Minutes – Standing Policy Committee on Finance – September 9, 2019

REPORTS

Item No. 2 North End Sewage Treatment Plant (NEWPCC) Upgrade Projects

STANDING COMMITTEE DECISION:

The Standing Policy Committee on Finance concurred in the recommendation of the Winnipeg Public Service and received as information the financial status of the North End Sewage Treatment Plant (NEWPCC) Upgrade Projects, as contained in this report.

Further, the Standing Policy Committee on Finance requested that future quarterly reports related to this project include costing of potential interim phosphorus removal measures, if any.

DECISION MAKING HISTORY:

Moved by Councillor Gilroy,

That the report of the Winnipeg Public Service be received as information and that future project quarterly reports include costing of any interim phosphorus removal measures.

Carried

ADMINISTRATIVE REPORT

Title: **North End Sewage Treatment Plant (NEWPCC) Upgrade Projects, Project ID: 2031001304, 2031001310 and 203110013B, Quarterly Project Status Report No. 18 For the Period Ended April 30, 2019**

Critical Path: **Standing Policy Committee on Finance**

AUTHORIZATION

Author	Department Head	CFO	CAO
G.K. Patton, P. Eng., Manager of Engineering Services	T. W. Shanks, P. Eng., Acting Director, Water and Waste Department	P. Olafson, Interim CFO	D. Wardrop, Acting Interim CAO

EXECUTIVE SUMMARY

Project On Schedule: Yes ☑ No ☐ **Project On Adopted Budget: Yes ☑ No ☐**

Percent of Schedule Complete: 5% **Percent of Adopted Budget Spent:** 5%

The preliminary design and Class 3 cost estimate for the entire North End Sewage Treatment Plant (NEWPCC) Upgrade is now complete. Due to the project cost, complexity and risk a recommendation was provided to Council to split the planned plant upgrade into three distinct projects and execute them based on process criticality and available funding. The projects to complete the NEWPCC Upgrade are Power Supply and Headworks Facilities, Biosolids Facilities and Nutrient Removal Facilities. The recommendation to Council requested approval to proceed with the project scope for Power Supply and Headworks Facilities. Council approved the project recommendations on February 28, 2019. An update project schedule is being developed and work is proceeding on the Power Supply and Headworks Facilities. Other levels of Government funding for the remaining projects, to complete the plant upgrade, are being reviewed.

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 North End Sewage Treatment Plant (NEWPCC) Upgrade Projects, 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 $23.4 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)

(Update from last report)

NEWPCC Upgrade: Power Supply and Headworks Facilities

Power Supply Facility

This part of the project is in the Design Build execution phase.

- **RFP 40-2014:** KGS Group's (Owner's Advocate) Phase 2 work, regarding professional engineering services during construction by the Design Builder continues under a Supplemental Agreement to RFP 40-2014.
- **RFP 10-2015:** Knowles Consultancy (Fairness Advisor) provided fairness monitoring and advisory services through the RFP closing and evaluation periods. This contract is now closed.
- **RFP 599-2015B**: A design build contract was executed on April 16, 2018 with Black & McDonald Ltd. Black & McDonald Ltd. is currently completing their design. Construction and energization of the temporary transformers was completed in Q1 2019. Excavation and piling for the new substation and electrical building is anticipated in Q2 2019. An over expenditure of $42,000.00 was required to remove trees and to address a City-owned transformer safety concern.
- **RFP 42-2018:** Construction on Manitoba Hydro's temporary power lines has been completed. Design for the final arrangement is nearing completion, and the easement process is about to begin. Construction of Manitoba Hydro's permanent power lines is anticipated in Q4 2019.

Headworks Facilities

This part of the project is in the Procurement Stage.

- **RFP 182-2015:** AECOM is providing services related to the open period for the RFQ 659-2018. They are working with the City to address requests for information and

associated addenda.

AECOM continues to work on Request for Proposal documents and technical requirements for the NEWPCC Upgrade: Headworks Facilities Project.

