

Minutes – Standing Policy Committee on Finance – July 5, 2019

REPORTS

**Item No. 6 South End Sewage Treatment Plant (SEWPCC) Upgrading and
Expansion**

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 – July 5, 2019

DECISION MAKING HISTORY:

Moved by Councillor Chambers,

That the report of the Winnipeg Public Service be received as information.

Carried

ADMINISTRATIVE REPORT

Title: South End Sewage Treatment Plant (SEWPCC) Upgrading and Expansion, Project ID: 20320002EL, 2032000207 and 203210002B, Quarterly Project Status Report No. 21 For the Period Ended March 31, 2019

Critical Path: Standing Policy Committee on Finance

AUTHORIZATION

Author	Department Head	CFO	CAO
Duane Griffin, P. Eng., Acting Manager of Engineering Services	M. L. Geer, CPA, CA, Director, Water and Waste Department	P. Olafson, Interim CFO	M. Ruta, Interim CAO

EXECUTIVE SUMMARY

Project On Schedule: Yes No

Project On Adopted Budget: Yes No

Percent of Schedule Complete:

Percent of Adopted Budget Spent:

Contract 3 – The Contractor attained Total Performance March 6, 2019. Numerous Contractor appeals need to be addressed.

Contract 4 – Construction activity is continuing. The Contractor has appealed four Contract Administrator determinations.

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

RECOMMENDATIONS

That the financial status of the South End Sewage Treatment Plant (SEWPCC) Upgrading and Expansion, as contained in this report, be received as information.

REASON FOR THE REPORT

The Asset Management Administrative Standard FM-004 requires all projects with a total estimated cost of \$23 million (2019) or more report quarterly to the Standing Policy Committee on Finance. This threshold is adjusted annually for construction inflation as part of the annual

Capital Budget approval. The Standing Policy Committee on Finance may also request reporting on any capital project.

IMPLICATIONS OF THE RECOMMENDATIONS

No implications.

HISTORY/DISCUSSION

See Appendix C – Key Project Events (History)

Construction (Update from last report)

RFP 682-2012 (Professional Consulting Services)

- No changes to report.

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

- No changes to report.

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

- Remaining scope of installation acceptance and startup assistance will be performed once C4 contractor has completed installation of the equipment.

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

- No changes to report.

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

- No changes to report.

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

- No changes to report.

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

- The Contractor achieved Total Performance as of March 6, 2019.
- Contractor has appealed over 20 determinations made by the Contract Administrator. The majority of the appeals are on schedule-related determinations.

Bid Opportunity 976-2016 (Contract C4 – Sitewide Mechanical, Electrical, Concrete and Site Works)

- Current primary items under construction are the Chemical/Electrical building, the Grit

and Screening building, substation, electrical duct banks and new Secondary Clarifier 4 & 5 works.

- The Contract Administrator's March 2019 monthly report states that the construction progress is tracking as per the contractor's latest schedule. The Contractor Administrator states they are performing regular schedule reviews and have brought in additional support for that purpose.

The Contractor has appealed four determinations made by the Contract Administrator. Associated appeal reports are being prepared by the Department.

