

**Minutes – Standing Policy Committee on Finance – April 7, 2016**

**REPORTS**

**Item No. 2                    South End Sewage Treatment Plant (SEWPCC) Upgrading and  
Expansion Financial Status Report No. 9 for the Period from  
November 1, 2015 to January 31, 2016**

**STANDING COMMITTEE DECISION:**

The Standing Policy Committee on Finance concurred in the recommendation number one of the Winnipeg Public Service and received the report as information.

Further, the Standing Policy Committee on Finance requested that the Public Service provide an update at each upcoming meeting on the status of federal government applications for the water treatment program.

**Minutes – Standing Policy Committee on Finance – April 7, 2016**

DECISION MAKING HISTORY:

Moved by Councillor Gillingham,

That the recommendation of the Winnipeg Public Service be concurred in.

That the Public Service provide an update at each upcoming meeting on the status of federal government applications for the water treatment program.

Carried

# ADMINISTRATIVE REPORT

**Title:** SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION FINANCIAL STATUS REPORT NO. 9 FOR THE PERIOD FROM NOVEMBER 1, 2015 TO JANUARY 31, 2016

**Critical Path:** The Standing Policy Committee on Finance

## AUTHORIZATION

Author	Department Head	CFO	CAO
G.K. Patton, P. Eng. Manager of Engineering Services	M. L. Geer, CPA, CA Acting Director, Water and Waste Department	M. Ruta	D. McNeil

## RECOMMENDATIONS

That this report be received as information.

## REASON FOR THE REPORT

Administrative Directive No. FM-004 requires quarterly reporting to the Standing Committee on Finance.

## EXECUTIVE SUMMARY

This report identifies the financial status and significant events for the SEWPCC Upgrading and Expansion for the period November 1, 2015 to January 31, 2016. With a project this large and complex, and at this stage, there are significant risks with respect to cost and schedule. In addition, the project is proceeding on a fast track basis with construction contracts proceeding during design. The project is currently on schedule and within budget.

## IMPLICATIONS OF THE RECOMMENDATIONS

There are no implications.

## HISTORY / DISCUSSION

### DISCUSSION:

#### 1. THE PROJECT

The goal of this project is to expand the capacity of the SEWPCC for expected 2031 flows and upgrade the process to meet new effluent limits for nitrogen and phosphorous. The project is expected to cost \$335.6 million (Class 3 Estimate) and be complete in 2019 with an important milestone to meet new effluent limits by the end of July 2018. The project design is based on the lowest life cycle cost (Net Present Value). In addition, the plant must operate continuously during the work and meet current effluent limits.

On November 5, 2015 the City received a letter from the Province granting a Licence compliance extension to December 31, 2016, noting that consideration of further extensions will be subject to the City providing quarterly status reports and consultation with the Clean Environment Commission (CEC). The project team will comply with these requirements by submitting the quarterly Financial Status Reports to the Regulator.

The project budget includes the following Project Identifications:

Project ID	Project Year	Adopted Budget
20320002EL <sup>1</sup>	2002	\$ 222,752
2032000207	2007	\$ 10,695,000
203210002B	2012	\$324,682,248
Total Project Budget		\$335,600,000

<sup>1</sup> Does not appear in the Capital Expenditures Monthly Report as the funds have been expended and it is designated as a closed Project ID.

The Executive Project Sponsor is the Director of Water and Waste. The Project Manager is Neil Harrington, P. Eng.

## 2. MAJOR CAPITAL PROJECT STEERING COMMITTEE

Administrative policy for projects with capital cost exceeding \$20 million requires formation of a Major Capital Project Steering Committee. The Committee has been formed and its members are:

- Doug McNeil, Chief Administrative Officer
- Michael Ruta, Chief Financial Officer
- Moira Geer, Acting Director of Water and Waste
- Lucy Szkwarek, Acting Manager of Finance and Administration, Water and Waste
- Jackie Veilleux, Project Director Winnipeg Sewage Treatment Program, Water and Waste

The Committee has reviewed this report and recommended that the report be sent to the Standing Policy Committee on Finance.