- **RFP 9-2017**: P1 Consulting (fairness advisor) is involved in the RFQ open period for the design build of the NEWPCC Upgrade: Headworks Facilities Project. This includes Review of documents for fairness issues before it is issued to Proponents. Such documents include proponent conference presentation, requests for information, addenda etc.
- **RFP 102-2017**: Blakes Cassels & Graydon (Legal advisor) is involved in review of procurement documents and design build agreement for the project.
- **Bid Opportunity 586-2018:** NEWPCC - Upgrade Site Preparation Works is ongoing.
- **RFQ 659-2018A:** The Request for Qualifications (RFQ) for the design build of the NEWPCC Upgrade: Headworks Facilities Project was posted on the City's website March 6, 2019. The proponents' conference and site investigation took place March 20, 2019.
- **WWD File # S-1146:** AECOM was awarded a sole source professional consulting services contract in the amount of $30,118.00 to review potential interim phosphorus removal options for the City of Winnipeg. Work on this contract is ongoing.

Table 1 – Contracts

NEWPCC Upgrade: Power Supply and Headworks Facilities							
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**
Power Supply Facility							
40-2014 (Phase 1)	KGS Group Inc	Professional Engineering Consulting Services for the NEWPCC Power Supply Upgrade – Phase 1	$ 1,180,110	$ 94,602	7-Nov-2014	29-Jun-2018	100
40-2014 (Phase 2)	KGS Group Inc	Professional Engineering Consulting Services for the NEWPCC Power Supply Upgrade – Phase 2	$ 1,376,613	$ -	3-May-2018	-	25
10-2015	Knowles Consultancy Services Inc	Fairness Advisor for the NEWPCC Power Supply Upgrade Project	$ 37,620	$ 44,260	8-May-2015	-	100
599-2015 A[1]	Pre-qualified parties are Black & McDonald Limited Wescan Electrical Mechanical Services	Request for Qualifications for Design Build of the City of Winnipeg's North End Sewage Treatment Plant Power Supply Upgrade Project	N/A	N/A	N/A	-	100
599-2015 B[2]	Black & McDonald Limited	Request for Proposal for Design Build of the City of Winnipeg's North End Sewage Treatment Plant Power Supply Upgrade Project	$ 34,961,209	$ 42,067	16-Apr-2018	-	25
816-2015	Hanscomb Limited	Cost Consultant for the NEWPCC Power Supply Upgrade Project	$ 45,040	$ -	16-Dec-2015	2-Aug-17	100
773-2016	MB Hydro	Professional Consulting Services For Load Interconnection Facilities Study For The North End Sewage Treatment Plant (NEWPCC)	$ 88,299	$ -	7-Nov-2016	10-Jan-18	100
136-2017	Blakes Cassels & Graydon LLP	External Legal Counsel - NEWPCC Power Supply Project	$ 95,575	$ -	14-Dec-2016	-	90
42-2018	MB Hydro	Manitoba Hydro Works Associated with the North End Sewage Treatment Plant (NEWPCC) Biological Nutrient Removal Upgrade Project	$ 2,531,527	$ 249,556	29-Mar-2018	-	30
Headworks Facilities							
506-2014	Ostara Nutrient Recovery Technologies Inc	Supply and Delivery of a Struvite Recovery System	TBD	$ -	23-Jul-2015	-	-
182-2015	AECOM Canada Ltd	Professional Engineering Consulting Services for the North End Sewage Treatment Plant (NEWPCC) Upgrade – Phase 1	$ 16,015,439	$ 354,746	6-Jan-2016	-	70
866-2016	Cambi Inc.	Pre-Selection and Design Services for Thermal Hydrolysis Process System for the North End Sewage Treatment Plant	$ 75,000	$ -	15-Jun-2017	-	100
9-2017	P1 Consulting Inc	Request for Proposal for a Fairness Advisor for the North End Sewage Treatment Plant Upgrade Project	$ 82,880	$ -	2-May-2017	-	30
102-2017	Blakes Cassels & Graydon LLP	External Legal Counsel - NEWPCC Ugrade Project	$ 358,800	$ -	23-Nov-2017	-	30
225-2018	Hanscomb Limited	Professional Cost Consulting Services contract for the NEWPCC Upgrade Project	$ 98,800	$ -	27-Apr-2018	20-Jul-2018	100
586-2018	Chabot Enterprises Ltd	NEWPCC - Upgrade Site Preparation Works	$ 1,395,578	$ -	15-Aug-2018		60
S-1192	AECOM Canada Ltd	Professional Consulting Services for City of Winnipeg Interim Phosphorus Removal Options Evaluation	$ 30,118	$ -	17-Dec-2018		90
		Total	**$ 58,372,608**	**$ 785,231**			

