

**Minutes – Standing Policy Committee on Finance – April 13, 2017**

**REPORTS**

**Item No. 6                      South End Sewage Treatment Plant (SEWPCC) Upgrading and  
Expansion – Financial Status Report No. 13 for the Period from  
November 1, 2016 to January 31, 2017**

**STANDING COMMITTEE DECISION:**

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

**Minutes – Standing Policy Committee on Finance – April 13, 2017**

**DECISION MAKING HISTORY:**

Moved by Councillor Gerbasi,

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

Carried

# ADMINISTRATIVE REPORT

**Title:** SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION FINANCIAL STATUS REPORT NO. 13 FOR THE PERIOD FROM NOVEMBER 1, 2016 TO JANUARY 31, 2017

**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

## EXECUTIVE SUMMARY

This report identifies the financial status and significant events for the SEWPCC Upgrading and Expansion Project for the period November 1, 2016 to January 31, 2017. The project schedule remains as last reported. The design consultant's detailed cost estimate for Contract 4 bid opportunity, which is the last contract of this project, exceeds the project allocation for this contract. The approved 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. The detailed design cost estimate for Contract 4 results in the overall project still being within the identified Class 3 estimate range but approximately 11% beyond the approved budget representing \$37.3 million. Detailed reviews of the cost estimate are being undertaken, including by a third party cost consultant engaged by the Winnipeg Sewage Treatment Program (WSTP). Upon the completion of review and finalization of the C4 contract estimated cost the current approved project budget funding may need to be adjusted. Final costs will be known at the end of construction as contingencies are included.

## 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.

## IMPLICATIONS OF THE RECOMMENDATIONS

There are no implications associated with receiving this report as information.

## 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 design is based on the lowest life cycle cost (Net Present Value, or NPV). In addition, the plant must operate continuously during the work and meet current effluent limits to the greatest extent possible.

The project budget includes the following Project Identifications:

Project ID	Project Year	Adopted Budget
20320002EL <sup>1</sup>	2002	\$ 222,752
2032000207 <sup>1</sup>	2007	\$ 10,695,000
203210002B	2012-2015	\$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 Major Capital Project Steering Committee. The Committee has been formed and its members are:

Doug McNeil, Chief Administrative Officer  
Georges Chartier, Chief Asset and Project Management Officer  
Moiria 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 it be sent to the Standing Policy Committee on Finance.

#### 3. RISKS AND RISK MITIGATION STRATEGIES

The project has proceeded on a fast-track basis with construction contracts proceeding completion of the design. The detailed design is substantially complete with tendering of the largest and last construction contract, Contract 4 remaining. The design consultant has provided their cost estimate for Contract 4, which has an identified accuracy range of -10% to +10%. The submitted cost estimate is higher than anticipated and is under review. The current project budget of \$335.6 million was 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.

Detailed reviews of the design consultant's submitted cost estimate are being undertaken. The WSTP has engaged a third party cost consultant to review the cost estimate.

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 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 – these analyses have been completed
- Prior to the start of construction and quarterly during construction – Ongoing, eighth construction risk review performed on February 6, 2017
- Prior to the start of, and again at the end of, commissioning

A project risk register is being kept throughout the project and is updated by the above formal analysis. Global project risks of significance include:

<b>Risk Matrix<sup>1</sup></b>	
<b>Risk Statement and Explanation</b>	<b>Mitigation</b>
Contract 4 bid prices exceeds budget resulting in inability to award and schedule delay.	Obtain detailed cost estimate (+/- 10% accuracy) for C4 prior to tendering to afford opportunity to reassess tendered scope, if required. Obtain cost consultant review.
Rushed design to meet schedule resulting in a lower design quality and a higher frequency of contract change orders.	Conduct detailed review of the 100% design and intended bid opportunity documents using both internal and external resources.
Construction Schedule is aggressive and actual construction takes significantly longer than planned.	A 3rd party review of project construction schedule was undertaken. Detailed monitoring of the construction contract progress implemented.
Unknown existing conditions are encountered during construction causing schedule delays and additional costs.	Contracting strategy with multiple construction contracts to minimize impact, where possible early assessment of site conditions to minimize unknowns
Limited countrywide contractor awareness of Contract C4 bid opportunity resulting in limited number of bidders.	Materials Management has been engaged and is providing advance contractor awareness of the C4 bid opportunity.

