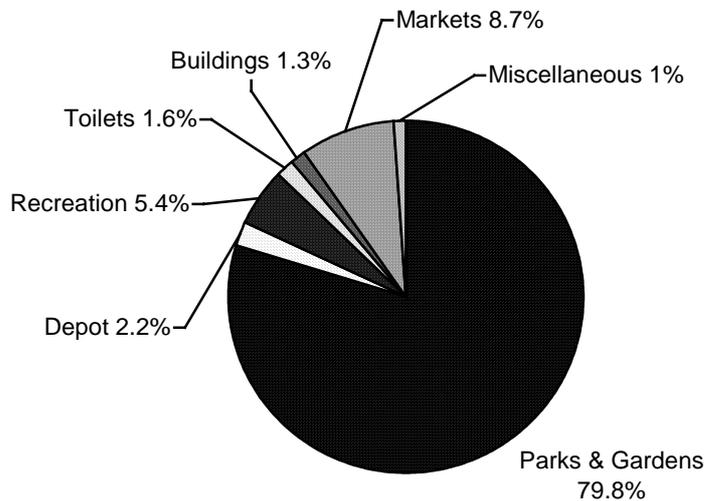
8. All feedback supported Council's water saving initiative. A range of working partnerships were offered in support of the Strategy from organisations such as the Australian Water Association, the Royal Australian Institute of Architects, RMIT University, and the Property Council of Australia (Victoria).
9. In summary, the following range of issues were raised:
 - 9.1. **Targets:** Comments on targets for water reduction consistently expressed that they were too low. This was based on comparison to targets set in other cities around the world, and in recognition that the forecasted population growth for the City of Melbourne will place additional demand on water supply. It was also suggested that targets should be based on catchment requirements for maintaining water flow;
 - 9.2. **Water Supply:** The draft water reduction targets will not be sufficient enough to result in reduced absolute demand (due to forecast population growth). Council should specify a position on where it will source its extra water supply;
 - 9.3. **Data:** Concern that the data is not of the necessary quality;
 - 9.4. **Regulation:** More regulation, planning enforcement and guidelines are sought to require water efficient design and practices;
 - 9.5. **Water Re-use:** Greater emphasis on water re-use, rainwater harvesting, and greywater should be given in the Strategy. Water re-use for Council parks should be required;
 - 9.6. **Protect Heritage Trees:** Supply sufficient water for parks, avenues etc; and
 - 9.7. **Education:** Communicate and educate about water conservation and water quality.

Water Consumption Data

10. The water consumption data has been completely revised in response to concerns about data quality. Council water use data is now comprehensive instead of sample based. Community wide data is now based on data from 1999-2001, and is no longer reliant on lesser quality 1998-1999 data.



11. The revised data has not resulted in any changes to the community wide data. It is noted that an interim breakdown of industry, retail, office and service sectors has been provided, however this will be finalised in the next month.
12. The revised data has resulted in quite significant changes to Council's own water use analysis. This includes a reduction in water consumption attributed to corporate buildings from 9.3% to 1.3%, and markets down from 10.1% to 8.7%. Water consumption levels for parks and gardens have increased from 69.4% to 79.8% of corporate water use.



13. A data protocol is needed to ensure future annual data collection is consistent and prompt. Application of spatial data management will need to be applied through GIS to ensure the data is most effectively managed and communicated.

Water Saving Targets

14. The targets have been reset in response to:
 - 14.1. the above data modifications;
 - 14.2. public submissions requesting increases in water reduction targets; and
 - 14.3. feedback from ICLEI that our draft targets are low, and should be significantly increased in order for the City of Melbourne to be a world leader in water conservation.
15. It is acknowledged that water saving targets for any area should be based on protecting the quality of water catchments by not reducing upstream water sources. Such an ecologically based target is the medium term goal for Council and ICLEI, however this cannot be achieved until further municipalities undertake water auditing to provide an understanding of catchment wide water use. In the interim, water saving targets will be based on pragmatic goals for reducing water through behavioural changes and technological improvements.
16. Detailed quantification of possible water savings has been undertaken where possible to ensure that water consumption targets are realistic. It is noted that further research and knowledge in the water industry is likely to evolve in the coming years making target setting an increasingly clearer task. See Attachment 1 for a breakdown of how residential water savings might be achieved.