[1]This is the first stage of two stage process and the contract value will be determined in the second stage
[2]The Original Contract Award Value includes MRST.

Upcoming Procurements:

Description	Anticipated Award Date
[1]Request for Qualifications for NEWPCC Upgrade : Headworks Facilities	Nov-2019
Request for Proposal Validation of Cost Estimate Classifications for NEWPCC Upgrade Project	May-2019

NEWPCC Upgrade: Biosolids Facilities							
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
TBD							
		Total	$ -	$ -			

Upcoming Procurements:	
Description	Anticipated Award Date

NEWPCC Upgrade: Nutrient Removal Facilities							
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
TBD							
		Total	$ -	$ -			

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
NEWPCC Power Supply Upgrade					
1	Project Definition Report [1]	2015 Q3	2015 Q4	2015 Q4	100
2	Preliminary Design Report	2016 Q1	2016 Q4	2017 Q1	100
3	Cost Report [2]	2017 Q1	2017 Q2	2017 Q3	100
4	Design Build RFP	2016 Q2	2017 Q1	2017 Q1	100
5	Design Builder Contract Award	2017 Q2	2018 Q2	2018 Q2	100
6	Design Build Substantial Performance	2020 Q2	-	-	-
7	Design Build Total Performance	2020 Q4	-	-	-
NEWPCC Upgrade: Headworks Facilities Project					
1	Project Definition Report [1]	2017 Q2	2017 Q2	2017 Q2	100
2	Preliminary Design Report	2018 Q1	2018 Q3	2018 Q3	100
3	Cost Report [2]	2018 Q3	2018 Q3	2018 Q3	100
4	Design Build RFP	2020 Q1	-	-	30
5	Design Builder Contract Award	2020 Q4	-	-	-
6	Design Build Substantial Performance	2025 Q4	-	-	-
7	Design Build Total Performance	2026 Q4	-	-	-
NEWPCC Upgrade: Biosolids Facilities Project					
TBD					
NEWPCC Upgrade: Nutrient Removal Facilities Project					
TBD					

[1] Owner's Advocate Class 5 Estimate

[2] Cost Consultant Class 3 Estimate

Risk (Update from last report)

NEWPCC Upgrade: Power Supply and Headworks Facilities

Power Supply Facility

The risk of project delays as a result of unknown environmental contamination at the location of Manitoba Hydro's existing substation has been mitigated by determining through an environmental site assessment that the contamination is limited to the existing fenced substation. This contamination will not cause project delays as the contamination is limited to the site of the existing substation. A remedial action plan to remove the contamination has been submitted by Manitoba Hydro to the Province for approval.

The risk associated with losing power at NEWPCC during a period of construction where there will be no redundancy to Manitoba Hydro electrical system is now closed. The construction period associated with no redundancy to Manitoba Hydro electrical system is complete.

Headworks Facilities

The risk associated with increase in project cost is now closed due to the provision of the class 3 cost estimate by the independent cost consultant and the owners advocate. The procurement strategy was also reviewed and the project will now be implemented in three capital projects per council meeting on February 28, 2019. Implementing the Project in three capital projects will mitigate the risk associated with a single large, complex, and lengthy project, and provide opportunities to better manage the overall project scope and cost.

NEWPCC Upgrade: Biosolids Facilities and Nutrient Removal Facilities

The NEWPCC Upgrade: Biosolids Facilities and the NEWPCC Upgrade: Nutrient Removal Facilities Projects are part of the projects for upgrading NEWPCC. Funding from other levels of government is required to implement these projects.