<sup>1</sup>Risk Matrix is arranged vertically from higher to lower assessed risk

#### **4. CHANGES FROM LAST REPORT**

##### **RFP 682-2012 (Professional Consulting Services)**

- Detailed design is substantially complete
  - Detailed Design Commissioning Plan reviewed.
  - 100% design and 976-2016 Bid Opportunity documents (Contract 4) under review.
  - Consultant's detailed cost estimate for 976-2016 Bid Opportunity (Contract 4) under review.
  
- The Consultant submitted Project Change Notices (PCN's)
  - PCN for existing void condition under the Grit Building. Consultant has advised that the condition will not affect the planned project work. The condition will be further reviewed at a later date when access conditions are more favorable.
  - PCN for replacement of roof slab and membrane on the existing High Purity Oxygen Reactors. Independent assessment recommends the need for replacement on the older half of the roof only. The replacement was not planned or budgeted as part of the project and is not deemed necessary to complete the planned project upgrades. A decision on whether to replace the identified portion of the roof slab/membrane by the project will be made at a later date, subject to budget considerations.
  - PCN to change design to implement Modicon 584 Programmable Logic Controllers, CSCO 27 issued. The required design changes are to be complete by March 3, 2017.
  - PCN to modify design to accommodate Distributed Control System patch chords as supplied by Schneider Electric, CSCO 28 issued. The required design changes are to be complete by March 3, 2017.
  
- Construction Management/Contract Administration  
The Consultant continues to provide temporary site Construction Manager/Contract Administrator services under the Optional Contract Administration Services of the assignment.
  
- The Program Team is preparing an Administrative Report for acquiring longer term site Construction Management/Contract Administration services. The report is expected to be finalized once the last major construction contract (C4) has been awarded and the Contractor's schedule received.

##### **RFP 57-2016 (Professional Consulting Services)**

- The Associated Engineering assignment for the SEWPCC - Detail Alternative Analysis Review is complete and was submitted to the Regulator October 20, 2016.

##### **RFP 871-2013 (Supply and Delivery of Free-Moving Media)**

- The Program Team is in discussions with the Contractor to modify the delivery schedule.

##### **RFP 873-2013 (Supply and Delivery of High Rate Clarification Equipment)**

- Contractor manufacturing is in progress.
- The Program Team is in discussions with the Contractor to modify the delivery schedule.

**Reference 1089-2015 (Single Source Negotiation for Manitoba Hydro Works Associated with the South End Sewage Treatment Plant (SEWPCC) Nutrient Removal/Expansion Project)**

- Manitoba Hydro has provided responses to the City's comments/modifications to the Construction Agreement. The City's Legal Services has been asked to review the Manitoba Hydro responses for acceptability.

**Reference 797-2016 (Single Source Authorization and Award of Contract for Relocation of Existing Manitoba Hydro Primary Electrical Service Cables to the South End Sewage Treatment Plant)**

- The relocation work is complete.

**Bid Opportunity 333-2014 (Contract C1 – Site Preparation Works)**

- The contract achieved Total Performance on February 17, 2016.
- On July 1, 2016 the Contractor filed a Claim with respect to a final determination made by the Contract Administrator.
- The Department is finalizing a report for issuance to the Chief Financial Officer outlining the background and rationale of the determinations that were made and appealed by the Contractor.

**Bid Opportunity 601-2015 (Contract C2 – High Rate Clarifier and Grit Removal Concrete and Miscellaneous Works)**

- Substantial Performance of the contract was achieved on January 9, 2017. Non Conformance/Deficiency Report 2 issued to Contractor January 18, 2017.

**Bid Opportunity 899-2015 (Contract C3 – Bioreactors, Blower Building and Secondary Clarifiers Structural Concrete & Miscellaneous Work)**

- The contract work is progressing and is currently considered to be one month behind schedule.
- The Contract Administrator has requested that the Contractor submit a schedule recovery plan.