17. As shown below, the corporate target is lower than the target set for the community's water use. The majority of Council's water use is in parks and gardens. These parks and gardens are a State tourist resource and need to be maintained to a very high standard. This makes water reduction particularly challenging, especially given the impact of varying climatic conditions. Conversely, residential targets are much less subjected to the variability of climatic conditions as approximately 80% of household water use is attributed to domestic appliances such as washing machines and shower roses. Gardens make up only 20% of an average household's water use in the City of Melbourne.
18. The proposed water saving targets will result in a significant per capita reduction in water consumption. Currently the water consumption per person in the City of Melbourne is 108 kilolitres per year. This will be reduced to approximately 65 kilolitres per year for each resident. The very large increase in population that is forecast for the City of Melbourne will mean that extra water supplies will be needed, however this extra demand will be significantly reduced by the commitment by Council to reduce water consumption.
19. The recommended targets are:

Land use	Use 1999 – 2000 (ML)	Target reduction (of 1999/2000 water consumption)	2020 target savings (ML) (based on 1999 population)
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Non Residential			
<i>Industry</i>	1824	25%	456
<i>Retail</i>	2007	15%	301
<i>Services</i>	6203	30%	1861
<i>Offices</i>	8209	30%	2463
Total	18,243	28%	5080

Residential			
<i>Residential</i>	5541	40%	2216
Total	5541	40%	2216

Corporate			
<i>Buildings</i>	23	35%	8
<i>Markets</i>	147	40%	58.8
<i>Parks & Gardens</i>	1345	18%	242
<i>Depot</i>	37.7	25%	9.4
<i>Toilets</i>	27.7	20%	5.5
<i>Recreation</i>	90.9	30%	27.3
<i>Miscellaneous</i>	14	5%	0.7
Total	1685	21%	352

See Attachment 2

Water Action Plan

20. The key actions respond to public feedback that Council needs to:
 - 20.1. lead by example in applying sustainable water practices and policy;
 - 20.2. action a small number of sustainable water projects, and concentrate on achieving effective results; and
 - 20.3. communicate its key sustainable water actions widely to the industry and community.
21. The seven recommended key actions are outlined in the attached Water Action Plan (Attachment 3). They address leadership, regulatory processes, communication and data management. Projects are:
 - 21.1. *New Council House*: best practice sustainable water design;
 - 21.2. *Open Space and Recreational Facilities Water Management Guidelines*: for Council assets;
 - 21.3. *Queen Victoria Markets*: vendor training, and rainwater harvesting scheme;
 - 21.4. *Property Council Partnership*: partnership to encourage development industry to apply sustainable water design and construction to commercial buildings;
 - 21.5. *Strategic and Regulatory Systems*: policies and procedures including Stormwater Management Guidelines, Rainwater Tank Policy, Soft Paving Materials Strategy;
 - 21.6. *Education and Communication*: promotion, consultation and community engagement; and
 - 21.7. *Data Management*: on-going data collection and GIS implementation.
22. The key actions have been developed in consultation with internal stakeholders, and an agreed budget is recommended to Council for implementation of sustainable water initiatives.
23. Key water saving actions will have impacts on greenhouse gas emissions. Some impacts will be positive such as the installation of water saving showerheads, which will substantially cut water use and at the same time cut greenhouse gas emissions due to the reduced heating of water. Some projects such as sewer mining will generate greenhouse emissions. It is acknowledged that consideration and management of greenhouse implications will need to be undertaken for water saving decisions.
24. Actions will be revised and renewed to ensure projects and progress is maintained over the next three years.

Relation to Council Policy

25. The projects outlined in this report relate to a number of council policies including the Stormwater Management Plan.
26. Council endorsement of the *Draft Sustainable Water Management Strategy* was received in September 2002 when it agreed to release the document for public comment.

Government Relations

27. The effective and sustainable management of water resources is a priority for both the Commonwealth and State governments. The partnership outlined will help to strengthen working relationships with agencies such as the Melbourne Water Corporation and the water retailers in the municipality.
28. The Strategy is consistent with the recently released State Government Water Resources Strategy, which also sets targets for reducing water consumption in metropolitan Melbourne.

Recommendation

29. That the Environment, Community and Cultural Development Committee:
 - 29.1. approve the revised data analysis and water reduction targets for inclusion in the revised *Sustainable Water Management Strategy*;
 - 29.2. approve the attached Action Plan in principle and refer it to the 2003/2004 budget process;
 - 29.3. require a further report with a fully revised Sustainable Water Management Strategy in April 2003 (associated projects will be subject to the budget process); and
 - 29.4. note that this decision is being made by the Committee under delegation from the Council and is subject to the referral notice process.

Setting Targets for Residential Water Saving

Residential Water Consumption:

Residential water consumption consists primarily of household water use in the bathroom, kitchen, laundry and garden.

Data has shown that the City of Melbourne's residential sector uses 5,541 megalitres of water, which equates to 22% of the municipality's total water use.

Through the following analysis, it is proposed to reduce this water use by 40%. This will result in a saving 2216 megalitres of potable water.

Possible water reductions can be made for specific water practices and components.

Current Water Use for Residential Sector – 5541 megalitres per year
Water Reduction Target of 40% - 2216 megalitres
2020 Water Use for Residential Sector (based on 1999/2000 population) - 3325 megalitres

Showers

The facts:

- Showers form 19% of the City of Melbourne's residential water use (CoM)
- It is estimated that 70% of households (calculated to 17,024 homes in CoM) do not use water efficient showerheads (*Water Resources Strategy*).
- City of Melbourne has 24,320 households each with 2.1 persons on average (CoM).
- Showerheads use:
 - A 12 to 15 litres per minute
 - AA 9-12 litres per minute
 - AAA 7.5 – 9 litres per minute (*Water Resources Strategy*).
- An average shower is 7 minutes long (*Water Resources Strategy*).