Table 3 – Significant Risks and Mitigations Strategies

NEWPCC Upgrade: Power Supply and Headworks Facilities	
Significant Risks and Mitigation Strategies	
Power Supply Facility	
Risk Statement and Explanation	**Risk Mitigation Management Plan**
New:	
None	
Ongoing:	
There may be unknown geotechnical conditions that impact the project schedule and cost.	A preliminary geotech study was performed by the Owners Advocate. Part of the risk will be transferred to the DB and the remainder will be retained by the City.
Safety issues could occur as a result of increased traffic on the NEWPCC site.	The Design Builder will be required to develop plans that address construction traffic and will be largely limited to a separate entrance to the plant.
Manitoba Hydro may not have the required power available within the required timeframe.	Ongoing close coordination with Manitoba Hydro and will obtain commitments from Manitoba Hydro based upon a firm schedule.
As part of construction activities, the power in an area believed to be de-energized could be energized resulting in a potential shock or arc flash and associated injury and equipment damage.	Ensure that the Design Builder has an appropriate Health and Safety Plan, Construction Phasing Plan and Interface Plan.
Mitigated:	
Old electrical equipment and building parts may contain asbestos.	Provide City hazardous material inventory as part of reference material and require Design Builder to perform detailed additional items. Ensure that DBA includes clear requirement for the Design Builder to manage this risk.
The Design Builder is not familiar with the existing equipment labelling, some of which may be confusing due to historical issues and thus there is a possibility of incorrect switching or electrical lock-out resulting in a potential shock or arc flash and associated injury and equipment damage.	City to carry out electrical switching of all equipment outside of the Design Builder's scope of work. Design Builder to prepare detailed plans of all switching events.
The existing substation is owned by Manitoba Hydro and it's environmental condition is unknown. Substation environmental issues may be identified through the course of the project resulting in project delays and additional costs.	Manitoba Hydro completed their Environmental Site Assessment in Q1. Results delineated the contamination within their existing fenced substation. A Remedial Action Plan to remove the contamination has been submitted by Manitoba Hydro to the Province for their approval.
Closed:	
There will be a period during construction when only a single power line will be active. In the event of a construction induced failure of that single line there could be a complete loss of power to the site along with the associated process consequences.	The construction period in time where there was no Manitoba Hydro electrical redundancy is now complete.

NEWPCC Upgrade: Power Supply and Headworks Facilities	
Significant Risks and Mitigation Strategies	
Headworks Facilities	
Risk Statement and Explanation	**Risk Mitigation Management Plan**
New:	
None	
Ongoing:	
There may be unknown conditions that may be associated with reusing existing facilities.	The DB agreement to include mechanism to deal with unforeseen conditions of existing facilities. Proponents will also be provided access to the site for due diligence and examination.
Assumptions made on the grit quantities in the sludge may not be appropriate resulting in damage to grit sensitive equipment and under sizing of sludge facilities.	A grit characterization study of the sludges from the City's sewage treatment plant will be carried out to quantify the grit in the sludge.
No existing legislation on odour release threshold causing potential impact and complaints from neighbors resulting in post - construction renovations or changes in operation at additional cost.	WSTP to define industry norm quantifiable odour limits and implement into DB design and performance requirements. A Field Study with dispersion modelling is ongoing.
Unknown existing conditions related to geotechnical, environmental and hazardous material may be encountered during construction causing schedule delays and additional costs.	Geotechnical investigations and environmental impact assessments are being carried out prior to construction to minimize unknowns. It is also anticipated that contracting with a single entity responsible for construction risks would minimize impact.
Closed:	
The Project may be affected due to project costs now estimated to be $1.4 billion.	A Class 3 cost estimate was carried out after preliminary design to validate the budget. An independent cost consultant was also retained to provide a Class 3 estimate.