Table 1 – Contracts

Contracts Table							
Bid Opportunity #	Company Name	Description	Original Contract Award Value (GST & MRST extra as applicable)	Total Approved Over-Expenditures (Over-Expenditure amount only)	Date of Award	Date of Completion	Estimated % Complete
682-2012	CH2M Hill Canada	Professional Consulting Services	\$ 25,350,419	\$ 6,233,179	4/29/2013		94
57-2016	Associated Engineering (Sask) Ltd.	Professional Consulting Services for an independent review and alternative schedule analysis	\$ 92,360	\$ -	1/28/2016	2/28/2017	100
871-2013	Veolia Water Technologies Canada Ltd.	Procurement of Free-Floating Media and Associated Appurtenances	\$ 7,750,588	\$ -	12/11/2014		38
873-2013	Veolia Water Technologies Canada Ltd.	Procurement of High Rate Clarification Equipment	\$ 2,052,500	\$ 107,300	7/10/2014		60
333-2014	PCL Constructors Canada Ltd.	Contract 1 - Site Preparation Works	\$ 22,646,510	\$ -	9/4/2014		98
353-2014	Hanscomb Ltd.	Construction Cost Consulting Services for SEWPCC Upgrading and Expansion	\$ 50,700	\$ -	9/4/2014	8/6/2015	100
572-2014	B&B Rentals Inc.	Provision for the Purchase or Lease of a Trailer for Office Space	\$ 184,000	\$ -	9/4/2014	3/18/2015	100
1067-2014	Manitoba Hydro	Manitoba Hydro Load Interconnection Study	\$ 60,000	\$ -	11/14/2014	10/31/2015	100
343-2015	Praxair Canada	Relocation of Lox Tank	\$ 62,715	\$ -	6/3/2015	8/28/2015	100
498-2015	Western Waste Management	Asbestos Abatement	\$ 24,950	\$ -	8/13/2015	11/9/2015	100
601-2015	Graham	Contract 2 - High Rate Clarifier and	\$ 9,549,100	\$ -	10/20/2015		98
899-2015	NAC Constructors Ltd..	Contract 3 - Bioreactors, Blower Building and Secondary Clarifiers Structural Concrete & Miscellaneous Work	\$ 39,756,000	\$ -	5/3/2016		98
797-2016	Manitoba Hydro	Relocation of existing primary electrical service cables	\$ 71,754	\$ -	9/7/2016	1/16/2017	100
976-2016	NAC Constructors Ltd.	Contract 4 - Site wide Mechanical, Electrical, Concrete and site Works	\$ 179,997,000		10/4/2017		20
1089-2015	Manitoba Hydro	Manitoba Hydro Works Associated with the South End Sewage Treatment Plant (SEWPCC) Nutrient Removal/Expansion Project	\$ 1,827,280		1/15/2018		70
		Total	\$ 289,475,876	\$ 6,340,479			

Upcoming Procurements:

Description	Anticipated Award Date

Schedule (Update from last report)

N/A

Table 2 – Milestones

Milestones					
	Deliverable	Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Date	Estimated % Complete
1	Project Definition Report	2013 Q4	2014 Q2	2014 Q2	100%
2	Preliminary Design Report	2014 Q2	2014 Q4	2014 Q4	100%
3	Detailed Design	2014 Q4	2017 Q3	2017 Q3	100%
4	Construction of Site Preparation and Piling (Contract 1)	2014 Q2	2016 Q1	2016 Q1	100%
5	Construction of High Rate Clarifier and Grit Removal Structural and Misc. Works (Contract 2)	2016 Q3	2017 Q1	2017 Q1	100%
6	Construction of Major Concrete Works (Contract 3)	2017 Q4	2018 Q3	2018 Q3	100%
7	Construction of Remaining Works (Contract 4)	2021 Q4			20%
8	Commissioning of interim BNR configuration	2016 Q4	2020 Q3		0%
9	Commissioning of all project components ¹	2021 Q3			0%
10					

¹ Manitoba Sustainable Development Notice of Alteration dated September 12, 2017 - City of Winnipeg South End Water Pollution Control Centre (SEWPCC) - Environment Act Licence No. 2716 RR identifies that the construction and commissioning of the upgraded wastewater treatment plant shall be completed before December 31, 2021.

Risk (Update from last report)

Last quarterly construction risk review took place January 16, 2019. Next risk review is being scheduled.

Table 3 – Significant Risks and Mitigations Strategies

Significant Risks and Mitigation Strategies	
Risk Statement and Explanation	Risk Mitigation Management Plan
New:	
Ongoing:	
Contract 3 construction takes longer than planned increasing the cost to the project.	Liquidated damages applied as per contract.
Actual Contract 4 construction performance takes longer than planned.	Key construction milestone dates with linked liquidated damages incorporated into Contract 4.
Process issues at the SEWPCC have delayed some scheduled construction activities.	Ongoing communication with Wastewater Services to facilitate construction activities when opportunity is available. Reschedule construction activities when possible.
Mitigated:	
Rushed design to meet schedule resulting in a lower design quality and higher frequency of contract change orders.	Detailed review of the 100% design and bid opportunity document was performed using both internal and external resources.
Construction schedule was aggressive and actual construction takes significantly longer than planned.	3rd party review of project schedule was undertaken. Recommended schedule extension was implemented. Detailed monitoring of the construction contract progress implemented.
Limited countrywide contractor awareness of Contract 4 bid opportunity resulting in limited number of bidders.	Advance notice of C4 bid opportunity was posted on Materials Management website and MERX.
Unknown existing conditions are encountered during construction causing schedule delays and additional costs. Internal condition of high purity oxygen reactors is unknown.	Shutdown and interior inspection of existing high purity oxygen reactor was performed in February 2018.

