Minutes – Standing Policy Committee on Finance – March 3, 2016

REPORTS

Item No. 7 North End Sewage Treatment Plant (NEWPCC) Biological Nutrient Removal Upgrade Financial Status Report No.6 for the Period from October 31, 2015 to December 31, 2015

STANDING COMMITTEE RECOMMENDATION:

The Standing Policy Committee on Finance concurred in the recommendation of the Winnipeg Public Service and received the report as information.

DECISION MAKING HISTORY:

Moved by Councillor Lukes,

That the recommendation of the Winnipeg Public Service be concurred in.

Carried

ADMINISTRATIVE REPORT

Title: **NORTH END SEWAGE TREATMENT PLANT (NEWPCC) BIOLOGICAL NUTRIENT REMOVAL UPGRADE FINANCIAL STATUS REPORT NO.6 FOR THE PERIOD FROM OCTOBER 31, 2015 TO DECEMBER 31, 2015**

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

AUTHORIZATION

Author	Department Head	CFO	CAO
G. K. Patton	M. L. Geer, Acting for D. Sacher	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 Policy Committee on Finance.

EXECUTIVE SUMMARY

This report identifies the financial status and significant events for the NEWPCC Biological Nutrient Removal Upgrading and Expansion for the period October 31, 2015 to December 31, 2015.

IMPLICATIONS OF THE RECOMMENDATIONS

The project schedule is under review and will be monitored throughout the life of the project.

HISTORY / DISSCUSSION

DISCUSSION:

1. 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

(based on recommendation to council) 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 processes 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 larger NEWPCC upgrade to allow for early procurement of long-lead items such as transformers, to ensure that power is available when needed.

The delivery method for the NEWPCC Power Supply Upgrade Project is design-build (DB). Upgrades for the NEWPCC Biological Nutrient Removal (BNR) Project will be a combination of DB and design-bid-build (DBB) procurement models.

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 meet current effluent limits. The impact of construction and commissioning to the treatment facility's capability will be minimized as much as possible.

The 2015 Adopted Budget for the NEWPCC – Nutrient Removal/Upgrade is $143.21 million (Class 5 Estimate). The 2015 NEWPCC – Nutrient Removal/Upgrade adopted project budget includes the following Project Identifications:

Project ID	Project Year	Adopted Budget
2031001304 [1]	2004	$ 213,958
2031001310[1]	2010	$ 304,829
203110013B	2012 - 2015	$ 142,695,171
2015 Total Adopted Budget		$ 143,213,958[2]

[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.

[2]This amount differs from the Table in Section 7 of this report because this table does not include all amounts in the 2015 Adopted Budget and Five Year Capital Forecast ($426,156,000 in 2016 for a total of $569,370,000).

Based on the Manitoba Conservation and Water Stewardship (the Regulator) approval of the NEWPCC Master Plan, the future NEWPCC BNR Project is to be completed by the end of December 2019.

The Executive Project Sponsor is the Director of Water and Waste. The Project Manager is Remi Adedapo, M.A.Sc., PMP, P. Eng.

2. MAJOR CAPITAL PROJECT STEERING COMMITTEE

Administrative policy for projects with capital cost exceeding $20 million requires formation of a Major Capital Project Steering Committee. This threshold was approved by Council on October 28, 2015. Any project reporting to Standing Policy Committee on Finance under the previous $10 million threshold will continue to report. The Committee has been formed and its members are:

Doug McNeil, Chief Administrative Officer
Michael Ruta, Chief Financial Officer
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 the report be sent to the Standing Policy Committee on Finance.

3. RISKS AND RISK MITIGATION STRATEGIES

There are significant risks associated with cost and schedule for a project this large and complex especially at the early stage. In addition, the final bid amounts for projects are unknown until the project agreement is finalized with the design builder. The 2015 Adopted Budget and the 2016 to 2020 Five Year Forecast project budget $569.37 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 $284.69 million to $1,138.74 million. The proposed new digestion facility to treat the biosolids from all three sewage treatment plants is estimated to cost $225.24 million (Class 5 Estimate, or $112.62 million to $450.48 million).

