CITY OF VANCOUVER

P1

POLICY REPORT
PHYSICAL SERVICES

Report Date: May 21, 2009
Contact: Brian Crowe
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RTS No.: 8074
VanRIMS No.: 08-2000-20
Meeting Date: June 2, 2009

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Draft Updated Liquid Waste Management Plan

RECOMMENDATION

A. THAT Council receive the draft updated Regional Liquid Waste Management Plan dated March 2009 for information and forward comments to Metro Vancouver as outlined in this report.

B. THAT Council urge Metro Vancouver and senior governments to investigate alternative schedules that re-prioritize the upgrades to secondary treatment at the Iona and North Shore Treatment Plants and accelerate overall completion of the upgrade program.

GENERAL MANAGER'S COMMENTS

This report provides Council with information regarding the ongoing process of updating the Regional Liquid Waste Management Plan (LWMP). In general the report supports the draft LWMP. The only specific additional recommendation relates to the schedule to upgrade the Iona Island and North Shore treatment plants to secondary treatment. The GCAT recommended that the schedule for both plants be accelerated. The staff recommendation is consistent with that direction, but also acknowledges that it is likely not feasible or advisable to build both plants at the same time.

In order to provide Council with the context within which this plan has been developed, staff have provided an extensive review of the history of the development of Vancouver's sewerage system and the relationship between the City and the Greater Vancouver Sewerage & Drainage District (Metro Vancouver) in the background section of this report.

This LWMP will have very significant cost implications to homeowners in Vancouver. The scale of these implications, and the importance of senior government cost sharing on the capital cost of secondary treatment upgrades is highlighted by the graphs included in Appendix A.

CITY MANAGER'S COMMENTS

The City Manager RECOMMENDS approval of A and B.

COUNCIL POLICY

In the early 1970s, Council approved the policy of separating sanitary and storm sewers, starting in the West End and Downtown areas, in order to begin reducing and eliminating combined sewer overflows.

In 1981, the sewer separation policy was reaffirmed with the adoption of the 1% life cycle replacement policy for sewer mains as part of the Sewers Long Range Capital Plan.

In 1999, Council approved continued funding of the sewer separation program to replace approximately 1% of the system annually to target elimination of combined sewer overflows by the year 2050.

In 2001, Council adopted the Regional Liquid Waste Management Plan (LWMP) and authorized Metro Vancouver to submit the LWMP to the British Columbia Minister of Environment, Lands and Parks for approval pursuant to Section 18(1) of the BC Waste Management Act.

PURPOSE

The purpose of this report is to inform Council on the background, process and contents of the draft updated Regional *Liquid Waste Management Plan,* and to forward comments to Metro Vancouver.

SUMMARY

Vancouver's sewer system is operated in partnership with Metro Vancouver. The City owns and operates the collector sewers while Metro owns and operates major trunk sewers and the sewage treatment plants. The total sewer fees charged to homeowners consist of approximately half Vancouver costs and half Metro costs.

Vancouver's original sewers were built mainly as combined sewers (one single pipe in the street which carries sewage and rainwater runoff). Prior to the early 1960s, all sewers emptied into surrounding water bodies untreated. During the 1960s and 1970s, regional sewage treatment plants were built which then treated about 80% of the sewage. It wasn't until the 1980s that all direct sewage discharges were intercepted for treatment during dry weather. However, during wet weather, combined sewer overflows (CSOs) occur. In the early 1970s, Vancouver Council approved the policy of separating sanitary and storm sewers to begin reducing and eliminating combined sewer overflows. At present, approximately 40% by length of Vancouver's sewer system is separated. This program has greatly reduced untreated sewage discharges to Vancouver's surrounding waters. As a result, about 98% of the total annual sewage flow is now treated while about 2% overflows through CSOs during wet

weather. Eliminating the remaining 2% will require continuation of the City's separation program until 2050.

In the 1980's and 1990s, Metro Vancouver and its member municipalities developed the current Liquid Waste Management Plan (LWMP). It received final approval by the Province in 2002 and became regulation under the Provincial Waste Management Act. The 2002 LWMP identified strategies and actions for both Metro Vancouver and its member municipalities to manage and provide liquid waste services that protect public health and maintain a healthy environment.

The key liquid waste initiatives in the approved 2002 LWMP for Vancouver include:

- separating 1% (about 16 km) of the system each year with the target of eliminating all CSOs by 2050 (separation of approximately 650 Km of sewer pipe);
- when resources permit accelerating sewer system projects to help reduce CSOs over a the short term;
- developing Integrated Stormwater Management Plans for all drainage basins by 2014;
- continuing the City's source control initiatives to minimize liquid waste discharges from commercial and industrial sources;
- participating in Metro's Environmental Monitoring Committee and Stormwater Interagency Liaison Group; and
- upgrading the Iona Sewage Treatment Plant (STP) to secondary treatment by 2020.