Financial (Update from last report)

For further information, refer to Appendix B – Financial Forecast

The current remaining project contingency allowance is less than typical for a project of this size. The ongoing SEWPCC Upgrading and Expansion project costs and contingency allowance will be reviewed as the project progresses.

Funding (Update from last report)

N/A

Table 4 – Project Funding Forecast and Receivable

Funding Forecast & Receivable			
Funding Source	Adopted Budget (in millions)	Amended Budget ¹ (in millions)	Committed (in millions)
Class of Estimate	Class 3		
City of Winnipeg Total	298.18	276.18	276.18
Retained Earnings	75.82	75.82	75.82
External Debt	222.36	200.36	200.36
Province of Manitoba	6.08	17.08	17.08
Government of Canada	31.34	42.34	42.34
Total	\$ 335.60	\$ 335.60	\$ 335.60

1. NOTE: Only approved funding to date.

Property Acquisition (Update from last report)

N/A

Stakeholder Engagements/Communications (Update from last report)

N/A

Subsequent Events after Report Period End Date

N/A

FINANCIAL IMPACT

Financial Impact Statement

Date: June 13, 2019

Project Name:

South End Sewage Treatment Plant (SEWPCC) Upgrading and Expansion,
Project ID: 20320002EL, 2032000207 and 203210002B,
Quarterly Project Status Report No. 21
For the Period Ended March 31 , 2019

COMMENTS:

Financial forecast for the SEWPCC Upgrade and Expansion project can be found in Appendix B.

"Original signed by L. Szkwarek, CPA, CGA"

Lucy Szkwarek, CPA, CGA

Manager, Finance and Administration

CONSULTATION

This Report has been prepared in consultation with:

N/A

OURWINNIPEG POLICY ALIGNMENT

01-3 Prosperity Direction 1: Provide efficient and focused civic administration and governance. This report supports demonstration of accountability through service performance measurement and reporting.

02-2 Environment: The SEWPCC Upgrade and 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: Neil Harrington, P. Eng.
Date: June 14, 2019
File No. 020-17-08-25-01, S-926

Appendices

Appendix A – Key Project Facts

Appendix B – Financial Forecast

Appendix C – Key Project Events (History)

Appendix D – Funding

Appendix A – Key Project Facts

Appendix A - Key Project Facts	
Project Name	South End Sewage Treatment Plant (SEWPCC) Upgrading and Expansion
Business Owner (Department)	Water and Waste
Project ID	20320002EL, 2032000207 and 203210002B
Project Sponsor	Director of Water and Waste
Department Responsible for Project Delivery	Water and Waste
Consultant Engineer (Company Name)	CH2M Hill Canada Ltd.
Adopted Budget	\$335,600,000
Class of Estimate (Adopted)	3
Range of Estimate (Adopted)	-20% to +30% \$268,500,000 to \$436,300,000.
Amended Budget	\$335,600,000
Class of Estimate (Amended)	3
Range of Estimate (Amended)	-20% to +30% \$268,500,000 to \$436,300,000.
<u>Project Scope</u>	
<p>The 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.</p>	
Major Capital Projects Advisory Committee Membership:	
<p>Doug McNeil, Chief Administrative Officer Dave Wardrop, Chief Transportation and Utilities Officer, Chief Administrative Office Georges Chartier, Chief Asset and Project Management Officer Moira Geer, Director of Water and Waste Lucy Szkwarek, Manager of Finance and Administration, Water and Waste Jackie Veilleux, Project Director Winnipeg Sewage Treatment Program</p>	