NEWPCC Upgrade: Biosolids Facilities	
Significant Risks and Mitigation Strategies	
Risk Statement and Explanation	**Risk Mitigation Management Plan**
New:	
Project cost for the NEWPCC Biologcal Nutrient Removal Upgrade exceeded anticipated budget resulting in project delay and increased costs for implementation.	The procurement strategy was reviewed and the NEWPCC Upgrade will be implemented in three caiptal projects (one of which is this project, NEWPCC Upgrade: Biosolids Facilities). This is per Council meeting of Februry 28, 2019.
Ongoing:	
Mitigated:	

* Other risks will be identified after the implementation of this project

NEWPCC Upgrade: Nutrient Removal Facilities	
Significant Risks and Mitigation Strategies	
Risk Statement and Explanation	**Risk Mitigation Management Plan**
New:	
Project cost exceeds anticipated budget resulting in project delay and increased costs for implementation.	The procurement strategy was reviewed and the NEWPCC Upgrade will be implemented in three caiptal projects (one of which is this project, NEWPCC Upgrade: Nutrient Removal Facilities). This is per Council meeting of Februry 28, 2019.
Ongoing:	
Mitigated:	

* Other risks will be identified after the implementation of this project

Financial (Update from last report)

An over-expenditure in the approximate amount of $42,000.00 for RFP 599-2015B was required as indicated in Table 1 and detailed in history/discussion.

For further information, refer to Appendix B – Financial Forecast

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 5**	**Class 3**	
North End Sewage Treatment Plant (NEWPCC) Biological Nutrient Removal Upgrade Project			
City of Winnipeg Total	**795.59**		
Retained Earnings	87.64		
External Debt	690.29		
Environmental Projects Reserve	17.66		
NEWPCC Upgrade: Power Supply and Headworks Facilities			
City of Winnipeg Total		**408.38**	**408.38**
Retained Earnings		87.64	87.64
External Debt		303.08	303.08
Environmental Projects Reserve		17.66	17.66
Province of Manitoba	-	-	-
Total	**$ 795.59**	**$ 408.38**	**$ 408.38**

- The funding forecast should match the Capital Budget Detail Sheet.

1 On February 28, 2019 Council approved the existing project be amended to consist of three projects. Project one being Power Supply and Headworks Facilities only. With projects two and three pending Council approval.

Project 2 - NEWPCC Upgrade: Biosolids Facility - $553 million
Project 3 - NEWPCC Upgrade: Nutrient Removal Facilities - $828 million

Property Acquisition (Update from last report)

N/A

Stakeholder Engagements/Communications (Update from last report)

N/A

Subsequent Events after Report Period End Date

On May 10, 2019 RFP 49-2019 Request for Proposal Validation of Cost Estimate Classifications for NEWPCC Upgrade Project was awarded to Turner & Townsend.

FINANCIAL IMPACT

Financial Impact Statement

Date: August 1, 2019

Project Name:
North End Sewage Treatment Plant (NEWPCC) Upgrade Projects
Project ID: 2031001304, 2031001310 and 203110013B,
Quarterly Project Status Report No. 18
For the Period Ended April 30, 2019

COMMENTS:
Financial forecast for the NEWPCC Upgrade Projects can be found in Appendix B.

"Original signed by D. Capp, Acting Manager"
Darlene Capp, CPA, CGA
Acting 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 NEWPCC Upgrade Projects 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: R. Y. Adedapo, M.A.Sc., PMP, P. Eng., Senior Project Engineer

Date: August 30, 2019

File No. S-972

Appendices

Appendix A – Key Project Facts

Appendix B – Financial Forecast

Appendix C – Key Project Events (History)