The calculations:

It is expected that new regulations to be introduced in the next few years will require all households to have AAA showerheads.

The following quantification (using the above data) shows us that x megalitres will be saved through the wide installation of AAA showerheads.

12 litres x 7 minutes x 2.1 persons x 365 days x 17,024 dwellings
= 1096 megalitres used if households retain old 'A' showerheads

7.5 litres x 7 minutes x 2.1 persons x 365 days x 17,024 dwellings
= 685 megalitres used if all households had 'AAA' showerheads.

1096 megalitres – 685 megalitres = 411 megalitres saved by installing AAA showerheads in all CoM residences.

411 megalitres / 5541 megalitres x 100 = 7%

This totals a 7% reduction of water use through the installation of showerheads.

Toilets

The facts:

- It is estimated that toilets use 20% of the average household water consumption (*Yarra Valley Water*). This totals 1108 megalitres of water per year used for toilet flushing for the City of Melbourne's residents.
- It is estimated that 50% of households do not have dual flush toilets (*Water Resources Strategy*). For the City of Melbourne, this totals 12,160 households.
- 11 litres – single flush
- 6/3 litres - dual flushes (this can be averaged at 5 litres per flush (*Yarra Valley Water*)).
- 6 flushes per day *Yarra Valley Water*.
- Toilet is 54,000 litres per household (*Yarra Valley Water*).
- Toilet uses 20% of the households water use (YVW)

The calculations:

$$11 \text{ litres} \times 6 \text{ flushes} \times 2.1 \text{ persons} \times 365 \text{ days} \times 12,160 \text{ dwellings} \\ = 615 \text{ megalitres being used by the 50\% of households still on a single flush system.}$$

$$5 \text{ litres} \times 6 \text{ flushes} \times 2.1 \text{ persons} \times 365 \text{ days} \times 12,160 \text{ dwellings} \\ = 280 \text{ megalitres used if the abovementioned 50\% of households switched to dual flush.}$$

$$615 \text{ megalitres} - 280 \text{ megalitres} = 335 \text{ megalitres saved by installing dual flush toilets}$$

$$335 \text{ megalitres} / 5541 \text{ megalitres} \times 100 = 6\%$$

This totals a 6% reduction of water use simply through the installation of dual flush toilets.

Washing Machine

The facts:

- Only 9% of machines are AAA. Top loader washing machines make up 85% of the current Australian market. (*Water Resources Strategy*). 6% are twin tubs - AA
- A: 26-34 litres/kg dry clothes
AA: 18-26 litres/kg dry clothes
AAA: 12-18 litres/kg dry clothes
AAAA: 8-12 litres/kg dry clothes (*Water Resources Strategy*).
- Top loader washing machine uses 120 litres per load.
- AAAA are water efficient, use less hot water and detergent. Some reports suggest that AAAA machines will pay themselves off in six years.
- AAAA washing machines will be regulated by 2010 (*Water Resources Strategy*).

The calculations:

$$120 \text{ litres/load} \times 4 \text{ loads} \times 52 \text{ weeks} \times 20,672 \text{ dwellings} \\ = 516 \text{ megalitres used if 85\% of households are 'A' washing machines.}$$

$$28 \text{ litres/load} \times 4 \text{ loads} \times 52 \text{ weeks} \times 20,672 \text{ dwellings} \\ = 120 \text{ megalitres used if 85\% of household's washing machines were AAA washing machines.}$$

Although AAA washing machines will be regulated by 2010, it is conservatively estimated that 50% of washing machines will be AAA by 2020.

28 litres/load x 4 loads x 52 weeks x 10,336 dwellings
= 60 megalitres used if 43% of household's washing machines were converted to AAA

516ml – 60ml = 456 megalitres saved by installing AAA washing machines in 43% of CoM households

456ML saved / 5541 total residential water use x 100 = 8% saved by installing AAA washing machines

This totals 8% reduction of water use simply through the installation of AAA washing machines.

Garden Practices

The facts:

- Garden practices make up 35% of household water use (*Water Resources Strategy*).
- Based on the residential consumption figures analysed in this study, and assuming higher density living on average, this figure is expected to be around 20% for the City of Melbourne (GHD).
- At 20%, external residential water use makes up 1108 megalitres.
- There are 6810 houses in City of Melbourne. The 17,510 apartments in the municipality will have very little external water use.
- Water savings can be made through sensible garden practices such as drip watering, tap timer, mulching, and water saving plants. Water savings can also be made by washing cars with buckets, and by sweeping driveways instead of hosing them down.

