

**Minutes - Standing Policy Committee on Finance - June 24, 2016**

**REPORTS**

**Item No. 13                    South End Sewage Treatment Plant (SEWPCC) Upgrading and  
Expansion Financial Status Report No. 10 for the Period from  
February 1, 2016 to April 30, 2016**

**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 - June 24, 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. 10 for the Period from February 1, 2016 to April 30, 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 February 1, 2016 to April 30, 2016. 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 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	\$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 ACE-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
- Prior to the start of construction and quarterly during construction – Fifth construction analysis has been completed
- 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, 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.
  - 60% design for the process control migration has been submitted and reviewed by the Program Team.
  - 90% design for the Biological Nutrient Reactors (BNR) has been submitted and reviewed.
  - 90% design for the Secondary Clarifier has been submitted and is currently under review.
  - 90% design for the ultraviolet disinfection is currently under review.
  - 90% design for High Rate Clarifier (HRC) has been issued and is reviewed.
  - 90 % design Process and Instrumentation drawings (P&ID's) for the Ultraviolet Disinfection and Yard areas have been issued and reviewed.
  - The electrical substation preliminary design has been issued and reviewed.
- 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.
- Consultant Project Change Notices (PCN) for additional work related to Document Numbering, Standby Load Sequencing and recent Canadian Electrical Code changes have been resolved within the available assignment budget.
- The Program Team is preparing an Administrative Report related to the Consultant's PCN for changed conditions that have affected the scope and schedule of the original assignment.
- The Program Team is preparing an Administrative Report for acquiring longer-term site Construction Management/Contract Administration services.

### **MATERIALS MANAGEMENT REFERENCE NO. 57-2016 (Professional Consulting Services)**

- A SEWPCC Alternative Analysis Workshop is scheduled to be held on May 17, 2016 with Associated Engineering and the SEWPCC Project Team as part of the project schedule review.

### **RFP 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 costing remains under review by the Program Team.

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

- Contractor manufacturing is in progress.
- First shipment containing HRC bridge structures was delivered to the site as scheduled.

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

- A Construction Agreement between the City and Manitoba Hydro for the new 66kV electrical service is under developmental review by the Legal Services Department.

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

- The contract achieved Substantial Performance on February 17, 2016.

- Contract remedial works have been completed.
- On March 11, 2016 an additional claim for piling costs was submitted by the contractor. The Contract Administrator has arranged a meeting on May 6, 2016 to review the outstanding claims with the contractor prior to making final determination(s) on the validity of same.
- Achievement of contract Total Performance is dependent on the determination(s) made on the contractor's claims.

**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 is approximately one (1) month behind schedule. Schedule improvement strategies have been requested from the contractor.
- The leak from the existing outfall structure is still under investigation. Needed access has been hampered by higher than typical springtime flows to the plant.

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

- On May 2, 2016 Standing Policy Committee on Water and Waste, Riverbank Management and the Environment approved a recommendation to award Bid Opportunity 899-2015 to NAC Constructors Ltd., the lowest responsive bidder meeting the specifications in the amount of \$39,756,000.00, MRST included, GST extra as applicable. Class 1 estimate for this Bid Opportunity was \$49,619,345.00
- On May 3, 2016 the letter of intent was issued to NAC Constructors Ltd. by the Acting Director of Water and Waste.

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

**Issues**

A site groundwater depressurization (pumping) system has been installed to protect the building excavations and associated construction from high groundwater levels which could occur due to prolonged periods of wet weather or during spring snow melts.

Should site depressurization be required there is a small potential risk that the quality and/or functionality of existing aquifer water wells in near proximity to the site could be affected due to drawdown of the aquifer. Adverse effects on well water supplies are not anticipated within the depressurization drawdown area but are being considered and planned for as a precautionary measure.

Notices to residents whose wells may be affected are planned to be distributed. The “Notice of Important Information about Upgrades to the South End Sewage Treatment Plant” will be distributed door-to-door to well owners within a 2 km radius of the SEWPCC project.

## Cost

There are 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 preparing an Administrative Report.

Contractor claims for additional costs under Bid Opportunity 333-2014 related to piling activities have been received. The claims have been reviewed by the Contract Administrator and a meeting has been scheduled for May 6, 2016 to review the claims with the contractor prior to making final determination(s) on the validity of the claims.

## 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 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	\$2,980,179



<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>
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	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	Awarded to NAC Constructors Ltd.	\$39,756,000	
	<b>Total</b>		<b>\$107,582,535</b>	<b>\$2,980,179</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:

YEAR	CAPITAL PROGRAM	ACTUAL + PROJECTED CASH FLOWS	CUMULATIVE CAPITAL BUDGET REMAINING
Up to 2016	335,600,000 <sup>1</sup>	90,951,502	244,648,498
2017		84,004,203	160,644,295
2018		90,661,364	69,982,931
2019		69,982,931	0
2020		0	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 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

The Provincial commitment does not include the additional \$100 million in provincial funding announced in the 2015 Throne Speech as there is currently insufficient information regarding details of the proposal.

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:**                      **May 17, 2016**

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### Project Name:

**SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION  
FINANCIAL STATUS REPORT NO. 10 FOR THE PERIOD FROM FEBRUARY 1, 2016 TO APRIL  
30, 2016**

### COMMENTS:

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

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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.

<b>SUBMITTED BY</b>
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Department: Water and Waste  
Division: Engineering Services  
Prepared by: N. A. Harrington, P. Eng.  
Date: May 20, 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>	<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 April 30, 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) 30-Apr-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	22,638,411	529,149	23,167,560	10,107,420	5,462,130	4,046,280	2,663,149	0 0	45,446,539	0
<b>B CONSTRUCTION <sup>3</sup></b>	257,241,978	27,882,279	1,031,140	28,913,419	28,763,103	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 0	32,911,483	0
<b>TOTALS</b>	<b>335,600,000</b>	<b>50,520,690</b>	<b>1,560,289</b>	<b>52,080,979</b>	<b>38,870,523</b>	<b>84,004,203</b>	<b>90,661,364</b>	<b>69,982,931</b>	<b>0</b>	<b>335,600,000</b>	<b>0</b>

**Percentage Complete 16%**

<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.