The Province also requires that the LWMP be updated every five years. The purpose of updating the Plan is to review the previous assumptions and timelines and to realign the Plan with any new municipal, regional and senior government policies. The Plan has now been updated (Attachment 1). It was developed in collaboration with municipalities via the Regional Engineers Advisory Committee – Liquid Waste Subcommittee, the sewerage area technical committees, and other regional committees. It has been endorsed by the Regional Engineers Advisory Committee and the Regional Administrative Advisory Committee. It has also received approval by the Metro Vancouver Board on March 27, 2009 for final public consultation.

The most significant philosophical change to the LWMP is the consideration of Integrated Resource Management (IRM). The focus of IRM is to look at ways to help preserve non-renewable resources, stretch the capacity of existing infrastructure, save energy, generate value, protect the environment and reduce greenhouse gas emissions. IRM seeks to capture revenue opportunities associated with water, energy, and materials from both the liquid and solid waste streams.

The draft updated LWMP builds on the 2002 LWMP by adding the following key initiatives:

- Minimizing greenhouse gas emissions from liquid waste management;
- Developing and implementing an odour and air emission management strategy;
- Implementing feasible opportunities that recover resources and or add resiliency;
- Coordinating liquid waste infrastructure and services with the Regional Growth Strategy and its objectives;
- Minimizing stormwater impacts by managing rainwater with on-site measures such as detention ponds, bio-filtration swales, green roofs, roof leader disconnections, etc.; and

- Identifying innovations that may improve the efficiency and effectiveness of wastewater and stormwater management and provide secondary benefits to the environment and society.

The two aspects of the Plan that continue to be of primary importance to Vancouver are: the municipal commitment to separate our combined sewer system at an average of 1% annually to eliminate CSOs by 2050; and the timing options to upgrade the Iona and the North Shore treatment plants.

Vancouver has provided substantial funding for many years to ensure that the integrity of our existing sewer infrastructure is maintained, and to avoid deferring high costs to future generations. In the 2009 – 2011 Capital Plan, approximately $25 million/year is provided for sewer main reconstruction and separation. To date, approximately 40% of our sewer lines have been separated. To eliminate CSOs (the last 2%), approximately 650km of combined sewers need to be separated over the next 40 years. Replacement of our old combined sewers with new separated storm and sanitary sewers at approximately 1% each year is consistent with Engineering's goal of replacing sewer mains near the end of their design life (the most cost-effective approach), while also achieving our commitment to eliminate CSO's by 2050. This program continuously reduces the remaining sanitary portion of combined sewage overflows as we approach 2050.

With 98% of our sanitary sewage flow presently receiving treatment, the most significant environmental and financial issue contained in the Plan is the timing and upgrading of the Iona and North Shore sewage treatment plants. The estimated costs for these upgrades are $1 billion and $400 million respectively.

Metro Vancouver's draft updated LWMP contains three potential timelines for upgrading the waste water treatment plants (WWTP) for the Vancouver (Iona) and the North Shore sewerage areas:

- Vancouver by 2020 and North Shore by 2030 (unchanged)
- Vancouver by 2030 and North Shore by 2020 (order reversed)
- Vancouver by 2020 and North Shore by 2020 (accelerated)

Noting the significant cost and importance of this work, the Plan recommends that provincial and federal cost sharing be sought by Metro Vancouver and its member municipalities.

Accelerating the existing schedule is recommended by the City's Greenest City Action Team (GCAT). Only the third timeline would accelerate the schedule, by completing both upgrades by 2020; however, this schedule would be very challenging both financially and logistically.

City staff believe the best overall approach is to upgrade the Iona and North Shore treatment plants sequentially. This would likely result in better application of technology, greater advancement of innovative resource management initiatives, and lower total cost.

With respect to prioritizing the upgrades, new federal guidelines set risk-based treatment standards and timelines to upgrade facilities across Canada. Based on these guidelines, preliminary environmental monitoring and risk assessments indicate that the order of the plant construction should be reversed, with the North Shore built first. Furthermore, as explained below, this project is essentially "shovel ready" and simple to construct thus lending itself to acceleration.

Upgrading the Iona plan presents a number of challenging issues. These include land tenure issues, site suitability and building constraints, sea level concerns, disposal of existing stockpiled biosolids, and the unique design parameters given that this plant will need to handle combined flows for many decades. These issues require more time to resolve relative to the smaller and simpler North Shore plant.