The calculations:

Little data exists to enable calculations on external water savings to be made.

It is considered that the current water restrictions on washing cars and driveways (which are being considered as permanent restrictions) will result in water savings from the 1999/2000 base year.

It would be conservative to estimate that a 5% reduction in external water use can be achieved by 2020. This will result in savings of 277 megalitres of water.

Technical Improvements

The facts:

- Opportunities to reduce potable water use exist in the application of greywater systems, flow diverters, and rainwater tanks. Literature and experience suggests that these technological improvements can provide water savings of approximately 15%.
- Specific quantification of these features will become increasingly available.
- The total CoM residential water consumption is 5541 megalitres per year.

The calculations:

It is considered that a 15% saving can be made through technical improvements, however for the purpose of this analysis, a conservative 10% saving is assumed (to be revised in coming years as further research comes to hand).

This will result in a saving of 554 megalitres.

Education etc.

Education and communication forms an integral part of the *Sustainable Water Management Strategy*. All of the above means of saving water are dependent on education (with some regulation mixed in).

It will be necessary to continue to provide broader education about water savings. This is likely to happen in conjunction with the water industry and other councils.

Opportunities such as developing a ‘water wise community’ which uses a street block or apartment building as a case study for best practice community water use can be pursued. The water savings from education are expected to result in about 1% water saving (GHD).

This will result in a saving of 55 megalitres.

The Target for Residential Water Consumption

All of the above opportunities for residential water conservation total a water saving target of 37.7%.

This is a calculation based on our best information to date and uses conservative estimates. The goal is rounded up to **40%** to acknowledge that our estimates are conservative.

Targets will be reviewed in the coming years as further information and research comes to hand. The targets are important in their role as setting a goal, they are not meant to be an inflexible criterion.

Future Population Growth

It is acknowledged that the City of Melbourne will face a dramatic increase in population and number of dwellings over the coming decades. A lot of this growth will be in the form of apartments, particularly in the Docklands precinct.

It is expected that the population will increase from 51,072 currently to 123,000 residents forecast for 2020.

This will place extra demand on water. The extra population will be recognised in future assessments of our targets, as all calculations will be in the context of our 1999/2000 base year. The absolute targets will be adjusted every second year to allow for population growth. This will be aligned with research and data analysis provided by CLUE.

A per capita calculation of residential water use shows:

1999/2000 per capita residential water use is 108KL

2020 per capita residential water use is targeted to be approximately 65KL.

This will ultimately result in a total residential water use increase of 2465 ML, which is 145% of current water use. If no water saving targets were in place, the 2020 population would use 241% of current water consumption.

Water Saving Targets for All Sectors

Corporate Water Consumption				
Land use	Average use 1999 –2002 (ML)	Target reduction	2020 target savings (ML)	Key initiatives
Buildings	23	35%	8	Retrofit dual flush toilets in all buildings Retrofit water efficient showers in all buildings Green building design for Council House Landscaping for sustainable water management – eg: childcare centres and cultural buildings In-house education and promotion of water smart practices
Markets	147	40%	58.8	Education program for vendors Water audit and implementation of identified water savings Rainwater harvesting – 80%-100% possible for Queen Victoria Market Greywater implementation Reduction of flow rate on hoses
Parks & Gardens	1345	18%	242	Water efficient landscape design. Gradual introduction of moisture sensitive irrigation eg drips watering system. Program to fix leakage in fountains. Install water-recirculating systems in the fountains not recycling water Some installation of greywater management systems Sewer mining piloting Alternative paving design median strips. Contract management to reflect water conservation and stormwater management
Depot	37.7	25%	9.4	Some rainwater harvesting Retrofit any dual flush toilets & install AAA shower roses, where possible. Educating employees on wash-down practices
Toilets	27.7	20%	5.5	Retrofit dual flush toilets Feasibility and application of rainwater harvesting Sample water less toilet Improved internal cleaning
Recreation	90.9	30%	27.3	Efficient water management at City Baths (such as prompt identification and fixing of leaks) Re-use of swimming pool water Retrofit dual flush toilets Installation of AAA shower roses General staff and visitor education
Miscellaneous	14	5%	0.7	General Education Technological improvements
Total	1685	21%	352	Estimate of total savings: 21 %

Non-Residential Water Consumption				
Land use	Use 1999 –2000 (ML)	Target reduction	2020 target savings (ML)	Key initiatives
Industry	1824	25%	456	Installation of rainwater & greywater tanks. Retrofit dual flush toilets & AAA shower rose. Educating industry about wash-down practices. Green landscape/building design. Revising industrial practices eg. Cooling machinery.
Retail	2007	15%	301	Retrofit dual flush toilets, AAA shower rose & AAA dishwasher. Installation of rainwater & greywater tanks, where possible. Educating retailers about wash-down practices. Revising food handling practices.
Services	6203	30%	1861	Installation of rainwater & greywater tanks - eg. at Exhibition Centre Retrofit dual flush toilets & AAA shower rose. Green landscape/building design.
Offices	8209	30%	2463	Installation of rainwater & greywater tanks Retrofit dual flush toilets & AAA shower rose. Green Landscape/Building design.
Total	18,243	28%	5080	Estimate of total savings: 28%