In consultation with our engineering advisors it was necessary to make assumptions 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 the NEWPCC Power Supply Project. It includes a proactive process of identifying risks, performing qualitative and quantitative risk analyses, creating response plan strategies and ongoing monitoring.

The Winnipeg Sewage Treatment Program (WSTP), the design consultant, and the key City stakeholders for the NEWPCC Power Supply Project are scheduled to perform formal risk and opportunity analyses at the following project milestones:

- End of Project Definition Design Phase – this analysis has been completed
- End of Preliminary Design phase – this analysis is being scheduled

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 through the design build contract.

A project risk register will be developed for each separate project under the NEWPCC budget. Currently a risk register has been developed for the NEWPCC Power Supply project and contains over 30 specific cost and schedule risks associated with design, procurement, construction, operation, and unknown events. The project will also incorporate structured

Hazard and Operability Analysis and Construction Hazard Assessment Implication Review. A risk register for the NEWPCC Upgrade will be developed after the Project Definition Phase is complete.

Critical risks associated with the NEWPCC Power Supply include:

NEWPCC Power Supply Upgrade Risk Matrix[1]	
Risk Statement and Explanation	Mitigation
There are tight project constraints associated with the installation/removal of high voltage lines into the plant by MB Hydro as this work can only be carried out in the spring or fall. This may result in project delays.	Ongoing review of project concept and load requirements with Manitoba Hydro.
If power failures occur during construction when no line redundancy exists, Project delays and process upset may occur; resulting in additional costs for remediation, and lack of power for new plant facilities.	Provide backup capacity as part of the design and install temporary equipment early to be available as backup.
A safety issue as a result of work near energized high voltage equipment, project delay could occur resulting in additional costs for safety measures and longer project duration.	The design build RFP to require specific safety practices for work around HV equipment (safety watcher) as well as the development of very detailed step-by-step work execution plan and close monitoring to maintain adherence.
Old electrical equipment and building parts may contain asbestos.	Provide existing asbestos surveyed list in DB RFP. Include a process in the RFP for identifying and handling unidentified asbestos and include a requirement for mandatory asbestos training for all DB construction staff.
Delays in equipment delivery may result in project delay.	Expedite construction schedule and contractor awards.

[1]Risk Matrix is arranged vertically from higher to lower assessed risk

4. CHANGES FROM LAST REPORT

NEWPCC Power Supply Upgrade:
The Project Definition Report – 100% Complete has been accepted. The preliminary design is in progress. The Request for Qualifications (RFQ) for the design builder has been posted on the Materials Management website.

The cost consultant contract to estimate the construction costs of the NEWPCC Power Supply Upgrade Project for internal purposes has been awarded.

NEWPCC Upgrade:
A Request for Proposal (RFP) was posted on the City's website in April 2015 to engage the services of a professional consulting firm to act as both the owner's advocate for the design build and the consultant for the design bid build for the NEWPCC Upgrade. This RFP closed in

July, 2015 and, based on the authority delegated by Council on May 19, 2010, the CAO approved award of the contract to AECOM.

5. ISSUES/RISKS REQUIRING FURTHER ATTENTION

Cost Risk

The current project budget for the NEWPCC Upgrade Project is $569.37 million and is based on a Class 5 estimate with an expected accuracy range of between -50% and +100%. It is anticipated that the estimate will be refined based on cost estimates from design consultants for the NEWPCC Power Supply and the NEWPCC Upgrade Projects at the completion of the conceptual design and preliminary design phases.

The NEWPCC Upgrade project is proposed to include the new digestion facility to treat the biosolids from all three sewage treatment plants at a Class 5 estimated cost of $225.24 million. The budget for this work is currently included in the Biosolids – Alternative Disposal Delivery and Management System budget. The estimated cost is proposed to be integrated into the NEWPCC - Nutrient Removal/Upgrade during the 2016 budget process for consideration by Council.