Notwithstanding that logistical issues and the preliminary risk assessments suggest that the North Shore plant is more amenable to immediate acceleration, a major effort should be placed on developing a plan for the upgrading of the Iona Plant and dealing with its many challenging issues. An appropriate plan should accelerate the overall completion of the treatment upgrading (so that both plants are completed well before 2030), re-prioritize the upgrades to secondary treatment and address the associated environmental, economic, technological and integrated resource management issues and priorities. From the City's perspective, the integrated resources management framework provides significant opportunities for engagement in initiatives which are aligned with Vancouver's sustainability agenda.

Vancouver's municipal commitments in the Plan will require an increase in Vancouver's sewer utility budget of about $150,000/year (ongoing) and an additional lump sum cost of about $500,000 over the life of the plan. This excludes the cost of our sewer separation program, which is an existing commitment under City policy and the current LWMP. These are modest changes compared to the overall sewer utility budget of approximately $73 million per year.

The overall financial impact of the LWMP on Vancouver's homeowners is shown in Appendix A. The graphs show three possible outcomes depending on cost sharing from senior governments. Most optimistically, if the treatment plant upgrades are two thirds co-funded by senior governments (Figure A3), the estimated average sewer service costs to homeowners will increase by about one third. The pace of these increases depend on the relative timing of the plant upgrades, as shown. If no co-funding occurs, the estimated average sewer costs to homeowners will eventually double from an average of $300 to $600 annually (Figure A1).

This report provides Vancouver's comments on the draft updated Liquid Waste Management Plan dated March 2009. Most of the LWMP's actions are consistent with Vancouver's plans and priorities, with the exception that alternative schedules to upgrade the Vancouver and North Shore sewage treatment plants should be developed.

With these comments, staff support Metro's efforts to finalize the updated Liquid Waste Management Plan.

BACKGROUND

Vancouver's sewer system is operated in partnership with Metro Vancouver. The City provides the individual connections to buildings and collects the sewage within neighbourhoods and Metro Vancouver provides the major trunk sewers and the treatment. Metro Vancouver levies fees to the City of Vancouver to cover its portion of capital and operating costs. The City of Vancouver recovers the costs of these fees and its capital and operating programs by levying a combination of fees and taxes to individual property owners. The Metro Vancouver Levy represents approximately half these costs.

The history of Vancouver's sewer system influences the operation and planning of the system today. In the late 1800s when the first sewers were built in Vancouver, marine waters were thought to have ample assimilative capacity for liquid wastes. The main purpose of building sewers was to carry sewage and rainwater run-off from the city to surrounding water bodies. It was the state of the art practice at that time to build a combined system in which both sewage and rainwater were collected in a single pipe and conveyed to the nearest natural water body. By 1910, approximately 150 miles (241 km) of sewers were constructed.

In 1911, the Committee of the Greater Vancouver Joint Sewerage and Drainage System was established to oversee the development of an overall plan for adequate sewerage and drainage on the Burrard Peninsula. The Committee was comprised of representatives from the City of Vancouver, and the municipalities of South Vancouver, Point Grey, and Burnaby. The Committee retained R.S. Lea, a consulting engineer, to prepare a plan for a comprehensive sewerage and drainage system for the Greater Vancouver area. Lea reported on the state of the science with references to New York and England and pointed out that the despite the lack of recognized standards, sewage discharges to the environment needed to be managed, especially in areas of high public contact such as beaches or areas where the natural ability to digest the pollutants was compromised. The Lea report of 1913 directly led to the adoption of the "Act Providing a Joint Sewerage and Drainage System for the City of Vancouver and adjoining District". Administration of the Act became the responsibility of the Vancouver and District Joint Sewerage and Drainage Board who used the Lea report as the basis for the design and construction of sewerage and drainage facilities in the city from 1913 until 1953. During this time, major trunk sewers were built to redirect combined flows away from False Creek and English Bay beach areas.

By the late 1940s Vancouver had grown beyond the area considered in the Lea Report and the Vancouver and District Joint Sewerage and Drainage Board now encompassed Vancouver, Burnaby, and New Westminster. In 1949 the Board engaged a team of engineers under Commissioner Rawn to create a new comprehensive plan that considered the areas surrounding these municipalities even though they were outside the boundaries of the area for which the Board was responsible. The 1953 report, known as the Rawn Report, recommended that primary sewage treatment plants be built to treat all dry weather flows and that combined sewer overflows (CSOs) to surrounding water bodies be permitted during wet weather periods.

To implement the Rawn Report, the Vancouver and District Joint Sewage and Drainage Board was replaced by the Greater Vancouver Sewerage and Drainage District (GVS&DD) in 1956. System upgrades took until the early 1980's to achieve Rawn's recommendation that all dry weather sanitary sewage be treated at the treatment plants.

In 1967 the BC Provincial Government passed the Pollution Control Act. This Act provided the provincial government with control over the standards for the sewage systems and sewage disposal. The adoption of the Act also brought environmental concerns to the forefront within the industry and in the public eye. The Rawn report was updated in 1967, however, it still allowed for CSOs.