Residential Water Consumption				
Land use	Use 1999 –2002 (ML)	Target reduction	2020 target savings (ML)	Key initiatives
Residential	5541	40%	2216	Installation of diverters, rainwater & greywater Retrofit dual flush toilets & install AAA shower roses Green building design. Water efficient landscape design Education on garden practices Case study on street/community. Education re: concrete wash-down & car washing practices.
Total	5541	40%	2216	Estimated of total savings 40%

Absolute Targets and Per Capita Targets

The above figures have been set as targets for reducing absolute water consumption. The targets will be measured from the 1999/2000 base year. The residential population in the base year was 51,072 persons.

The absolute targets can be expressed as per capita targets. In the instance of residential water use, an absolute reduction of 40% of water will result in a per capita reduction from 108 KL to 65 KL by 2020.

Similar reviews will be undertaken for other sectors, such as industry, which would take into account the number of businesses in the base year and the current year.

This per capita calculation refers only to the residential water consumption. This is because a per capita calculation that refers to total municipal water use would misrepresent the small residential population of the City of Melbourne given it hosts approximately 200,000 employees each day.

It will be necessary to adjust the absolute residential water saving target every two years in accordance with renewed population levels. This will ensure that true water demand will be reflected, taking into account extra residential population.

Sustainable Water Management Strategy – Action Plan

Strategy 1: LEADERSHIP

The City of Melbourne council makes up six percent of the total water consumption in the municipality. This provides an important opportunity for Council to modify its own water use to both conserve water and to be a leader in sustainable water practices. Feedback from community and stakeholders has indicated that it is of paramount importance that Council apply best practice sustainable water management. This will not only indicate Council's commitment to water management, but it will also provide an important educational program for the community.

Based on 1999 population levels, Council aims to achieve a total water reduction of 21% by 2020. This includes a 18% reduction in water use for its parks and gardens. Other targets for Council's water use include: 35% reduction for buildings, 40% reduction for markets, 25% reduction for depots, 20% reduction for toilets, 30% reduction for recreation and 5% for miscellaneous by 2020.

Key Action 1	<p>Create a showcase out of Council's administration building by 2005</p> <p>Responsibility: City Projects, Arts and Culture, City Assets and Services</p> <p>Background: The administration building is an opportunity to demonstrate best practice in both the building design process and water conservation.</p> <p>Opportunities/Challenges: Council has specified best practice requirements in relation to water design and practices in the proposed new building.</p> <p>City Projects is currently project managing the development, in close liaison with Facilities Management. Development and maintenance costs of the building will be borne by these sections of Council and are not specified in the budget below.</p> <p>Tasks to be undertaken specific to achieving and promoting sustainable water management are:</p> <ul style="list-style-type: none"> • applying appropriate performance targets and design principles in contracts and agreements • investigating significant obstacles to sustainable water design in buildings by applying where necessary, studies, technologies and/or partnerships. These projects will provide benefit to the wider development industry. • developing case study reports, and communication strategies to describe best practice sustainable building design processes. <p>Possible Partners: SEAV, CSIRO, GBCA, CWW, PCA, AGO</p> <p>Targets: This project will address Strategy targets relating to:</p> <ul style="list-style-type: none"> • reducing building water consumption by 35%. In 2001/2002 Council House used 2,909 kilolitres of water totalling 12.5% of water consumed by all Council buildings. It is intended that the new building will capture all of its water for reuse, and will actually capture more water than it can use. This excess water could be used for garden watering or other such options, further reducing water consumption. • improving stormwater quality. The proposed Council House will capture nearly all rainwater landing on site and will reduce stormwater volumes and velocities as a result. 						<p>Status:</p> <p>Council has appointed its design consultants.</p> <p>Partnership with CSIRO and SEAV has already been developed for the construction of the new building.</p> <p>Partnership with the Federal Government is being sought</p>																															
	<table border="1"> <thead> <tr> <th></th> <th>2002/03 \$</th> <th>2003/04 \$</th> <th>2004/05 \$</th> <th>2005/06 \$</th> <th>2006/07 \$</th> <th>Budget Notes:</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center;">Timeline & Budget</td> <td style="text-align: center;">625</td> <td style="text-align: center;">1625</td> <td style="text-align: center;">1625</td> <td></td> <td></td> <td>Budget for ESD branch to liaise with design team (1 hr/week until 2005) [ESD Branch]</td> </tr> <tr> <td></td> <td style="text-align: center;">25,000</td> <td style="text-align: center;">25,000</td> <td></td> <td></td> <td>Budget for specific follow-up research relating to water provisions in the new building [CP Branch and seek sponsorship from water retailer]</td> </tr> <tr> <td style="text-align: center;">5,000</td> <td style="text-align: center;">10,000</td> <td style="text-align: center;">10,000</td> <td style="text-align: center;">10,000</td> <td></td> <td>Budget for educational sessions and promotion of best practice building features [CP Branch and seek sponsorship from Green Building Council Australia, BCC, etc]</td> </tr> <tr> <td style="text-align: center;">160</td> <td style="text-align: center;">875</td> <td style="text-align: center;">875</td> <td style="text-align: center;">875</td> <td></td> <td>Budget for case studies (1 hr/month until 2005 plus publication costs) [ESD Branch]</td> </tr> </tbody> </table>							2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$	2006/07 \$	Budget Notes:	Timeline & Budget	625	1625	1625			Budget for ESD branch to liaise with design team (1 hr/week until 2005) [ESD Branch]		25,000	25,000			Budget for specific follow-up research relating to water provisions in the new building [CP Branch and seek sponsorship from water retailer]	5,000	10,000	10,000	10,000		Budget for educational sessions and promotion of best practice building features [CP Branch and seek sponsorship from Green Building Council Australia, BCC, etc]	160	875	875	875		Budget for case studies (1 hr/month until 2005 plus publication costs) [ESD Branch]
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**Key
Action
2**