A City-owned communications tower is located on the land proposed for the NEWPCC Upgrade and therefore must be removed prior to the construction of the NEWPCC Upgrade. Costs associated with moving this tower are currently estimated to be $862,400. The estimate is based on a Class 4 cost estimate with an expected accuracy range of between -30% to +60%. This cost is not included in the current cost estimate or budget and will be included in the 2017 Five-Year Capital Forecast (2018 to 2022).

A Thermal Hydrolysis with Mesophilic Anaerobic Digestion (TH-MAD) process is proposed to be installed as part of the NEWPCC Upgrade based on the Biosolids Master Plan. The TH-MAD process will generate more bio-gas than the existing process and will also require a significant amount of high pressure steam to aid the sludge digestion. This bio-gas could be used as an energy source for the boilers to produce the steam for the TH-MAD process or it could be used by a combined heat and power (CHP) facility to produce both steam and electricity. The steam from the CHP could be used by the TH-MAD process while the electricity produced could be used to offset electricity costs.

The owner’s advocate for the NEWPCC Upgrade will develop a business case to determine the viability of building and using a CHP facility versus the use of boilers for the bio-gas. Costs related to the design construction of the CHP facility have not been included in the Biosolids – Alternative Disposal Delivery and Management System budget or the NEWPCC - Nutrient Removal/Upgrade budget. These costs may be added to the NEWPCC budget for Council review if justified by the business case.

It is an AACE International accepted practice that cost estimates are adjusted as design progresses.

6. SCHEDULE

Key schedule milestones for the NEWPCC Power Supply Upgrade project's professional engineering services, as provided by the consultant, are as follows:

NEWPCC Power Supply Upgrade		
Milestone Description	**Timeline**	
	Previous Report	**This Report**
Complete Project Definition Report	July 2015	November 2015
Complete Preliminary Design Report	March 2016	March 2016
Issue Design Builder RFP	May 2016	May 2016
Design Builder Contract Award	February 2017	February 2017

Detailed design and construction schedule for the NEWPCC Power Supply Upgrade Project will be provided upon project award to the design builder.

Project schedules for the NEWPCC Upgrade will be included in future reports when design commences. Completion of the Project Definition Report in November is not anticipated to result in delays to other aspects of the project, as they are run concurrently.

7. FINANCIAL ANALYSIS

The status of current Requests for Proposal and Bid Opportunities are as follows:

RFP or Bid Opportunity	Description	Current Status	Contract Value (GST & MRST extra as applicable)
40-2014	Professional Engineering Consulting Services for the NEWPCC Power Supply Upgrade – Phase 1	Contract awarded to KGS Group Inc.	$1,180,110.00
506-2014	Supply and Delivery of a Struvite Recovery System	Pre-selection awarded to Ostara Nutrient Recovery Technologies Inc.	TBD
10-2015	Fairness Advisor for the NEWPCC Power Supply Upgrade Project	Contract awarded to Knowles Consultancy Services Inc.	$37,620.00
182-2015	Professional Engineering Consulting Services for the North End Sewage Treatment Plant (NEWPCC) Upgrade – Phase 1	Awarded to AECOM Canada Ltd.	$16,015,439.00
816-2015	Cost Consultant for the NEWPCC Power Supply Upgrade Project	Contract awarded to Hanscomb Limited	$45,040.00
	Total		$17,278,209.00+

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 2015	143,214,000 [1]	3,073,485	140,140,515
2016	426,156,000 [2]	7,935,000	558,361,515
2017		23,474,000	534,887,515
2018		166,219,000	368,668,515
2019		145,174,000	223,494,515
Beyond 2019		223,494,515	0
Total	569,370,000[3]	569,370,000	

[1]Capital budget approved by Council
[2]Capital Program requirements included in the 2015 - 2019 Capital Budget Estimates
[3]Does not include the 2016 budget submission

A summary of the budget to forecast comparison is included in Appendix 1 (attached).