In the early 1970s, Council adopted the policy of separating sanitary and storm sewers to begin the process of eliminating CSOs. Vancouver's 1971-1975 and 1976 – 1980 Sewer Capital Plans contained an important pollution control program. This program was the result of both the Pollution Control Act and the Rawn Report Update. The plan focussed on capital

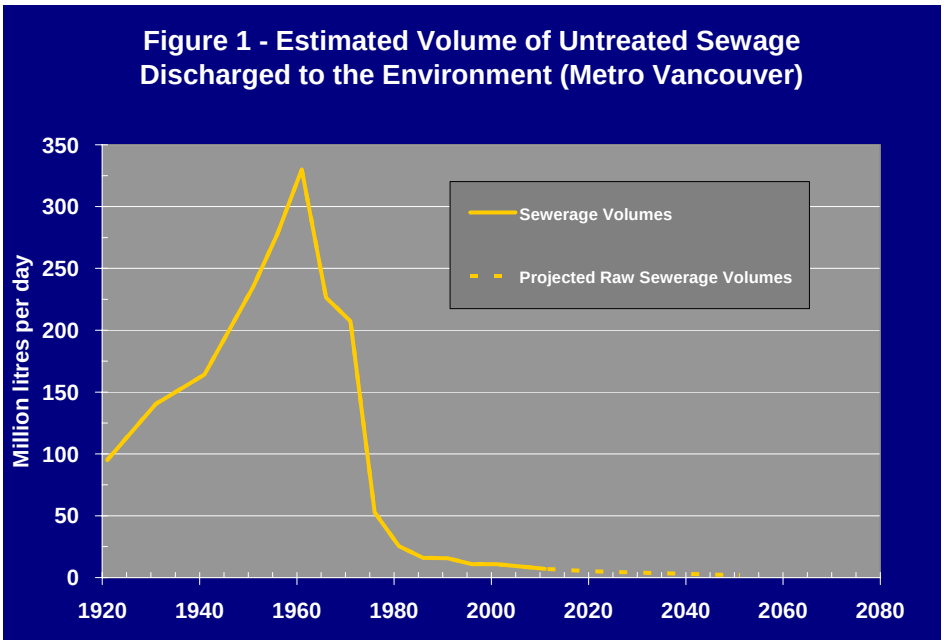
construction that would reduce pollution levels in English Bay, False Creek, and the Fraser River. Pollution levels in these waters had been high enough to require beach closures during recreational seasons in previous years.

During the 1980s the City of Vancouver collaborated with the Greater Vancouver Regional District (GVRD) and other member municipalities to develop the Liquid Waste Management Plan, which in accordance with the provincial Environmental Management Act would regulate liquid waste discharges in the region. Stage 1 of the plan was received by the Province in 1989.The Province approved the Plan subject to a number of measures including the provision of secondary treatment at two of the regional treatment plants: Annacis and Lulu Island, as these plants discharged into the more sensitive Fraser River.

Stage 2 of the Liquid Waste Management Plan (LWMP) received approval from the Provincial Government in 2000. This phase of the plan outlined policy statements and the commitments that the GVRD and member municipalities made toward maintaining sewer infrastructure and reducing combined sewage overflows (CSOs). Vancouver's commitment remained unchanged from its previous commitment to separate 1% of the system each year until it is totally separated.

The third and final phase of the LWMP (Stage 3) established the goal of eliminating combined sewage overflows by 2050 and provided implementation schedules for the GVRD and its member municipalities. The draft plan was submitted to the Province in 2001, which received approval in April 2002. Some additional requirements to the final draft LWMP were also mandated including upgrading the Iona and Lions Gate sewage treatment plants by 2020 and 2030 respectively.

Vancouver and the region have come a long way in the management of liquid wastes. Figure 1 shows the history of untreated sewage discharges to our surrounding water bodies. Prior to the early 1960s, before the construction of the treatment plants, all sewage flowed into local water bodies untreated. In the 1960s and early 1970s, the Metro treatment plants were built which then treated about 80% of the region's sewage. This was followed by additional trunk construction and sewer separation and now approximately 98% of the region's annual sanitary sewage volume is treated. Approximately 2% of the total annual sanitary sewage flow discharges without treatment through CSOs during heavy rainstorms.



The 2002 LWMP identified strategies and actions for both Metro Vancouver and its member municipalities to manage and provide liquid waste services that protect public health and maintain a healthy environment. These services include wastewater collection and treatment, source control programs, rainwater (stormwater) management, and environmental monitoring programs.