Appendix D – Funding

Appendix A – Key Project Facts

Project Name	**NEWPCC Upgrade: Power Supply and Headworks Facilities**
Business Owner (Department)	Water and Waste Department
Project ID	2031001304 , 2031001310 and 203110013B
Project Sponsor	Director of Water and Waste
Department Responsible for Project Delivery	Water and Waste Department
Consultant Engineer (Company Name)	KGS Group Consutling Engineers and AECOM Canada Ltd.
Adopted Budget	$795.95 million
Class of Estimate (Adopted)	Class 5
Range of Estimate (Adopted)	-50% to +100% $397.80 million to $1,591.18 million.
Amended Budget	$408.38 million
Class of Estimate (Amended)	Class 3
Range of Estimate (Amended)	-20% to +30% $326.70 million to $ 530.89 million
Project Scope	
The scope is to accommodate expected influent flows and loads to 2037; upgrade the power supply to provide adequate power capacity for subsequent upgrades at NEWPCC; and address end-of-life issues at the front end of the plant that should be in place for projects that will address regulatory requirements for maximizing nutrients, biosolids reuse and new effluent limits for nitrogen and phosphorous.	
Major Capital Projects Advisory Committee Membership: - Moira Geer, Director of Water and Waste Department (Chair) - Mike Ruta, Acting Chief Administrative Officer - Dave Wardrop, Chief Transportation and Utilities Officer - Georges Chartier, Chief Asset and Project Management Officer - Lucy Szkwarek, Manager of Finance and Administration, Water and Waste - Jackie Veilleux, Project Director, Winnipeg Sewage Treatment Program, Water and Waste	

Project Name	**NEWPCC Upgrade: Biosolds Facilities**
Business Owner (Department)	Water and Waste Department
Project ID	TBD
Project Sponsor	Director of Water and Waste
Department Responsible for Project Delivery	Water and Waste Department
Consultant Engineer (Company Name)	TBD
Adopted Budget	Funding Dependent
Class of Estimate (Adopted)	
Range of Estimate (Adopted)	
Amended Budget	Funding Dependent
Class of Estimate (Amended)	
Range of Estimate (Amended)	
Project Scope	
The Biosolids Facilities project will address end of life equipment and regulatory requirements regarding the recovery of nutrients and maximize biosolids reuse. It will add new facilities to treat the sludge from City of Winnipeg's three sewage treatment plants and replace end-of-life equipment.	
Major Capital Projects Advisory Committee Membership:	
TBD	

Project Name	**NEWPCC Upgrade: Nutrient Removal Facilities**
Business Owner (Department)	Water and Waste Department
Project ID	TBD
Project Sponsor	Director of Water and Waste
Department Responsible for Project Delivery	Water and Waste Department
Consultant Engineer (Company Name)	TBD
Adopted Budget	Funding Dependent
Class of Estimate (Adopted)	
Range of Estimate (Adopted)	
Amended Budget	Funding Dependent
Class of Estimate (Amended)	
Range of Estimate (Amended)	

Project Scope

The Nutrient Removal Facilities project will address end of life equipment and regulatory requirements regarding the new effluent limits for nitrogen and phosphorous. It will add mostly all new facilities including new wet weather treatment capability; and replace end-of-life equipment.

Major Capital Projects Advisory Committee Membership:

TBD

Appendix B – Financial Forecast

Appendix B - North End Sewage Treatment Plant (NEWPCC) Upgrade Projects Financial Forecast*
As at April 30, 2019