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

**Issues**

Operation of the site depressurization (pumping) system is currently no longer needed and has stopped. Water sampling results and circumstances concerning a resident's concern that their well water quality may have been affected by the pumping has been reviewed with Risk Management and Legal Services. The well is located in an area historically documented to have saline groundwater conditions. Should further enquiries be received from the resident they will be instructed to follow the City's 311 procedure for claim submission.

A comprehensive review of the C4 bid opportunity documents is being undertaken by the WSTP and their third party consultant.

**Cost**

The design consultant's detailed cost estimate for the C4 contract bid opportunity exceeds the project allocation for this contract. The overall project remains within the identified Class 3 estimate range but approximately 11% beyond the approved budget representing \$37.3 million. Detailed reviews of the cost estimate are being undertaken, including by a third party cost consultant engaged by the Winnipeg Sewage Treatment Program (WSTP). Upon the

completion of review and finalization of the C4 contract estimated cost the current approved project budget funding may need to be adjusted. Final costs will be known at the end of construction as contingencies are included.

## 6. SCHEDULE

Current key schedule milestones are:

Milestone Description	Timeline	
	Previous Report	This Report
Complete Project Definition Report	May 2014	May 2014
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)	July 2017	July 2017
Complete Commissioning interim BNR configuration	July 2020	July 2020
Complete Commissioning of all project components <sup>1</sup>	September 2021	September 2021

<sup>1</sup> SEWPCC Regulatory License 2716RR commissioning completion date was December 31, 2015. Compliance date has further been revised in consultation with the Province of Manitoba and the Clean Environment Commission. Construction on the SEWPCC Upgrade continues to progress expeditiously.

The schedule milestone dates identified in this report are based on the project consultant's updated project schedule and are consistent with the dates submitted to Manitoba Sustainable Development.



## 7. FINANCIAL ANALYSIS

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

<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>
682-2012	Professional Consulting Services for SEWPCC Upgrading/Expansion Project	Ongoing, CH2M Hill Canada Ltd.	\$25,350,419	\$6,233,179
57-2016	Professional Consulting Services for an independent review and alternative schedule analysis	Completed, Associated Engineering (Sask.) Ltd.	\$95,053	
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	Construction Completed, PCL Constructors Ltd. has appealed certain CA determinations	\$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	Substantially Complete, Graham Construction and Engineering LP	\$9,549,100	

Request for Proposal or Bid Opportunity	Description	Current Status	Contract Value (GST and MRST extra as applicable)	Total Approved Over-Expenditures
899-2015	Contract 3 - Bioreactors, Blower Building and Secondary Clarifiers Structural Concrete & Miscellaneous Work	Ongoing, NAC Constructors Ltd.	\$39,756,000	
797-2016	Manitoba Hydro relocation of existing primary electrical service cables	Completed, Manitoba Hydro	\$71,754.00	
	Total		\$107,654,289	\$6,233,179

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:

YEAR	CAPITAL PROGRAM	ACTUAL + PROJECTED CASH FLOWS	CUMULATIVE CAPITAL BUDGET REMAINING
Up to 2017	335,600,000 <sup>1</sup>	138,145,614	197,454,386
2018		40,362,040	157,092,346
2019		66,228,035	90,864,311
2020		61,707,302	29,157,009
2021		66,496,190	-37,339,181
Total	335,600,000	372,939,181	-37,339,181

<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 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 Standing Policy Committee on Water and Waste, Riverbank Management and the Environment meeting September 8, 2016) 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 21, 2017**

### Project Name:

**SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION  
FINANCIAL STATUS REPORT NO. 13 FOR THE PERIOD FROM NOVEMBER 1, 2016 TO  
JANUARY 31, 2017**

### COMMENTS:

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

*"Original signed by D. Capp, for"*  
\_\_\_\_\_  
Lucy Szkwarek, CPA, CGA  
Acting Manager of Finance and Administration

## CONSULTATION

In preparing this report there was consultation with:

N/A

## **OURWINNIPEG POLICY ALIGNMENT**

This report is in accordance with the OurWinnipeg policies through

OurWinnipeg Reference: 02-2 Environment. 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.