The key liquid waste initiatives in the approved 2002 LWMP for Vancouver include:

- separating 1%(about 16 km) of the system each year with the target of eliminating all combined sewer overflows (CSOs) by 2050;
- undertaking accelerated sewer system projects to help reduce CSOs in the short term;
- developing Integrated Stormwater Management Plans for all drainage basins by 2014;
- continuing the City's source control initiatives to minimize liquid waste discharges from commercial and industrial sources;
- participating in Metro's Environmental Monitoring Committee and Stormwater Interagency Liaison Group; and
- upgrading the Iona Sewage Treatment Plant (STP) to secondary treatment by 2020.

Vancouver has made good progress on the LWMP initiatives since it was developed. Extensive sewer separation work continued throughout the City. Full separation was achieved in the downtown West End area which eliminated all sanitary overflows at the Denman Street outfall into Coal Harbour. Metro Vancouver built the "Trout Lake Sanitary Trunk Sewer" which completed the separation of Still Creek and Burnaby's Metrotown area, significantly reducing sanitary overflows at Clark Drive into Vancouver Harbour. Vancouver and Metro Vancouver are jointly working on the "Greening of the English Bay Interceptor" project (removing sanitary sewer inflows into the English Bay Trunk Sewer) which will in turn significantly reduce sanitary discharges through several CSO outfalls.

The Integrated Stormwater Management Plan (ISMP) for the Still Creek watershed was also completed, which was a joint project with Vancouver, Burnaby and Metro Vancouver. As a result of this project, we have already undertaken major upgrading of the creek along its lower reaches in Vancouver. Work is now underway on developing ISMPs for the rest of the City. In addition, improvements have been made to our source control program with the implementation of new discharge regulations for large industrial and commercial operations (jointly undertaken with Metro staff). These regulations have significantly reduced BOD (biological oxygen demand), TSS (total suspended solids) and flows to the sewer system and the Iona treatment plant, which helps the plant operate within the Provincial permit levels.

DISCUSSION

The Province requires that the LWMP be updated every five years. The purpose of updating the Plan is to review the previous assumptions and timelines and to realign the Plan with any new municipal, regional and senior government policies.

In 2008, Metro Vancouver initiated the first update to the 2002 LWMP. The proposed updated LWMP (Attachment #1) considers municipal and public input received in the 2008 consultation process on strategic content and direction for the LWMP. The new Plan was developed in collaboration with municipalities via the Regional Engineers Advisory Committee – Liquid Waste Subcommittee, the sewerage area technical committees, and other regional committees. It has been endorsed by the Regional Engineers Advisory Committee and the Regional Administrative Advisory Committee. It has also received approval by the Metro Vancouver Board on March 27, 2009 for final public consultation.

Metro Vancouver has indicated that the review process for the draft LWMP requires all comments and feedback by the beginning of June 2009. Following receipt of input from member municipalities, Metro staff will finalize the Plan and present it to their Board in July 2009. Upon approval by the Board, the updated LWMP will be submitted to the Minister of Environment for their approval and to each municipality for approval relative to their municipal commitments.

Since approval of the existing LWMP in 2002, new initiatives and directions have been researched and developed including the BC Climate Action Plan, the BC Energy Plan, Living Water Smart - A Guide to Green Choices, the Ministry of Community Development's objectives on Integrated Resource Management, and the Canadian Council of Ministers for the Environment (CCME) Canada-wide Guidelines for the Management of Municipal Wastewater Effluent.

Common themes in these new initiatives and directions are: looking more holistically at our impact on the local and global environments; further protecting and enhancing the environment; conserving natural resources; and turning wastes into resources.

<u>Integrated Resource Management</u>

The most significant philosophical change to the LWMP is the consideration of Integrated Resource Management (IRM). The Ministry of Community Services recently commissioned a report titled "Resources from Wastes" which advocates treating liquid waste as a resource. The focus of IRM is to look at ways to help preserve non-renewable resources, stretch the capacity of existing infrastructure, save energy, generate value, protect the environment and

reduce greenhouse gas emissions. IRM seeks to capture revenue opportunities associated with water, energy, and materials from both the liquid and solid waste streams.

Updated LWMP Initiatives

The updated LWMP builds on the 2002 LWMP by adding the following key initiatives:

- Minimizing greenhouse gas emissions from liquid waste management;
- Developing and implementing an odour and air emission management strategy;
- Implementing feasible opportunities that recover resources and or add resiliency;
- Coordinating liquid waste infrastructure and services with the Regional Growth Strategy and its objectives;
- Minimizing stormwater impacts by managing rainwater at the site-level; and
- Identifying innovations that may improve the efficiency and effectiveness of wastewater and stormwater management and provide secondary benefits to the environment and society.

The two aspects of the Plan that continue to be of primary importance to Vancouver are: the municipal commitment to separate our combined sewer system at an average rate of 1% annually to eliminate CSOs by 2050; and the timing options to upgrade the Iona and the North Shore treatment plants. These are discussed in more detail below.