## 3. RISKS AND RISK MITIGATION STRATEGIES

With a project this large and complex, and at this stage, there are significant risks with respect to cost and schedule. In addition, the project is proceeding on a fast-track basis with construction contracts proceeding during design. In a fast-track approach, the final bid for construction is not known until the bid amount for final contract is known. The current project budget of \$335.6 million is based on a Class 3 cost estimate which has an AACE expected accuracy range of -20% to +30%, or \$269.5 million to \$436.3 million.

In consultation with our engineering advisors, we have had to make assumptions about the pace of engineering design and the pace of construction. Any delays would typically result in an increase in cost.

An ongoing risk management strategy has been implemented for the project encompassing a proactive process of identifying and assessing project risk, defining appropriate risk handling strategies and plans, and monitoring those actions to completion.

Formal risk and opportunity analyses of the project are scheduled to be performed by the Winnipeg Sewage Treatment Program (WSTP), the design consultant and key City stakeholders at the following project milestones:

- End of Project Definition design stage – this analysis has been completed
- End of Preliminary Design phase – this analysis has been completed
- At 60% and 90% completion of Detailed Design – analysis has been completed for Contract 1, Contract 2 and Contract 3
- Prior to the start of construction and quarterly during construction – Fourth construction analysis has been completed
- Prior to the start of and at the end of commissioning

A project risk register is being kept throughout the project and will be updated by the formal analysis. The risk register contains over a hundred specific cost and schedule risks associated with delivery, staffing, quality of work, production, fire and accidents, and unknown events.

Global project risks of significance include:

<b>Risk Matrix<sup>1</sup></b>	
<b>Risk Statement and Explanation</b>	<b>Mitigation</b>
Construction Schedule is aggressive and actual construction takes significantly longer than planned.	Ongoing reviews of construction schedule as the design progresses, continuous review of construction contract packages, 3rd party review of construction schedule
Acceptable design is not completed on schedule delaying tendering and schedule.	Smaller packages of design reviews, advance review of specification, monitoring design schedule progress, ongoing review of 3D model
Contract 4 bid prices exceeds budget resulting in inability to award and schedule delay.	Ongoing discussion with consultant on any significant cost impacts, obtain an updated cost estimate of Contract 4 as early as possible
Rushed design to meet an aggressive schedule resulting in a lower design quality and a higher cost of contract change orders.	Conduct technical design reviews at 30%, 60% and 90% design progression including operation review and input, training of operations personnel in design review techniques, development and utilization of WSTP design standards

Unknown existing conditions are encountered during construction causing schedule delays and additional costs.	Contracting strategy with multiple construction contracts to minimize impact, early assessment of site conditions to minimize unknowns
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<sup>1</sup>Risk Matrix is arranged vertically from higher to lower assessed risk