## **SUBMITTED BY**

Department: Water and Waste  
Division: Engineering Services  
Prepared by: N. A. Harrington, P. Eng.  
Date: April 5, 2017  
File No.: 020-17-08-25-01, S-926

### **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>	<b>Total Cost</b>	<b>Funded to Date</b>		<b>Funding Pending</b>		<b>Total Funding</b>		<b>City Share of Costs</b>
		<b>Canada</b>	<b>Manitoba</b>	<b>Canada</b>	<b>Manitoba</b>	<b>Canada</b>	<b>Manitoba</b>	
Environment Act Licence Driven Funding								
CSIF    BNR	\$147.00	\$5.18	\$6.08	\$26.16		\$31.34	\$6.08	\$109.58
GIF    Wet Weather	\$60.00	\$1.87	\$2.80	\$9.13	\$8.20	\$11.00	\$11.00	\$38.00
Other	\$128.60					\$0.00	\$0.00	\$128.60
<b>Estimated Program Costs</b>	<b>\$335.60</b>	<b>\$7.05</b>	<b>\$8.88</b>	<b>\$35.29</b>	<b>\$8.20</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>	<b>Total Cost</b>	<b>Funded to Date</b>		<b>Funding Pending</b>		<b>Total Funding</b>		<b>City Share of Costs</b>
		<b>Canada</b>	<b>Manitoba</b>	<b>Canada</b>	<b>Manitoba</b>	<b>Canada</b>	<b>Manitoba</b>	
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	\$7.05	\$8.88	\$35.29	\$8.20	\$42.34	\$17.08	\$276.18
NEWPCC Nutrient Removal/Upgrade	\$794.61		\$33.54		\$161.46	\$0.00	\$195.00	\$599.61
<b>Estimated Program Costs</b>	<b>\$1,215.52</b>	<b>\$17.71</b>	<b>\$65.15</b>	<b>\$35.29</b>	<b>\$169.66</b>	<b>\$53.00</b>	<b>\$234.81</b>	<b>\$927.71</b>

Notes:

- WEWPCC Biological Nutrient Removal and NEWPCC Centrate and UV Disinfection have been completed.

**SEWPCC UPGRADING/EXPANSION PROJECT  
WATER AND WASTE DEPARTMENT - ENGINEERING DIVISION  
APPENDIX 2  
As at January 31, 2017**

Components	COSTS				PROJECTED COSTS TO COMPLETE				TOTAL	VARIANCE	
	Approved Budget <sup>1</sup>	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to date (per G/L) 31-Jan-17	2017	2018	2019	2020	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget ( Unfavourable )
<b>A PROFESSIONAL SERVICES<sup>2</sup></b>	45,351,487	30,079,333	1,576,504	31,655,837	4,198,644	3,316,283	2,869,253	1,422,232	1,889,238	45,351,487	0
<b>B CONSTRUCTION<sup>3</sup></b>	257,241,977	44,590,376	7,216,538	51,806,914	46,878,619	37,045,757	46,382,026	43,308,313	48,649,090	274,070,719	(16,828,742)
<b>C CONTINGENCIES</b>	33,006,536	81,853 <sup>4</sup>	3,119,414 <sup>4</sup>	3,201,267 <sup>4</sup>	404,333 <sup>4</sup>	0	16,976,756	16,976,757	15,957,862	53,516,975	(20,510,439)
<b>TOTALS</b>	<b>335,600,000<sup>5</sup></b>	<b>74,751,562</b>	<b>11,912,456</b>	<b>86,664,018</b>	<b>51,481,596</b>	<b>40,362,040</b>	<b>66,228,035</b>	<b>61,707,302</b>	<b>66,496,190</b>	<b>372,939,181</b>	<b>(37,339,181)</b>

Percentage Complete

23%

<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 will be revised 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

<sup>4</sup> Professional Services Costs

<sup>5</sup> The Department has committed or included allowances for project costs as of January 31, 2017 in the approximate amount of \$147.7M of the approved \$335.6M budget. The remaining available project budget allocation is for Contract 4 and project contingency