Municipal Commitments

Reinvestment in existing sewerage infrastructure is crucial to providing sustainable wastewater services. Vancouver has provided substantial funding for many years to ensure that the integrity of our existing sewer infrastructure is maintained, and to avoid deferring high costs to future generations. In the 2009 – 2011 Capital Plan, approximately $25 million/year is provided for sewer main reconstruction and separation. To eliminate CSOs (the last 2%), approximately 650km of combined sewers need to be separated over the next 40 years. Generally our sewers are designed and constructed to last about 100 years. On that basis, replacement of our old combined sewers with new separated storm and sanitary sewers at 1% each year is consistent with Engineering's goal of replacing sewer mains near the end of their design life, while also achieving our commitment to eliminate CSO's by 2050. This program also continuously reduces sanitary sewage overflows through CSO outfalls as we approach 2050.

Other key municipal commitments in the plan include:

- Continuing with Integrated Stormwater Management planning for the remaining drainage basins in Vancouver, including the development of improved procedures and processes for their implementation, and increased management of rainwater at the site-level;
- Improving regulations, incentives, enforcement and outreach programs to manage contaminants (such as pharmaceuticals, personal-care-products, pesticides, and commercial/industrial discharges) through source control programs;
- Exploring additional opportunities to recover energy from sewer systems, such as Vancouver's Neighbourhood Energy Utility in the South East False Creek Development;
- Developing improved wet weather infiltration and inflow management plans to minimize rainwater entering sanitary sewers;

- Continuing to look for operational improvements to the sewer system to reduce CSOs in the short term;

Metro Vancouver's Sewage Treatment Plant Upgrades

The most significant environmental and financial issue contained in the Plan is the timing and upgrading of the Iona and North Shore sewage treatment plants. The estimated costs for these upgrades are $1 billion and $400 million respectively. This issue was recently identified as a "Quick Start Recommendation" by Vancouver's Greenest City Action Team (GCAT). Their recommendation can be summarized as follows: Vancouver should urge senior governments to accelerate the overall schedule to upgrade the Iona and North Shore treatment plants. This upgrade to secondary treatment should incorporate integrated resource management (IRM).

In the 2002 LWMP, the timelines for secondary treatment upgrades were set by the Minister of Environment as a condition of approving the document. The current specified completion dates are 2020 for Iona and 2030 for the North Shore, subject to ongoing environmental monitoring. Metro Vancouver's environmental monitoring of the Iona and North Shore wastewater treatment plant effluent discharges has not identified any triggers to upgrade these facilities sooner; however, GCAT and many members of the public would like to see the upgrades accelerated.

Metro Vancouver's draft updated LWMP contains three potential timelines for upgrading the waste water treatment plants (WWTP) for the Vancouver (Iona) and the North Shore sewerage areas:

- Vancouver by 2020 and North Shore by 2030 (unchanged)
- Vancouver by 2030 and North Shore by 2020 (order reversed)
- Vancouver by 2020 and North Shore by 2020 (accelerated)

Noting the significant cost and importance of this work, the Plan recommends that provincial and federal cost sharing be sought by Metro Vancouver and its member municipalities.

With regard to accelerating the existing schedule, only the third timeline would accelerate it by completing both upgrades by 2020. This would be very challenging both financially and logistically, as discussed below. Alternative timelines should be considered that could accelerate the overall schedule, while addressing the environmental, economic, technological and integrated resource management priorities and issues.

City staff believe that the best approach is to upgrade the Iona and North Shore treatment plants sequentially both on an accelerated timeframe. Lessons learned as the first plant is upgraded can be applied during the second upgrade, likely resulting in better application of technology and greater advancement of integrated resource management initiatives. As well, construction economics should improve with lower pricing for a staggered delivery of these two major projects, and the sequential expenditure of the estimated $1.4 billion costs would have less impact on the region's taxpayers.

With respect to prioritizing the upgrades, the Canadian Council of Ministers of the Environment (CCME) recently developed guidelines for municipal waste discharges, in order to set minimum risk-based treatment standards and timelines to upgrade facilities across Canada. The guidelines advocate undertaking environmental and risk assessments to

determine the priorities for when STPs are to be upgraded. City staff suggest that Metro Vancouver and senior government regulators use this assessment strategy to determine the scheduling priority. Preliminary environmental monitoring and risk assessments indicate that the order of the plant construction should be reversed, with the North Shore built first.

Design of the North Shore project could proceed immediately with completion likely well before 2020. Conversely, the upgrade of the Iona treatment plant presents a number of challenging issues that will take several years to resolve and may delay completion beyond 2020. These include land tenure issues, site suitability and building constraints, sea level concerns, disposal of existing stockpiled biosolids, and unique design parameters given that this plant will need to handle combined sewer flows for many decades (eg. sizing of the plant and technology required to accommodate changing characteristics of the influent).