#### 4. CHANGES FROM LAST REPORT

##### RFP No. 682-2012 (Professional Consulting Services)

- Detailed design is ongoing.
  - 60% design submittal for the Chemical/Electrical Buildings has been issued and is under review.
  - 90% design for High Rate Clarification has been issued and is under review.
  - 90 % design Process and Instrumentation drawings (P&ID's) for the Ultraviolet Disinfection and Yard areas have been issued and are under review.
  - The electrical substation preliminary design has been issued and is under review.
  - Bid Opportunity documents 899-2015 for Contract 3 – Bioreactors, Blower Building and Secondary Clarifiers Structural Concrete & Miscellaneous Work have been completed and posted on the Materials Management website with a closing date of March 11, 2016. The associated Class 1 cost estimate is being finalized by the Consultant.
- Construction Management/Contract Administration
  - As of January 18, 2016 the Consultant is providing site Construction Manager/Contract Administrator services under the Optional Contract Administration Services of the assignment. These services are being provided on an interim basis, as replacement to the Program Team, until a longer term approach is finalized.
- On December 1, 2014, the National Energy Code for Buildings became effective in Manitoba. The new code impacts the design of building HVAC and electrical systems. The Authority Having Jurisdiction (AHJ) advised on January 26, 2016 that the SEWPCC project is not mandated to meet the new requirements, noting the new requirements may have been onerous given the nature of the construction. The Consultant has been advised accordingly and their submitted Project Change Notice (PCN) in the amount of \$290,777 for associated design changes is, therefore, not being considered. It is of note that a number of energy saving requirements are being implemented in the project design.
- Consultant PCNs for additional work related to Document Numbering, Standby Load Sequencing and recent Canadian Electrical Code changes remain under review by the Program Team. Mitigating strategies are being developed in conjunction with the Consultant.
- The Consultant has issued a PCN identifying the details of changed conditions that have affected the scope and schedule of the original assignment. The PCN is under review by the Program Team.
- A Consultant proposal to provide Construction Management/Contract Administration services for the remainder of the project has been requested by the Program Team. It is anticipated to be received in February 2016.

##### Materials Management Reference No. 57-2016 (Professional Consulting Services)

- An award to Associated Engineering (Sask.) Ltd. has been approved, at an estimated cost of \$95,053.00, GST and MRST extra, to provide Professional Consulting Services

for performing an independent review and alternative schedule analysis for the SEWPCC Upgrade.

- The review and alternatives analysis is a requirement of Manitoba Conservation and Water Stewardship to consider a SEWPCC licence extension beyond December 31, 2016.
- Initial meeting with CEC was held February 3, 2016 to present a high level overview of the SEWPCC upgrade project and schedule review and analysis process.

**RFP No. 871-2013 (Supply and Delivery of Free-Moving Media)**

- Associated design work is progressing.
- Contractor costing (credit) has been received in response to the issued Contemplated Change Order 1 for the revised IFAS design. The Contractor has been asked to provide additional information.

**RFP No. 873-2013 (Supply and Delivery of High Rate Clarification Equipment)**

- Contractor manufacturing is in progress.
- First shipment containing High Rate Clarifier bridge structures is scheduled for delivery in March 2016.

**RFP No. 1089-2015 (Single Source Negotiation for Manitoba Hydro Works Associated with the South End Sewage Treatment Plant (SEWPCC) Nutrient Removal/Expansion Project)**

- An Administrative Report recommending a single source negotiation with Manitoba Hydro for the construction of Manitoba Hydro 66kV services was approved on February 3, 2016.

**Bid Opportunity No. 333-2014 (Contract C1 – Site Preparation Works)**

- The contractor has requested contract substantial completion be granted. The request is under review by the contract administrator.
- Contract remedial work is currently being performed on the site by the contractor.
- Contractor claims for additional time and costs related to unexpected soil conditions and broken/rejected piles are under review by Legal Services.

**Bid Opportunity No. 601-2015 (Contract C2 – High Rate Clarifier and Grit Removal Concrete and Miscellaneous Works)**

- The contract work is progressing.
- Effluent leakage from the existing outfall structure has recently been observed in another location adjacent to the UV building. An internal inspection by Dominion Divers is scheduled for February 17, 2016. The contractor has been directed to provide the needed labour and equipment to contain the leaking effluent from affecting construction activities. The contained effluent is currently being pumped back into the outfall at a location upstream of the SEWPCC regulatory effluent sampling point without effect to the sampling results.

**5. CURRENT ISSUES/RISKS REQUIRING FURTHER ATTENTION**

**Cost Risk**

There are sizable costs associated with the Consultant's PCN for changed conditions considered by the Consultant to have affected the scope and schedule of their services. The

Program Team is undertaking a detailed review of the submission in conjunction with the Consultant.