Project Component Deliverables	Budget (in 000's)			Expenditure Forecast (in 000's)							Surplus (Deficit) From Amended Budget	Variance Last Report	Change in Variance
	Adopted Budget	Council Approved Change	Amended Budget*	Actual Costs To April 30, 2019 [1]	Projected Costs					Total Forecasted Costs			
					2019	2020	2021	2022	2023 and Beyond				
Power Supply and Headworks Facilities Project													
Engineering, Design and Other	$ 57,196	$ (8,503)	$ 48,693	$ 18,167	$ 5,465	$ 3,012	$ 3,246	$ 2,633	$ 16,664	$ 49,187	$ (494)	$ (494)	$ -
Construction	$ 621,011	$ (352,645)	$ 268,366	$ 2,473	$ 6,372	$ 33,115	$ 10,000	$ 35,000	$ 181,698	$ 268,658	$ (292)	$ (250)	$ (42)
Land Acquisition	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Internal Financing/Overhead Costs	$ -	$ 15,969	$ 15,969	$ 1,384	$ 490	$ 1,450	$ 2,010	$ 1,827	$ 8,808	$ 15,969	$ -	$ -	$ -
Contingency	$ 117,383	$ (42,031)	$ 75,352						$ 74,566	$ 74,566	$ 786	$ 744	$ 42
Subtotal	**$ 795,590**	**$ (387,210)**	**$ 408,380**	**$ 22,024**	**$ 12,327**	**$ 37,577**	**$ 15,256**	**$ 39,460**	**$ 281,736**	**$ 408,380**	**$ -**	**$ -**	**$ -**
Biosolids Facilities Project - Funding Dependent													
Engineering, Design and Other	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (30,967)	$ -	$ (30,967)
Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (377,967)	$ -	$ (377,967)
Land Acquisition	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Internal Financing/Overhead Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (43,161)	$ -	$ (43,161)
Contingency	$ -	$ -	$ -						$ -	$ -	$ (100,617)	$ -	$ (100,617)
Subtotal	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ (552,712)**	**$ -**	**$ (552,712)**
Nutrient Removal Facilities Project - Funding Dependent													
Engineering, Design and Other	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (34,973)	$ -	$ (34,973)
Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (536,250)	$ -	$ (536,250)
Land Acquisition	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Internal Financing/Overhead Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (143,252)	$ -	$ (143,252)
Contingency	$ -	$ -	$ -						$ -	$ -	$ (113,582)	$ -	$ (113,582)
Subtotal	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ (828,057)**	**$ -**	**$ (828,057)**
Total Project Budget		$ (387,210)	**$ 408,380**	$ 22,024	$ 12,327	$ 37,577	$ 15,256	$ 39,460	$ 281,736	$ 408,380	$ (1,380,769)	$ -	$ (1,380,769)

% of Project Budget Spent[3]	
Power Supply & Headworks Facilities	5%
Biosolids Facilities	TBD
Nutrient Removal Facilities	

		Amount in '000's	
Project ID	**Project Year**	**Amended Budget**	**Costs to Date**
2031001304 [2]	2004	$214	$214
2031001310 [2]	2010	$305	$305
203110013B	2012 – 2017	$407,861	$21,505
Total Project Budget		$408,380	$22,024

* Amended budget and actual costs to date have been agreed to the City's general ledger and Monthly Capital Expenditures Report

[1] Actual Costs to Date include closed budget years

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

[3] Actual costs to date/Amended budget

Appendix C – Key Project Events (History)

THE PROJECT

The goal of this project is to upgrade the North End Sewage Treatment Plant (NEWPCC) to meet new Regulatory Licence requirements regarding the maximization of nutrients and biosolids reuse and new effluent limits for nitrogen and phosphorous. The upgrade will also add wet weather treatment capability; add a new facility to treat the sludge from all three plants and replace end-of-life equipment. The Project design will accommodate expected influent flows and loads to 2037. It will also take into account future regulatory trends and long term planning to year 2067 to facilitate effective process or facility modifications should they be required.

A new power sub-station is required at the NEWPCC to accommodate the additional power demand of the upgrades at the facility. The power supply upgrade is being delivered as a separate project from the main NEWPCC upgrade to allow for early procurement of long-lead items such as transformers, to ensure that the electrical power upgrade is available for the new processes when needed.

The delivery method for NEWPCC Power Supply Upgrade Project is design build (DB). The work will replace the existing Manitoba Hydro substation on the site with a City owned substation. The main NEWPCC Upgrade Project will be largely a DB project with a small scope being procured as design bid build (DBB).

The upgraded facility will have an economical whole-life cost and be an efficient and safe workplace for operational personnel. In addition, the plant must operate continuously during the work and continue to meet current effluent limits. The impact of construction and commissioning to the treatment's facility capability will be minimized as much as possible.

The Adopted Budget to date for the NEWPCC – Nutrient Removal/Upgrade is $795.59 million (Class 5 Estimate). The NEWPCC – Nutrient Removal/Upgrade adopted project budget includes the following Project Identifications:

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

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.

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 May 6, 2009 the Environment Act Licence (EAL) No. 2684 RRR was issued for the NEWPCC.

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 June 16, 2011, the Save Lake Winnipeg Act amending sections of the Water Protection Act (Act) came into effect. Section 4.2(3) of the amended Act requires the City to submit a plan that details how the City will comply with subsections 4.2(1) and (2).