Appendix B – Financial Forecast

Appendix B - Project SEWPCC Upgrading and Expansion Financial Forecast As at March 31, 2019

Project Component Deliverables	Budget (in 000's)			Actual Costs To April 30, 2019 ²	Expenditure Forecast (in 000's)					Total Forecasted Costs	Surplus (Deficit) From Amended Budget	Variance Last Report	Change in Variance
	Adopted Budget	Council Approved Change	Amended Budget*		Projected Costs								
					2019	2020	2021	2022	2023 and Beyond				
Engineering, Design and Other	\$ 45,351	\$ -	\$ 45,351	\$ 42,861	\$ 3,805	\$ 946	\$ 1,345	\$ -	\$ -	\$ 48,957	\$ (3,606)	\$ (3,606)	\$ -
Construction	\$ 257,242	\$ -	\$ 257,242	\$ 113,810	\$ 45,738	\$ 70,224	\$ 47,467	\$ -	\$ -	\$ 277,239	\$ (19,997)	\$ (19,997)	\$ -
Land Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Internal Financing/Overhead Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contingency	\$ 33,007	\$ -	\$ 33,007	\$ -	\$ -	\$ -	\$ 9,404	\$ -	\$ -	\$ 9,404	\$ 23,603	\$ 23,603	\$ -
Total Project Budget	\$ 335,600	\$ -	\$ 335,600	\$ 156,671	\$ 49,543	\$ 71,170	\$ 58,216	\$ -	\$ -	\$ 335,600	\$ -	\$ -	\$ -

% of Project Budget Spent (Actual Costs to Date / Adopted & Amended Budget)	47%		47%
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¹ Total budget of \$335.60 Million for the SEWPCC Upgrading and Expansion Project and Distribution of costs for Components was done by the Water and Waste Department. These are estimates and will be revised as the project progresses.

² Adopted and Amended budget, and actual costs to date have been agreed to the City's general ledger and Monthly Capital Expenditures Report, actual cost variance equals spending from closed budget years of \$10.918M. See below.

Project ID	Project Year	Adopted Budget	Costs to Date
20320002EL ¹	2002	\$222,752	\$222,752
2032000207 ¹	2007	\$10,695,000	\$10,695,000
203210002B	2012-2015	\$324,682,248	\$145,753,564
Total Project Budget		\$335,600,000	\$156,671,316

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

Appendix C – Key Project Events (History)

HISTORY

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.

As a result of the 2003 Clean Environment Commission Hearings on the City's wastewater collection and treatment systems, Manitoba Conservation and Water Stewardship (the Regulator) notified the City that it intended to issue a licence for the South End Water Pollution Control Centre (SEWPCC) that would require control of nutrients discharged to the Red River.

Between 2001 to 2010, Council has approved \$203,250,000.00 for the Nutrient Removal Upgrade/Expansion at the SEWPCC.

On January 9, 2006, the Chief Financial Officer concurred with the recommendation to authorize an assignment to Stantec Consulting Ltd. for preliminary and conceptual engineering services related to the South End Water Pollution Control Centre upgrading and expansion at an estimated cost of \$3,250,000.00.

On May 16, 2007, Council authorized the Chief Administrative Officer to finalize the terms and conditions of a contribution agreement with the Government of Canada and the Province of Manitoba for funding of Wastewater Treatment Plant upgrades under the Canada Strategic Infrastructure Fund.

In late 2007, the Winnipeg Public Service was directed to initiate an assessment of alternate project delivery methods for the SEWPCC upgrade and expansion. Consequently, the assignment to Stantec was suspended after the conclusion of the conceptual and preliminary engineering work.

On November 19, 2008, City Council authorized the Winnipeg Public Service to:

- begin the procurement of a strategic partner that could bring private sector experience to the design, construction, finance and potentially the operation of the North and South End Sewage Treatment Plants as well as potential operation of the West End Water Sewage Treatment Plant, and;
- authorize the Chief Administrative Officer to approve and issue the Request for Expressions of Interest followed by a Request for Qualifications and the Request for Proposals.