Contractor's claims (Bid Opportunity 333-2014) for additional time and costs related to unexpected soil conditions and broken/rejected piles are significant. Options for resolution are being reviewed with Legal Services.

## 6. SCHEDULE

Current key schedule milestones are:

Milestone Description	Timeline	
	Previous Report	This Report
Complete Project Definition Report	May 2014	May 2014 <sup>1</sup>
Complete Preliminary Design Report	November 2014	November 2014
Start Detailed Design	March 2014	March 2014
Start Construction of Site Preparation and Piling (Contract 1)	October 2014	October 2014
Start Construction on High Rate Clarifier and Grit Removal Structural Concrete and Misc. Works (Contract 2)	November 2015	November 2015
Start Construction Major Concrete Works (Contract 3)	May 2016	May 2016
Start Construction of Remaining Works (Contract 4)	December 2016	December 2016
Complete Commissioning interim BNR configuration	July 2018	July 2018
Complete Commissioning of all project components	July 2019	July 2019

<sup>1</sup> Substantial completion

Associated Engineering (Sask.) Ltd. has been engaged to perform an independent review and alternative schedule analysis for the SEWPCC Upgrading and Expansion Project. The Alternative Analysis Report is required to be submitted to Manitoba Conservation and Water Stewardship by September 30, 2016.

## 7. FINANCIAL ANALYSIS

The status of current Requests for Proposal and Bid Opportunities are as follows:

Request for Proposal or Bid Opportunity	Description	Current Status	Contract Value (GST and MRST extra as applicable)	Total Approved Over-Expenditures
682-2012	Professional Consulting Services for SEWPCC Upgrading/Expansion Project	Ongoing, CH2M Hill Canada Ltd.	\$25,350,419	\$2,980,179.13
57-2016	Professional Consulting Services for an independent review and alternative schedule analysis	Ongoing, Associated Engineering (Sask.) Ltd.	\$95,053	



<b>Request for Proposal or Bid Opportunity</b>	<b>Description</b>	<b>Current Status</b>	<b>Contract Value (GST and MRST extra as applicable)</b>	<b>Total Approved Over-Expenditures</b>
871-2013	Procurement of Free-Floating Media and Associated Appurtenances	Ongoing, Veolia Water Technologies Canada Inc.	\$7,750,588	
873-2013	Procurement of High Rate Clarification Equipment	Ongoing, Veolia Water Technologies Canada Inc.	\$2,052,500	
333-2014	Contract 1- Site Preparation Works	Ongoing, PCL Constructors Ltd.	\$22,646,510	
353-2014	For Construction Cost Consulting Services for SEWPCC Upgrading/Expansion Project	Completed, Hanscomb Ltd.	\$50,700	
572-2014	Provision for the Purchase or Lease of a Trailer for Office Space	Completed, B&B Rentals Inc.	\$184,000	
1067-2014	Manitoba Hydro Load Interconnection Study	Completed, Manitoba Hydro	\$60,000	
343-2015	Relocation of Lox Tank	Completed, Praxair Canada	\$62,715	
498-2015	Asbestos Abatement	Completed, Western Waste Management	\$24,950	
601-2015	Contract 2 - High Rate Clarifier and Grit Removal Concrete and Miscellaneous Works	Ongoing, Graham Construction and Engineering LP	\$9,549,100	
899-2015	Contract 3 - Bioreactors, Blower Building and Secondary Clarifiers Structural Concrete & Miscellaneous Work	Issued for Tender		
	<b>Total</b>		<b>\$67,826,535</b>	<b>\$2,980,179.13</b>

Future major Bid Opportunities anticipated are:

- Contract 4 – For the remaining works including mechanical, electrical and automation

### **Project funding**

The approved capital and current projected budget are as follows:

<b>YEAR</b>	<b>CAPITAL PROGRAM</b>	<b>ACTUAL + PROJECTED CASH FLOWS</b>	<b>CUMULATIVE CAPITAL BUDGET REMAINING</b>

Up to 2016	335,600,000 <sup>1</sup>	90,950,996	244,649,004
2017		84,004,709	160,644,295
2018		90,661,364	69,982,931
2019		69,982,931	0
Total	335,600,000	335,600,000	

<sup>1</sup> Capital budget approved by Council

A summary of the budget to forecast comparison is contained in Appendix 2.