Open Space and Recreational Facilities Water Management Strategy

Responsibility: City Assets and Services

Background: Council is committed to improving the environmental management of its parks, open spaces and recreational facilities. Water is currently used in the parks and gardens for irrigation, water features, cleaning and in public toilets. High quality water is currently being used for all purposes, and the opportunity to use recycled or lower quality water for some activities is not being taken. Some water features recycle water, but most of the older ones do not.

Opportunities/Challenges: Council is currently considering the Growing Green Environmental Sustainability Plan, and has also prepared a Drought Response Plan in response to Level 1 water restrictions. Growing Green provides strategic and action based opportunities for long-term water saving practices, Water Management Plans, water audits and identification of opportunities for new technology.

Water re-use technology is currently being investigated and developed and provides rapidly improving opportunities to re-use water for irrigation purposes.

It is noted that the contracts for open space maintenance are due for renewal by the end of 2003. Opportunity is provided for the contracts to be renewed in a manner that ensures water conservation issues are considered

Possible Partners: Melbourne Water, CWW, SEW, manufacturers.

Targets: The water saving target for Council's parks and gardens has been set at 18%, however the ability to achieve this target may be influenced by climatic conditions, and the amount of funds available to undertake improvement works.

Status:

Short term water reductions have been implemented through the current Drought Response Plan.

The recently completed Sewer mining trial in the Domain was a partnership project with Melbourne Water

Parks maintenance contracts are currently in the process of being reviewed

	2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$	2006/07 \$	Budget Notes:
Timeline & Budget	5,000	25,000				Budget required for development and printing of Open Space and Recreational facilities Water Management Strategy [Parks and Rec Branch]
	1,950	750				Budget required to assist with Open Space and Recreational facilities Water Management Strategy (3 hrs/week) [ESD Branch]
		35,000	70,000	35,000		Implementation of Open Space and Recreational facilities Water Management Strategy including monitoring – 1 full time employee [Parks & Rec Branch]
	5,000	10,000				Detailed water audits of large parks [seek sponsorship from City West Water and South East Water]
		15,000	20,000	20,000	25,000	Continued implementation of water efficient irrigation technology [Parks & Rec Branch]
	5,000	20,000	20,000	60,000	60,000	Continued research and application of water re-use technology such as sewer mining [Parks & Rec Branch and seek sponsorship from Melbourne Water and water retailers]
		10,000	10,000	10,000		Program for water recycling in fountains [Cultural Development and Parks & Rec Branch and possible sponsorship from water industry]
		15,000	15,000	45,000	45,000	Budget required to fix lake and pond leakages [Parks & Rec Branch].

