

Minutes – Standing Policy Committee on Finance – January 16, 2017

REPORTS

**Item No. 7 South End Sewage Treatment Plant (SEWPCC) Upgrading and
Expansion Financial Status Report No. 12 for the Period from August
1, 2016 to October 31, 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 – January 16, 2017

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. 12 FOR THE PERIOD FROM AUGUST 1, 2016 TO OCTOBER 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 of Water and Waste Dept	M. Ruta	D. McNeil

EXECUTIVE SUMMARY

This report identifies the financial status and significant events for the SEWPCC Upgrading and Expansion for the period August 1, 2016 to October 31, 2016. The project is currently within the approved budget and the schedule has been significantly adjusted based on extensive review and third party recommendation. 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 project consultant is in the process of developing a Class 1 cost estimate for the final project construction contract (Contract 4). The Class 1 cost estimate for Contract 4 has an AACE expected accuracy range of -10% to +15%. The revised project schedule may result in additional project costs. The Class 1 Contract 4 cost estimate is a key milestone in confirming that the approved budget is adequate to complete the project.

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). The project was expected to 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 to the greatest extent possible.

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.

To comply with the Provincial Licence requirements the City hired Associated Engineering to conduct an Alternative Analysis Review. This report is an independent review of the SEWPCC construction schedule, evaluating ways to accelerate the schedule and/or mitigate delays. The City and Associated Engineering met with the Clean Environment Commission multiple times to review the scope and findings of the report.

The Alternative Analysis Review concluded that there were no ways to accelerate the schedule, as the City had already implemented their suggested mitigations. They also found that the SEWPCC upgrade schedule was aggressive for a project of this scale and complexity and that the schedule should be extended to March 2021 for full licence compliance.

The factors contributing to the revised date include:

- Contract detailed design is trending later than the original schedule
- Critical low wastewater flow construction window will delay completion by 12 months
- There was no schedule contingency in the original project critical path
- There was no allocation in the schedule for project risk due to winter construction and unforeseen situations

The Alternative Analysis Review was submitted to Manitoba Sustainable Development on October 20, 2016.

The project budget includes the following Project Identifications:

Project ID	Project Year	Adopted Budget
20320002EL ¹	2002	\$ 222,752
2032000207 ¹	2007	\$ 10,695,000
203210002B	2012-2015	\$324,682,248
Total Project Budget		\$335,600,000

¹Does 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
Maira 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. A detailed cost estimate, with an expected accuracy range of -10% to +15% for the last construction contract to be tendered has been requested and is expected to be received from the project Consultant shortly.

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, Contract 3 and Contract 4
- Prior to the start of construction and quarterly during construction – Seventh construction risk review was performed on October 27, 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:

Risk Matrix¹	
Risk Statement and Explanation	Mitigation
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 detailed cost estimate (+/- 10% accuracy) 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.

¹Risk 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
 - Commissioning Sequencing and Appendix B – Startup/Commissioning Sequence and Process Tie-ins sections of the Detailed Design Commissioning Plan review completed.
 - 60% and 90% design for the Fermenter, Odour Control and Thickening, review completed.
 - 90% DCS Migration submitted and reviewed.
 - 90% Miscellaneous Works submitted and reviewed.
 - Detailed Design Commissioning Plan submitted, under review.
 - Consultant has advised that the documents for the Contract 4 tender will now be issued for Program Team review on December 16, 2016.

- Substantive review comments on Consultant submittals are typically necessary due to apparent incompleteness and quality control issues. This added effort is extending the review timelines and closure of review cycles.
- Consultant design submittals continue to trend late.
- The Consultant submitted Project Change Notices (PCN's)
 - Existing void condition under the Grit Building. After review the Consultant advised that they are reassessing the methodology and their submitted PCN.
 - Replacement of roof slab and membrane on the existing High Purity Oxygen Reactors. The Program Team is undertaking an independent assessment of the need for replacement.
 - Revisions to the detailed design drawings for the Biological Nutrient Removal aeration piping. Consultant Services Change Order (CSCO) 23 issued.
 - Extent of work associated with Contract 1, Contract 2 and Contract 3 on the Contract 4 drawings that are at varying stages of completion. CSCO 25 issued.
- 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 Department issued the SEWPCC - Detail Alternative Analysis Review and Reporting to the Regulator on October 20, 2016.
- The report by Associated Engineering (AE) determined that the existing project schedule was extremely aggressive given the complexity of constructing such an upgrade on an existing facility providing an essential wastewater treatment service under an Environment Act License. AE recommended to the CEC a final BNR upgrade completion date of March 31, 2021.
- The Departments covering letter noted that “the C4 contract posting date is trending late and the design consultant is forecasting a completion date of September 2021. The City is endeavoring to complete this important upgrade as soon as practical.”