This project will receive \$37.42 million in Canadian Strategic Infrastructure funding and \$22 million in Green Infrastructure funding. The balance of the project cost will be funded using a combination of cash, Environmental Projects reserve and debt funding. Each of these sources are internally funded by rates as forecast in the Council-approved rate report.

### **Overall Sewage Treatment Program Funding**

The Province of Manitoba and the Government of Canada have committed \$287.8 million towards the sewage treatment plant upgrades:

The Province has committed:

- \$25 million from the Canada Strategic Infrastructure Fund program
- \$11 million from the Green Infrastructure Fund program
- \$3.8 million from the 2004 Urban Capital Projects Allocation
- \$195 million in its 2007 Throne Speech

The Government of Canada has committed:

- \$42 million from the Canada Strategic Infrastructure Fund program
- \$11 million from the Green Infrastructure Fund program

Of the total \$287.8 million committed to sewage treatment plant upgrades, the City projects federal and provincial funding of \$59.42 million towards the South End sewage treatment plant upgrade.

Funding for the SEWPCC and the WSTP is outlined in Appendix 1.

## **8. OTHER**

### **Winnipeg Sewage Treatment Program (WSTP)**

Under the WSTP, Veolia is to provide advice to the City of Winnipeg in the design and construction of the SEWPCC project. As indicated in the latest WSTP Annual Report (tabled at City Council on July 15, 2015) Veolia is delivering value to the City of Winnipeg. In this project, the City of Winnipeg is benefitting from:

- Provision of expert advice on SEWPCC upgrade and expansion
- Share in the risks of the capital project delivery

## FINANCIAL IMPACT

**Financial Impact Statement**      **Date:**      **February 23, 2016**

**Project Name:**

**SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION  
FINANCIAL STATUS REPORT NO. 9 FOR THE PERIOD FROM NOVEMBER 1, 2015 TO  
JANUARY 31, 2016**

**COMMENTS:**

As this report is submitted for informational purposes only, there is no financial impact associated with this recommendation.

*"Original signed by L. Szkwarek, CPA, CGA"*  
Lucy Szkwarek, CPA, CGA  
Acting Manager of Finance and Administration

## CONSULTATION

In preparing this report there was consultation with:

N/A

## OURWINNIPEG POLICY ALIGNMENT

The SEWPCC Nutrient Removal/Expansion will reduce the environmental impact of our citizens on the Red River and the downstream lakes and rivers. It is in collaboration with the Regulatory Licence requirements issued by the Province of Manitoba.

OurWinnipeg Reference: Section 02-2 Environment

## SUBMITTED BY

Department: Water and Waste  
Division: Engineering Services  
Prepared by: N. A. Harrington, P.Eng.  
Date: March 8, 2016  
File No.: 020-17-08-25-01, S-926

c: Major Capital Project Steering Committee (email)  
J. Veilleux, P. Eng., Water and Waste Department (email)  
N. A. Harrington, P. Eng., Water and Waste Department (email)

ATTACHMENTS:

Appendix 1 – Funding: South End Sewage Treatment Plant (SEWPCC) and Winnipeg Sewage Treatment Program (WSTP)

Appendix 2 – Costs of SEWPCC Upgrading/Expansion Project

**Funding: South End Sewage Treatment Plant (SEWPCC) and Winnipeg Sewage Treatment Program (WSTP)  
Appendix 1**

1) Funding for the SEWPCC is as follows:

<b>SEWPCC Nutrient Removal/Upgrade (in \$millions)</b>	Total Cost	Funded to Date		Funding Pending		Total Funding		City Share of Costs
		Canada	Manitoba	Canada	Manitoba	Canada	Manitoba	
Environment Act Licence Driven Funding								
CSIF    BNR	147.0	2.11	6.08	29.23		31.34	6.08	109.58
GIF    Wet Weather Flow	60.0			11.00	11.00	11.00	11.00	38.00
Other	128.6							128.60
<b>Estimated Program Costs</b>	<b>335.6</b>	<b>2.11</b>	<b>6.08</b>	<b>40.23</b>	<b>11.00</b>	<b>42.34</b>	<b>17.08</b>	<b>276.18</b>

2) Funding for the Winnipeg Sewage Treatment Programs is as follows:

<b>WSTP All Projects (in \$millions)</b>	Total Cost	Funded to Date		Funding Pending		Total Funding		City Share of Costs
		Canada	Manitoba	Canada	Manitoba	Canada	Manitoba	
WEWPCC Biological Nutrient Removal	33.23	5.07	8.19			5.07	8.19	19.97
NEWPCC Centrate and UV Disinfection	52.08	5.59	14.54			5.59	14.54	31.95
SEWPCC Nutrient Removal/Expansion	335.60	2.11	6.08	40.23	11.00	42.34	17.08	276.18
NEWPCC Nutrient Removal/Upgrade	569.37		26.94		168.06		195.00	374.37
<b>Estimated Program Costs</b>	<b>990.28</b>	<b>12.77</b>	<b>55.75</b>	<b>40.23</b>	<b>179.06</b>	<b>53.00</b>	<b>234.81</b>	<b>702.47</b>

Notes: WEWPCC Biological Nutrient Removal and NEWPCC Centrate and UV Disinfection have been completed. The City's share of the SEWPCC project costs will be funded by the Environmental Projects Reserve (\$60 million) and debt financing (\$216.18 million). The funding distribution is subject to change, depending on the actual timing of spending and prevailing borrowing rates.

**SEWPCC UPGRADING/EXPANSION PROJECT**  
**WATER AND WASTE DEPARTMENT - ENGINEERING DIVISION**  
**APPENDIX 2**  
**As at January 31, 2016**

Components	COSTS				PROJECTED COSTS TO COMPLETE					TOTAL	VARIANCE	
	Approved Budget To Date <sup>1</sup>	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to Date (per G/L) 31-Jan-16	2016	2017	2018	2019	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavourable)	
<b>A PROFESSIONAL SERVICES <sup>2</sup></b>	45,446,539	18,989,400	3,649,011	22,638,411	10,636,063	5,462,636	4,046,280	2,663,149	0	0	45,446,539	0
<b>B CONSTRUCTION <sup>3</sup></b>	257,241,978	21,535,051	6,347,228	27,882,279	29,794,243	78,542,073	86,615,084	34,408,299	0	0	257,241,978	0
<b>C CONTINGENCIES</b>	32,911,483							32,911,483	0		32,911,483	0
<b>TOTALS</b>	<b>335,600,000</b>	<b>40,524,451</b>	<b>9,996,239</b>	<b>50,520,690</b>	<b>40,430,306</b>	<b>84,004,709</b>	<b>90,661,364</b>	<b>69,982,931</b>	<b>0</b>		<b>335,600,000</b>	<b>0</b>

**Percentage Complete** 15%

<sup>1</sup>Total budget of \$335.60 Million for the SEWPCC Upgrading/Expansion Project and Distribution of costs for Components A, B and C was done by the Water and Waste Department. These are estimates and there may be reallocation of budget between components as the project progresses.

<sup>2</sup>Professional Services include Professional Engineering Services, other expert design and cost review, CSIF Funding Audits, Municipal Corporate Utility Model review, overhead and administration charges

<sup>3</sup>Construction includes Commissioning and Construction Management Services