Key Action 3	<p>Queen Victoria Markets Responsibility: Financial and Business Services Background: Analysis has shown that Queen Victoria Market and Footscray Wholesale Fish Markets are significant users of water in the municipality (8.7%). It is a priority to reduce this water consumption, primarily through an intensive program of working with the Queen Victoria Market. A Draft Masterplan has been prepared for the Queen Victoria Markets and a draft Environmental Management Plan is currently being prepared. Water use is mentioned briefly in this over-arching report. It is considered that most water used at QVM is for food preparation (fruit and vegetable traders and fishmongers being the two heavy users groups). Cleaning and toilet flushing are the other two heavy uses. Opportunities/Challenges: QVM operational staff are welcoming guidance in improving their water management practices. The project will address behavioural changes of vendors. This will involve training, and increased information through the development of an Environmental Management Plan. Water management will be integrated with other environmental factors including energy and waste. The project will address stormwater re-use opportunities including plans to collect rainwater from the market roof and store on site for market requirements. Alternatively it may be possible to source water from Elizabeth Street stormwater pipes for re-use on site. This is an extensive infrastructure commitment that would need to be assessed for its triple bottom line viability. Initial scoping and funding activities will be undertaken in the immediate term. The Queen Victoria Market attracts large numbers of tourists and provides an optimum educational opportunity. Possible Partners: Queen Vic Markets, CWW, Melbourne Water, Heritage Office, PCA, Sustainable Energy Authority, architects/energy/water consultants, development industry. Community groups. Targets: The Markets (QVM and Melbourne Wholesale Fish Market) use approximately 8.7% of the Council's corporate water use. It is targeted to reduce this by 40%, which will total 147 megalitres savings per year. As QV M uses 36 megalitres of water each year, a comprehensive greywater reuse system could achieve this total. This project will deliver outcomes to address stormwater targets relating to gross litter management and nutrient management.</p>						<p>Status: Masterplan and EMP are in preparation.</p>
	Timeline & Budget	2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$	2006/07 \$	Budget Notes:
	2300	9900	9900			Project scoping, funding applications, consultation (6 hrs/wk) [ESD Branch]	
		8,900	8,900	8,900		Project management – infrastructure (8 hrs/wk) [Eng. Branch]	
		3,000				Consultation [QVM]	
		12,000	4,000	4,000		Training and materials for vendors [QVM]	
		10,000	10,000	10,000		Flow rates, technology, auditing, monitoring for MWFM [MWFM]	
		40,000	50,000	30,000	30,000	Greywater infrastructure [QVM with possible grants and sponsorship]	
			10,000	12,000	10,000	Education for general public on greywater system [ESD Branch]	

**Key
Action
4**

Property Council of Australia to facilitate water management in the development industry

Responsibility: Sustainable Development and Strategy

Background: The Property Council has a Memorandum of Understanding with the City of Melbourne to work together on promoting environmental building design and construction issues to the development industry. PCA has been involved in the greenhouse campaign and will be able to promote sustainable water practices.

Opportunities/Challenges: PCA has expressed difficulties in achieving developer support for environmental programs due to difficulty in auditing and measuring resource use etc. The current establishment of the Green Building Council of Australia and promotion of a nation wide building rating tool are current opportunities that will help to encourage developers to change their environmental practices.

Possible Partners: PCA, FMAA, and other regulating agencies.

Targets: Commercial buildings and offices use 23megaliters of water per annum, which is 1.3% of City of Melbourne's overall consumption. The Property Council can encourage developers to apply water efficient design. The take up rate is not expected to be high, however it will be important to continually educate the industry in anticipation of possible regulation and building rating requirements.

Status:

Existing Memorandum of Understanding.

	2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$	2006/07 \$	Budget Notes:
Timeline &	200	800				Liaison with PCA on promoting commercial building design (0.5 hrs/wk) [ESD Branch]
Budget	7,500	15,000				Part of salary for PCA liaison person for environment [ESD Branch]
	5,000	15,000	5,000			For seminar/s with development industry [PCA to fund with possible sponsorship from GBCA,, water retailers etc]
		5,000				Presentation Material (information pack)

Strategy 2: STRATEGIC AND REGULATORY SYSTEMS

The rapid advance in knowledge and technology for sustainable water practices provides opportunities for innovative building, urban and landscape design. Often existing regulations and procedures can inadvertently obstruct such new innovations. It is necessary for the regulatory systems to enable improved sustainable design to be easily implemented, and to provide incentives where possible.

