

**Minutes - Standing Policy Committee on Finance - October 13, 2016**

**REPORTS**

**Item No. 11                    South End Sewage Treatment Plant (SEWPCC) Upgrading and  
Expansion Financial Status Report No. 11 for the Period from May  
1, 2016 to July 31, 2016**

**STANDING COMMITTEE RECOMMENDATION:**

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 - October 13, 2016**

DECISION MAKING HISTORY:

Moved by Councillor Lukes,

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. 11 FOR THE PERIOD FROM MAY 1, 2016 TO JULY 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

## EXECUTIVE SUMMARY

This report identifies the financial status and significant events for the SEWPCC Upgrading and Expansion for the period May 1, 2016 to July 31, 2016. The project is proceeding on a fast-track basis with construction contracts proceeding during design. The project is currently within budget and trending behind schedule.

## 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 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 July 2018. 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.

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. The project team is complying with these requirements.

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, Manager of Infrastructure Planning, Corporate Finance Department
- 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 it be sent to the Standing Policy Committee on Finance.

## 3. RISKS AND RISK MITIGATION STRATEGIES

The project is proceeding on a fast-track basis with construction contracts proceeding during design. Completion of the detailed design and tendering of the largest construction contract remain to be done. The full construction cost will be known with more certainty once the bid amounts for the final contract are received. 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 estimations about the pace of engineering design and the pace of construction. Any delays would typically result in increases 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. A risk analysis for Contract 4 will be conducted prior to tender.
- Prior to the start of construction and quarterly during construction – Sixth construction analysis was performed on July 12, 2016
- 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>
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.	Update Project Class 3 cost estimate to identify remaining value for Contract C4. Obtain Class 1 cost estimate for C4 prior to tendering to afford opportunity to reassess tendered scope, if required.
Rushed design to meet an aggressive schedule resulting in a lower design quality and a higher frequency 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, 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.	Engage with Materials Management to formulate an advance contractor awareness methodology for 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 ongoing.
  - 90% design for the headworks submitted and reviewed.
  - 90% design for the electrical substation submitted and reviewed.
  - 90% design for the chemical/electrical building submitted and reviewed
  - 90% design Process and Instrumentation drawings for Fermenter, Odour Control and Thickening submitted and reviewed.
  - Commissioning Sequencing and Appendix B – Startup/Commissioning Sequence and Process Tie-ins sections of the Detailed Design Commissioning Plan submitted, under review.
  - HAZOP workshop held, report issued.
  - 60% design for the Fermenter, Odour Control and Thickening submitted, under review.
  - Consultant design submittals are trending late (see section 6 Schedule).
  - The Consultant recently advised that routing modifications to the existing underground Manitoba Hydro high voltage power supply cables to SEWPCC are required to eliminate interference with upgrade components. An Administrative Report for approval of Manitoba Hydro to undertake the needed relocation is being prepared.
  
- The Consultant has submitted Project Change Notices (PCN's) for additional engineering services related to the following items, which may result in cost and schedule implications;
  - Existing void condition under the Grit Building.
  - Replacement of roof slab and membrane on the existing High Purity Oxygen Reactors.
  - Revisions to the detailed design drawings for the Biological Nutrient Removal aeration piping.
  - Extent of work associated with Contract 1, Contract 2 and Contract 3 on the Contract 4 drawings that are at varying stages of completion.These PCN's are currently under review by the Program Team.
  
- An Over Expenditure Report for the Consultant's PCN for changed conditions that have affected the scope and schedule of the original assignment has been approved in the amount of \$3,253,000 taxes extra.
  
- 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)**

- A SEWPCC Alternative Schedule Analysis Workshop was held on May 17, 2016 with Associated Engineering and the SEWPCC Project Team as part of the project schedule review.
- The Department and Associated Engineering met with the Clean Environment Commission (CEC) on June 2, 2016 to provide update on the analysis.
- Associated Engineering held a follow up meeting with the Department on July 11, 2016.
- The draft report on the findings of the SEWPCC alternative schedule analysis is anticipated to be received by the Department in mid-August 2016.
- The final report on the findings is required to be issued to the Regulator by September 30, 2016.

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

- Contractor costing (credit) for the revised IFAS design has been accepted by the Program Team and an associated Change Order provided.
- Contractor has provided shop drawings for aeration system piping.
- The Program Team is reviewing required modifications to the delivery schedule with the Contractor.

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

- Contractor manufacturing is in progress.
- The Program Team is reviewing required modifications to the delivery schedule with the Contractor.

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

- City comments/modifications to the Construction Agreement with Manitoba Hydro for the new 66kV electrical service have been provided to Manitoba Hydro. Manitoba Hydro is currently reviewing.