Notwithstanding that logistical issues and the preliminary risk assessments suggest that the North Shore plant is more amenable to immediate acceleration, a major effort should be placed on developing a plan for the upgrading of the Iona Plant and dealing with its many challenging issues. An appropriate plan should accelerate the overall completion of the treatment upgrading (so that both plants are completed well before 2030), re-prioritize the upgrades to secondary treatment and address the associated environmental, economic, technological and integrated resource management issues and priorities. From the City's perspective, the integrated resources management framework provides significant opportunities for engagement in initiatives which are aligned with Vancouver's sustainability agenda.

Public Consultation:

Public consultation began in April 2008 with meetings related to the "Strategy" for updating the liquid waste and solid waste management plans. Nine meetings were held throughout the region which were well attended. In June 2008, a "Reference Panel" was formed made up of leading industrial and academic experts. They have been involved in the process and have also provided input into the LWMP. During April this year, five public consultation meetings were held throughout the region. Staff and Councillor Cadman (Vancouver's representative on the Waste Management Committee) attended Vancouver's April 15th evening meeting where the report was well received.

The following concerns and suggestions resulted from this consultation process:

- accelerate the timeline to upgrade Vancouver and North Shore sewage treatment;
- pursue senior governments for funding assistance for these upgrades;
- continued support and possibly increase the 1% sewer separation program;
- reclaim wastewater and captured rainwater for purposes such as irrigation;
- increase energy recovery from sewers; and
- eliminate point sources through initiatives such as pharmaceutical recycling.

FINANCIAL IMPLICATIONS

The commitments contained in the updated LWMP will have significant financial impact on Vancouver and its taxpayers. The greatest impact will be Metro Vancouver's estimated $1.4 billion cost of upgrading the two sewerage treatment facilities. In addition, there will be about a $35 million one time additional Metro cost over the 10 years of the plan to complete

the various other actions beyond the plant upgrades. While the cost estimates are very preliminary, it is expected that Metro's levy will increase approximately $2.5 million/year as a result of the LWMP (based on the current timelines for secondary treatment).

Vancouver's municipal commitments in the Plan will require an increase in Vancouver's sewer utility budget of about $150,000/year (ongoing) and an additional lump sum cost of about $500,000 over the life of the plan. This excludes the cost of our sewer separation program, which is an existing commitment under City policy and the current LWMP. These are modest changes compared to the overall sewer utility budget of approximately $73 million per year.

The overall financial impact of the LWMP on Vancouver's homeowners is shown in Appendix A. The graphs show three possible outcomes depending on cost sharing from senior governments. Most optimistically, if the treatment plant upgrades are two thirds co-funded by senior governments (Figure A3), the estimated average sewer service costs to homeowners will increase by about one third. The pace of the increase depends on the relative timing of the plant upgrades, as shown. If no co-funding occurs, the estimated average sewer costs to homeowners will eventually double from an average of $300 to $600 annually (Figure A1). These estimates do not incorporate significant cost recovery from IRM initiatives, as these have not yet been identified.

CONCLUSION

New investment and ongoing reinvestment in aging infrastructure are essential to protect human health, the environment, and to maintain service reliability. The 2002 LWMP and the updated Plan contain significant financial commitments, particularly for ongoing municipal sewerage infrastructure renewal and maintenance, and for upgrading the Vancouver and North Shore Sewerage Area treatment plants to secondary wastewater treatment.

This report provides Vancouver's comments on the draft updated Liquid Waste Management Plan dated March 2009. Most of the LWMP's actions are consistent with Vancouver's plans and priorities, with the exception that alternative schedules to upgrade the Vancouver and North Shore sewage treatment plants should be developed, and these upgrades should be completed sequentially but on an accelerated schedule. Furthermore, senior governments should develop an economic plan to fund the large costs of these upgrades while meeting environmental, technological and integrated resource management priorities.

With these comments, staff support Metro's efforts to finalize the updated Liquid Waste Management Plan.