Key Action 5	Strategic and Regulatory Systems					Status: The Stormwater Guidelines for Construction are currently underway, The Soft Paving Materials Strategy is underway.	
	Responsibility: Sustainable Development and Strategy						
	Background: A range of small ad-hoc provisions for sustainable water management have been developed over the years in Council policies and procedures in areas such as planning, building, local laws, engineering, and general Council procedures. This ad-hoc policy development will continue in the short term to address pressing obstacles and provide incentives for sustainable water management. A holistic approach is a long term goal.						
	Opportunities/Challenges: Council is currently exhibiting a draft <i>Ecologically Sustainable Building</i> policy that encourages water efficiency. This policy provides a basis for further sustainable water provisions to be added over time. The EPA has provided a \$20,000 grant that has been matched by Council for the development of <i>Stormwater Management Guidelines for Construction</i> . Council has prepared its <i>Stormwater Management Plan</i> which it will revise in 2003, by providing more analytical data and linking with the <i>Drainage Strategy</i> . The <i>Soft Paving Material Policy</i> has been drafted that reviews the appropriateness of paving materials such as grass, gravel, mulches, native grasses etc. The adoption of the <i>Sustainable Water Management Strategy</i> will provide the strategic basis for a range of relevant policies for example, rainwater tanks, soft paving materials and Water Sensitive Urban Design.						
	Possible Partnerships: EPA, ABM, PCA, FMAA						
	Targets: Guidelines for environmental building design and construction will help educate the development and planning industry about water efficient design. These guidelines will achieve reductions in water use in new buildings and associated landscaping where applied. These reductions will not be substantial until such guidelines and rating tools are regulated. Preparing guidelines now is the necessary preliminary work for possible future regulation. In particular, these provisions will affect targets for the residential (40%), service (30%) and office (30%) land uses. This project will deliver outcomes to address stormwater targets relating to erosion and sediment control, gross litter management and nutrient management.						
	Budget Notes:						
	Timeline & Budget	2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$		2006/07 \$
	30,000					Revise <i>Sustainable Water Management Strategy</i> [ESD Branch]	
	2,000	6,600	6,600			Staff time to instigate and develop project plans for regulatory guidelines (4 hrs/wk) [ESD Branch]	
	40,000					<i>Stormwater Management Guidelines for Construction</i> (EPA, ESD Branch, Eng Branch, Development Planning Branch)	
	15,000	5,000				Update <i>Ecologically Sustainable Buildings Policy</i> to include water provisions [Strategic Planning]	
		20,000				Develop <i>Soft Paving Materials Policy</i> [City Projects, Engineering, Building Branch]	
		20,000	30,000	50,000	30,000	<i>Rainwater Tank Policy</i> [Development Planning]	
						Additional policies relating to stormwater, water consumption etc [Development Planning Branch]	

STRATEGY 4: IMPLEMENTATION AND MONITORING

It is important to develop base audits and key indicators to have a full understanding of resource use. Such audits will enable the success of different strategies and actions to be assessed and programs to be modified accordingly. Developing data management protocols is the first important step in the monitoring process.

Key Action 7	<p>Data Management Responsibility: Sustainable Development and Strategy Background: The Draft <i>Sustainable Water Management Strategy</i> has identified that the availability and accuracy of technical water consumption data is critical for the assessment, monitoring and refinement of this Strategy. Opportunities/Challenges: Generate an agreed data management protocol for water consumption and monitoring for the City of Melbourne. Having regards to customer privacy rights, aggregated data is required in a consistent manner that includes as a minimum:</p> <ul style="list-style-type: none"> • Total water consumption by property type particularly for 'non-residential uses' such as industry, office, retail and entertainment/hospitality; • Clarification of residential and non-residential data sources (eg: investment property) • Confirmation and improvement of City of Melbourne internal data collection and knowledge management processes of utility costs, responsibilities and utility outgoings. • Input of data into customised ICLEI database. • Consideration of long term GIS implementation of data • Assessment of indicators relating to stormwater management <p>Possible Partnerships: CWW, SEW, MW, ICLEI Targets: Data management will allow water consumption to be monitored and responded to accordingly. This will ensure actions are measured and revised to best address the target requirements.</p>					<p><i>Status:</i> Data has been collected as the basis for the <i>Sustainable Water Management Strategy</i> using 99/00 as the base year.</p>	
	Timeline & Budget	2002/03 \$	2003/04 \$	2004/05 \$	2005/06 \$	2006/07 \$	Budget Notes:
		1000					Project management of data protocol [ESD Branch]
		8,000					Staff to undertake project [ESD Branch]
		-	-	-	-	-	Updating of CWW and SEW data systems [CWW and SEW to fund]
			3000	3000	3000	3000	Annual reporting [ESD Branch]
			6000	6000	12,000	12,000	Annual publishing of audits and associated initiatives [ESD Branch]
			10,000	10,000	10,000	10,000	Development of GIS application of data [ESD Branch]

Other projects to possibly be developed in short term include:

- Royal Park Wetlands
- Partnership with Crown Casino to reduce water consumption
- Stormwater Management – Council practices regarding erosion, sediment, pesticides, herbicides, nutrients, wastewater.
- Industry support program
- Cigarette butt campaign

FINANCE ATTACHMENT

SUSTAINABLE WATER MANAGEMENT STRATEGY & ACTION PLAN

The financial implications are detailed in the report.

Funding requirements will be subject to Council's budget processes.

Joe Groher
Manager Financial Services

LEGAL ATTACHMENT

SUSTAINABLE WATER MANAGEMENT STRATEGY & ACTION PLAN

No direct legal issues arise from the recommendation in the report, however Schedule 1 of the *Local Government Act 1989* (“Act”) provides that the functions of a Council include:

"7. *Any other functions relating to the peace, order and good government of the municipal district including –*

(5) *Information;*

(7) *Encouragement of commerce, industry and agriculture;*

(8) *Environment control, protection and conservation;"*

In addition, the objectives of the Council detailed in section 7 of the Act include:

“(c) *to ensure adequate planning for the future of its municipal district;*

(d) *to represent and promote the interests of the community and to be responsive to the needs of the community;"*

The recommendation is within the Council's functions and powers under the Act.

Alison Lyon
Manager Governance Services