The NEWPCC Upgrading Plan was submitted to the Regulator in compliance with Section 4.2(3) of the amended Water Protection Act on June 15, 2012. The Regulator approved the Upgrading Plan on October 2, 2012. The Department submitted the NEWPCC Master Plan and the revised NEWPCC Master Plan on September 27, 2013 and April 28, 2014 respectively. The Master Plan was approved by the Regulator on May 29, 2014.

In the Regulator's Licence alteration Letter dated December 30, 2014, the project completion date was specified as December 2019. However, the Regulator was notified on June 23, 2016 that the project schedule was not achievable. Manitoba Sustainable Development acknowledged receipt of this notice on August 16, 2016 and indicated they had "no concerns at this time." Regular schedule updates and progress reports continue to be submitted to MB Sustainable Development on a quarterly basis.

In the second quarter of 2017, the Department reported that an updated conceptual design project cost estimate was received from the design consultant. This new information indicated costs over a billion dollars, much higher than the currently approved budget of $795.59 million (Class 5 estimate).

RISKS AND RISK MITIGATION STRATEGIES

There are risks associated with the cost and schedule for a project that is this large and complex especially at the early stages. In addition, the final bid amounts for projects are unknown until the project agreement is finalized with the Design Builder.

The Adopted Budget to date, $795.59 million, is based on a Class 5 cost estimate which has an Association for the Advancement of Cost Engineering (AACE) expected accuracy range of -50% and + 100% or $397.80 million to $1,591.18 million. However, the project cost is estimated to be $1.4 billion. There could be a risk to the schedule due to the budget constraint.

In consultation with our engineering advisors, it was necessary to make estimates about the pace of engineering design and the pace of construction. Any delays typically result in increases in cost.

An ongoing risk management strategy has been implemented for both the main NEWPCC Upgrade and the NEWPCC Power Supply Upgrade Projects. It includes a proactive process of

identifying risks, performing qualitative and quantitative risk analyses, creating response plan strategies and ongoing monitoring. The risk management process is an active part of the management of the projects. The projects will also incorporate structured Hazard and Operability Analysis and a Construction Hazard Assessment Implication Review. Since detailed design and construction will be carried out through a DB contract, the WSTP will be transferring as much risk as reasonable to the Design Builder.

The Risk Registers for each of the Projects contain cost and schedule risks associated with design, procurement, construction, operation and unknown events. The Risk Register is reviewed and updated regularly by the WSTP.

Appendix D - Funding

Funding: North End Sewage Treatment Plant (NEWPCC) and Winnipeg Sewage Treatment Program (WSTP)
Appendix D

1) Funding for the NEWPCC Upgrade is as follows:

NEWPCC Upgrade (in $millions)	Total Cost	Funded to Date Canada	Funded to Date Manitoba	Funding Pending Canada	Funding Pending Manitoba	Total Funding Canada	Total Funding Manitoba	City Share of Costs
Power Supply and Headworks Facilities [1]	$ 408.38	$ -	$ -	$ -	$ -	$ -	$ -	$ 408.38
Funding Dependent								
Biosolids Facilities	552.71							$ -
Nutrient Removal Facilities	828.06							$ -
Estimated Program Costs	**$ 1,789.15**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 408.38**

[1] To date Council has approve NEWPCC Upgrade budget for Power Supply and Headworks Facilities only.

2) Funding from other levels of government for the Winnipeg Sewage Treatment Programs is as follows:

WSTP All Projects (in $millions)	Total Cost	Funded to Date Canada	Funded to Date Manitoba	Funding Pending Canada	Funding Pending Manitoba	Total Funding Canada	Total Funding Manitoba	City Share of Costs
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 [2]	335.60	33.21	49.52	9.13	1.10	42.34	50.62	242.64
NEWPCC Power Supply and Headworks Facilities	408.38	-	-	-	-	-	-	408.38
NEWPCC Biosolids Facilities	552.71							-
NEWPCC Nutrient Removal Facilities	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] $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.