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 advised that they have scheduled an internal meeting for November 7, 2016 to discuss the City's comments/modifications to the Construction Agreement.

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 currently in progress.

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 preparing 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)

- The contract work is nearing substantial completion. The Contract Administrator has indicated that the work remains approximately one (1) month behind schedule. Some weather related delays have also been encountered.

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 on schedule.

5. CURRENT ISSUES/RISKS REQUIRING FURTHER ATTENTION

Issues

Operation of the site depressurization (pumping) system is currently no longer needed and has stopped. A resident, located outside of the Consultant identified two (2) kilometer radius of influence, notified the Consultant that their well water quality may have been affected by the pumping. The well is located in area historically documented to have non potable saline groundwater conditions. The circumstances are under review by the Consultant.

Completion of the detailed design by the Consultant and associated provision of the draft Contract 4 tender documents for review by the Program Team continues to trend late. A comprehensive review of the C4 tender documents will be undertaken by the WSTP once received by the Consultant and prior to release for public tender.

Cost

For RFP 682-2012 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. An associated report to the Chief Financial Officer is being prepared by the Department.

The Consultant's detailed cost estimate for the C4 contract tender (accuracy range of -10% to +15%) has been requested but not yet received. This cost estimate is a key milestone in confirming that the project budget is adequate to complete the project.

6. SCHEDULE

Current key schedule milestones are:

Milestone Description	Timeline	
	Previous Report	This Report
Complete Project Definition Report	May 2014	May 2014 ¹
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)	February 2017	July 2017
Complete Commissioning interim BNR configuration	July 2018	July 2020
Complete Commissioning of all project components	July 2019	September 2021

¹ Substantial completion

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:

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	

Request for Proposal or Bid Opportunity	Description	Current Status	Contract Value (GST and MRST extra as applicable)	Total Approved Over-Expenditures
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	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	
797-2016	Manitoba Hydro relocation of existing primary electrical service cables	In progress, 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 2016	335,600,000 ¹	87,611,625	247,988,375
2017		56,536,246	191,452,129
2018		46,185,466	145,266,663
2019		57,331,221	87,935,442
2020		57,158,037	30,777,405
Total	335,600,000	304,822,595	30,777,405

¹ 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: November 21, 2016

Project Name:

**SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) UPGRADING AND EXPANSION
FINANCIAL STATUS REPORT NO. 12 FOR THE PERIOD FROM August 1, 2016 TO October 31,
2016**

COMMENTS:

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

Original signed by Laurie Fisher, CPA, CA
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: December 8, 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:

SEWPCC Nutrient Removal/Upgrade (in \$millions)	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	\$147.00	\$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
Estimated Program Costs	\$335.60	\$7.05	\$8.88	\$35.29	\$8.20	\$42.34	\$17.08	\$276.18

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

WSTP All Projects (in \$millions)	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	\$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
Estimated Program Costs	\$1,215.52	\$17.71	\$65.15	\$35.29	\$169.66	\$53.00	\$234.81	\$927.71

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 October 31, 2016

Components	COSTS				PROJECTED COSTS TO COMPLETE					TOTAL	VARIANCE
	Approved Budget ¹	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to date (per G/L) 31-Oct-16	2016	2017	2018	2019	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavourable)
A PROFESSIONAL SERVICES²	45,351,486	29,161,905	917,428	30,079,333	2,161,179	5,311,921	2,792,733	2,442,223	2,564,097	45,351,486	0
B CONSTRUCTION³	257,241,978	32,551,177	12,039,199	44,590,376	7,172,444	51,224,325	43,392,733	54,888,998	55,973,102	257,241,978	0
C CONTINGENCIES	33,006,536	66,518	15,335	81,853⁴	3,526,440⁴	0	0	0	29,398,243	33,006,536	0
TOTALS	335,600,000⁵	61,779,600	12,971,962	74,751,562	12,860,063	56,536,246	46,185,466	57,331,221	87,935,442	335,600,000	0

Percentage Complete **22%**

¹ 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.

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

³ Construction includes Commissioning and Construction Management Services

⁴ Professional Services Costs

⁵ The Department has committed or included allowances for project costs as of October 31, 2016 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