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

- The contract achieved Total Performance on February 17, 2016.
- On June 24, 2016 the Contractor Administrator issued their final determinations with respect to the claims submitted by the Contractor.
- The Contractor issued a letter to the City's Chief Financial Officer on July 1, 2016 noting their intent to appeal some of the determinations.
- The Chief Financial Officer has requested that the Contractor provide particulars concerning the specific aspects of the determination which are under contention by August 19, 2016.

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

- The contract work is progressing. The Contract Administrator has indicated that the work remains approximately one (1) month behind schedule. Some weather related delays have also been encountered.
- The Contractor is bringing additional manpower and is utilizing a prefabricated forming system to improve productivity and improve schedule. They are also working weekends.
  - Temporary repairs have been made to the leak in the existing UV outfall structure. Planning for permanent repairs is being undertaken by the Department.

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

- The Contractor has mobilized to site and the contract work is progressing.
- The Contract Administrator has indicated that the work appears to be falling behind schedule. Additionally some weather related delays have been encountered.
- The Contractor has advised they will be significantly increasing their manpower starting in August. They are also working weekends to improve schedule.

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

### **Issues**

The site depressurization (pumping) system is currently being utilized by the project to lower site groundwater elevations for localized deeper foundations associated with the new Secondary Clarifiers. The system is anticipated to be employed for approximately one month.

One resident has recently advised the Consultant of an issue with the operation of their well. Initial investigation undertaken by an independent well contractor indicated that the issue is likely a failure of the well pumping components and is not related to the site depressurization operation.

The award/start of construction of Contract 4 previously targeted for December 2016 is currently anticipated to take place in February 2017, due to later completion of the detailed design. The Contractor's ability to acquire the needed equipment and perform the necessary installations for the low plant flow winter period of 2017-2018 may be affected. The schedule is under review.

### **Cost**

For RFP 682-2012 an Over Expenditure Report for the Consultant's Project Change Notice for changed conditions that have affected the scope and schedule of the original assignment was approved on August 5, 2016 in the amount of \$3,253,000, taxes extra.

For RFP682-2012 the Consultant has issued additional Project Change Notices which may have cost and schedule implications. These are under review by the Program Team.

For Bid Opportunity 333-2014 the Contractor has notified the Chief Financial Officer of their intent to appeal some of the Contract Administrator's determinations.

## **6. SCHEDULE**

Current key schedule milestones are:

<b>Milestone Description</b>	<b>Timeline</b>	
	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



Milestone Description	Timeline	
	Start Construction on High Rate Clarifier and Grit Removal Structural Concrete and Misc. Works (Contract 2)	November 2015
Start Construction Major Concrete Works (Contract 3)	May 2016	May 2016
Start Construction of Remaining Works (Contract 4)	December 2016	February 2017
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 Sustainable Development (previously known as 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	\$6,233,179
57-2016	Professional Consulting Services for an independent review and alternative schedule analysis	Ongoing 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. Intent to appeal determinations received.	\$22,646,510	
353-2014	For Construction Cost Consulting Services for SEWPCC Upgrading/Expansion Project	Completed, Hanscomb Ltd.	\$50,700	

<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>
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	Ongoing, NAC Constructors Ltd.	\$39,756,000	
	<b>Total</b>		<b>\$107,582,535</b>	<b>\$6,233,179</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>	89,875,075	245,724,925
2017		77,067,828	168,657,097
2018		91,214,710	77,442,387
2019		77,442,387	0
2020		0	0
<b>Total</b>	<b>335,600,000</b>	<b>335,600,000</b>	

<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 (proposed to be tabled at the 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: **August 16, 2016**

#### **Project Name:**

**SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION  
FINANCIAL STATUS REPORT NO. 11 FOR THE PERIOD FROM May 1, 2016 TO July 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

#### **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: September 13, 2016  
File No.: 020-17-08-25-01, S-926

c: Major Capital Project Steering Committee (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>	<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 July 31, 2016**

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-Jul-16	2016	2017	2018	2019	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavourable)
A PROFESSIONAL SERVICES <sup>2</sup>	45,351,486	23,146,770	6,015,135	29,161,905	3,966,201	4,487,409	4,729,216	3,006,755	0	45,351,486	0
B CONSTRUCTION <sup>3</sup>	257,241,978	28,913,419	3,637,758	32,551,177	20,587,499	72,580,419	86,485,494	45,037,389	0	257,241,978	0
C CONTINGENCIES	33,006,536	20,790 <sup>4</sup>	45,728 <sup>4</sup>	66,518 <sup>4</sup>	3,541,775 <sup>4</sup>	0	0	29,398,243	0	33,006,536	0
<b>TOTALS</b>	<b>335,600,000</b>	<b>52,080,979</b>	<b>9,698,621</b>	<b>61,779,600</b>	<b>28,095,475</b>	<b>77,067,828</b>	<b>91,214,710</b>	<b>77,442,387</b>	<b>0</b>	<b>335,600,000</b>	<b>0</b>

Percentage Complete 18%

<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