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Figure A1 - LWMP Effect on Average Household Sewer Cost in Vancouver
(No Senior Government Cost Sharing)

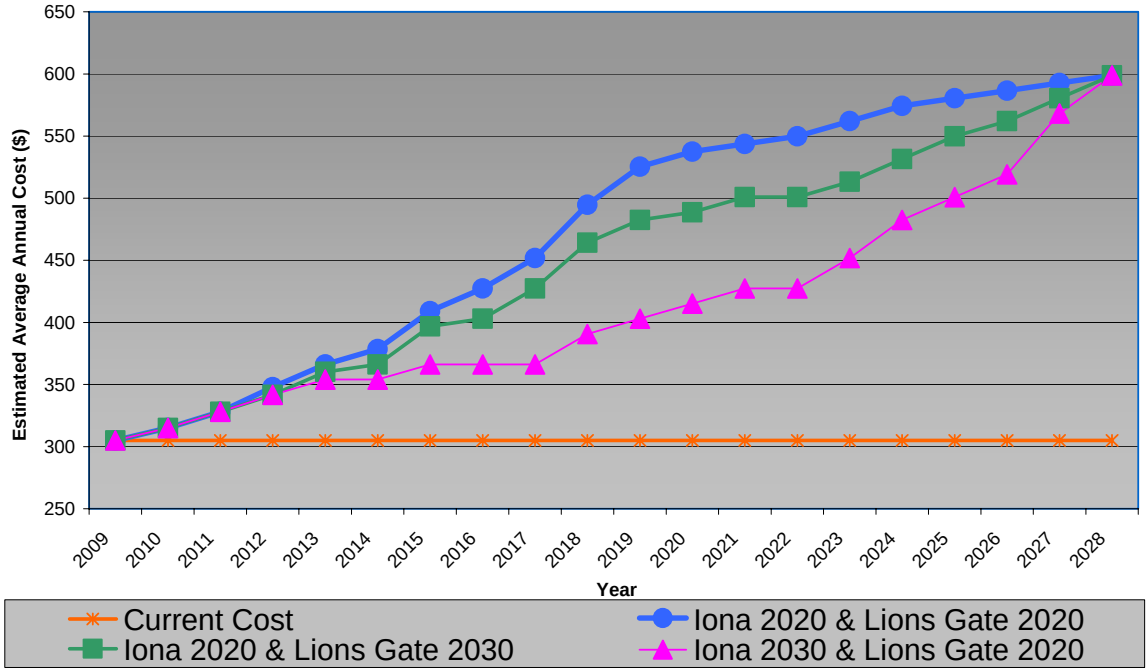

Figure A2 - LWMP Effect on Average Household Cost in Vancouver
(1/3 Senior Government Cost Sharing)

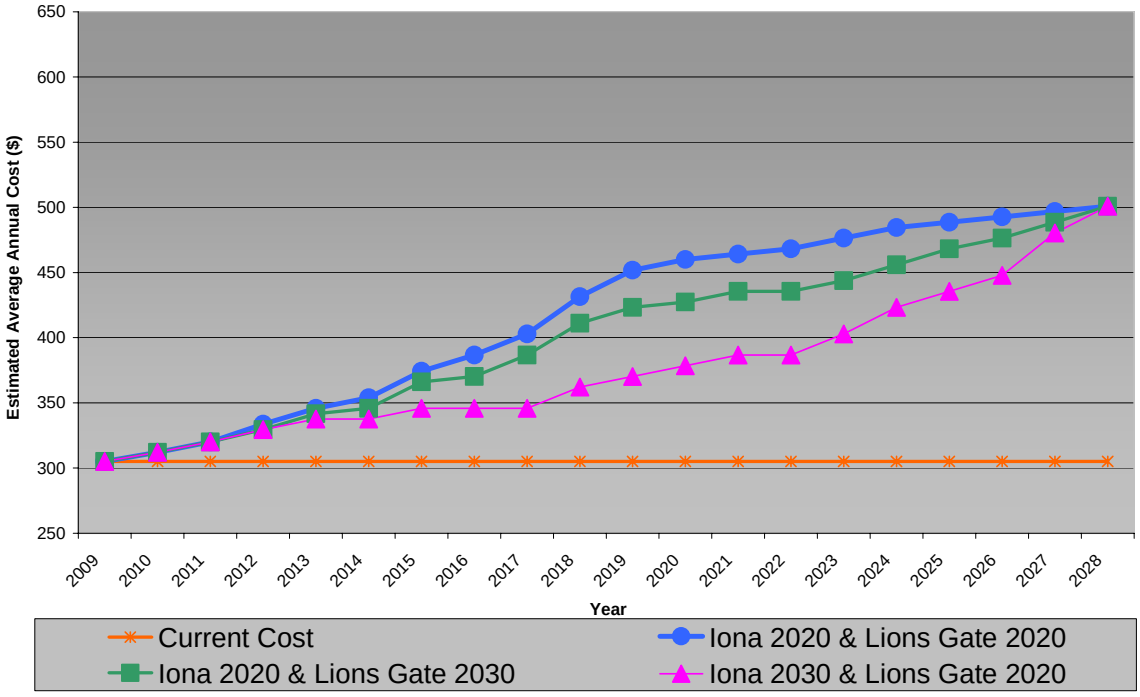

Figure A3 - LWMP Effect on Average Household Cost in Vancouver
(2/3 Senior Government Cost Sharing)