On June 19, 2009 the Regulator issued a revised Environment Act Licence No. 2716 R for the SEWPCC.

On November 25, 2009, the Chief Financial Officer approved an award to Taillieu Construction Ltd. for SEWPCC Installation of Outfall Pipe, Effluent Sampling Facility and Associated Works, Contract No. 2 at an estimated cost of \$4,884,450.00.

On May 19, 2010 Council:

- directed the Chief Administrative Officer to approve and issue a Letter of Notification to Veolia in order to immediately begin design and construction of the South and North End sewage treatment plant upgrades and expansion and biosolids handling facility.
- delegated the authority to the Chief Administrative Officer to “approve contract awards for upcoming South and North End sewage treatment plant capital projects where the value of each contract does not exceed \$30 million and there are sufficient funds in a budget approved by Council.

On September 6, 2011, the City submitted to the Regulator, an engineering plan for the upgrading and expansion of the SEWPCC in accordance with Environment Act Licence No 2716 R.

On April 18, 2012, the Regulator issued a revised Environment Act Licence No. 2716 RR for the SEWPCC effective May 1, 2012.

On October 5, 2012, the City submitted to the Regulator a revision to the engineering plan wherein the main treatment process was revised from Biological Aerated Filter to a Fixed-film Activated Sludge process.

On April 25, 2013, the Chief Administrative Officer approved a recommendation to award a contract to CH2M Hill Canada Ltd. to provide Professional Consulting Services for SEWPCC Upgrading/Expansion Project at an estimated cost of \$25,350,419.00.

On March 13, 2014, the Standing Policy Committee on Finance recommended that the South End Water Pollution Control Centre Financial Status reports and future reports pertaining to the North End, South End or West End Water Pollution Control Centre, include:

- The total amount of federal and provincial funding received to date as well as the balance of outstanding for Winnipeg ratepayers;
- Clarification of the cost estimates as a result of the regulatory requirements that have changed and the potential impact on the final budget; and
- A summary of the entire program in terms of funding from all levels of government.

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 now complete with the largest and last construction contract, Contract 4 tendered. The cost estimate for Contract 4 (C4), which has an identified accuracy range of -10% to + 10%, is higher than the project allocation for this work. The current project budget of \$335.6 million was based on a Class 3 cost estimate which had an AACE expected accuracy range of -20% to +30% or \$268.5 million to \$436.3 million.

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
- 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.

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

Appendix D

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	\$ 147.0	\$ 24.51	\$ 6.08	\$ 6.83		\$ 31.34	\$ 6.08	
GIF Wet Weather Flow	60.0	8.70	9.90	2.30	1.10	11.00	11.00	
Additional Provincial Funding ¹			33.54				33.54	114.04
Other	128.6					-	-	128.60
Estimated Program Costs	\$ 335.6	\$ 33.21	\$ 49.52	\$ 9.13	\$ 1.10	\$ 42.34	\$ 50.62	\$ 242.64

¹ \$33.54 of the \$195 million, committed by the Province of Manitoba for upgrade of all three wastewater treatment plants in the 2007 Throne Speech, has been received and is proposed to be applied to the SEWPCC subject to Provincial approval.

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 ¹	\$ 33.23	\$ 5.07	\$ 8.19			\$ 5.07	\$ 8.19	\$ 19.97
NEWPCC Centrate and UV Disinfection ¹	52.08	5.59	14.54			5.59	14.54	31.95
SEWPCC Nutrient Removal/Expansion	335.60	33.21	49.52	9.13	1.10	42.34	50.62	242.64
NEWPCC Power Supply and Headworks ²	408.38					-	-	408.38
NEWPCC Biosolids	552.71					-	-	-
NEWPCC Nutrient Removal	828.06					-	-	-
Estimated Program Costs	\$ 2,210.06	\$ 43.87	\$ 72.25	\$ 9.13	\$ 1.10	\$ 53.00	\$ 73.35	\$ 702.94

¹ WEWPCC Biological Nutrient Removal and NEWPCC Centrate and UV Disinfection have been completed.

² To date Council has approved NEWPCC Upgrade budget for Power Supply and Headworks Facilities only.