Overall Sewage Treatment Program Funding

The Province of Manitoba has committed $234.8 million towards the sewage treatment plant upgrades:

- $25 million is committed from the Canada Strategic Infrastructure Fund program.
- $11 million is committed from the Green Infrastructure Fund program.
- $3.8 million is committed from the 2004 Urban Capital Projects Allocation.
- $195 million committed by the Province of Manitoba in its 2007 Throne Speech.

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

The City projects provincial funding of $195 million towards the NEWPCC Upgrade out of the total $234.8 million committed to sewage treatment plant upgrades. The balance of $374.37 Million will be funded using a combination of cash, Environmental Projects reserve and debt funding. Each of these sources is internally funded by rates as forecast in the Council approved rate report.

There are no federal funds committed for this project. Funding for the NEWPCC and the WSTP is outlined in Appendix 2 (attached).

The Department is recommending inclusion of Biosolids as there is no government funding for this project.

8. OTHER

Winnipeg Sewage Treatment Program (WSTP)

Under the WSTP, Veolia will 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 NEWPCC upgrade and expansion
- Share in the risks of the capital project delivery

FINANCIAL IMPACT

Financial Impact Statement Date: January 21, 2016

Project Name:

NORTH END SEWAGE TREATMENT PLANT (NEWPCC) BIOLOGICAL NUTRIENT REMOVAL UPGRADE FINANCIAL STATUS REPORT NO. 6 FOR THE PERIOD FROM OCTOBER 31, 2015 TO DECEMBER 31, 2015

COMMENTS:

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

"Original signed by L. Szkwarek, CPA, CGA"
Lucy Szkwarek, CPA, CGA
Acting Manager of Finance and Administration

CONSULTATION

In preparing this report there was consultation with: n/a

OURWINNIPEG POLICY ALIGNMENT

02-2 Environment
The NEWPCC Biological Nutrient Removal Upgrade will reduce the environmental impact of our citizens on the Red River and its 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 Department
Division: Engineering Services Division
Prepared by: R.Y. Adedapo, P. Eng.
Date: February 3, 2016
File No.: S-972

c: Major Capital Project Steering Committee (email)
J. Veilleux, P. Eng., Water and Waste Department (email)

ATTACHMENTS:

Appendix 1 – NEWPCC Upgrade Estimated Costs and Project Costs to Complete
Appendix 2 – Funding: North End Sewage Treatment Plant (NEWPCC) and Winnipeg Sewage Treatment Program (WSTP)

NEWPCC UPGRADE
WATER AND WASTE DEPARTMENT - ENGINEERING DIVISION
APPENDIX 1
As at January 5, 2016

	COMPONENTS	COSTS				PROJECTED COSTS TO COMPLETE					TOTAL	VARIANCE
		Approved Budgeted to Date[1]	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to Date (per G/L) 05-Jan-16	2016	2017	2018	2019	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavorable)
A	**PROFESSIONAL SERVICES[2]**	53,860,000	2,749,202	222,283	2,971,485	7,935,000	11,427,000	15,219,000	8,700,000	7,607,515	53,860,000	0
B	**CONSTRUCTION**	440,419,000	102,000	0	102,000	0	12,047,000	151,000,000	136,474,000	140,796,000	440,419,000	0
C	**CONTINGENCIES**	75,091,000								75,091,000	75,091,000	0
	TOTALS	569,370,000	2,851,202	222,283	3,073,485	7,935,000	23,474,000	166,219,000	145,174,000	223,494,515	569,370,000	0
	Percentage Complete	0.54%										

[1] Total budget of $569.37 Million for the NEWPCC Upgrade and Distribution of costs to 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, overhead and administration charges

Funding: North End Sewage Treatment Plant (NEWPCC) and Winnipeg Sewage Treatment Program (WSTP)
Appendix 2

1) Funding for the NEWPCC is as follows:

NEWPCC Nutrient Removal/Upgrade		Funded to Date		Funding Pending		Total Funding		City Share of
(in $millions)	Total Cost	Canada	Manitoba	Canada	Manitoba	Canada	Manitoba	Costs
Provincial Funding								
Environment Act Licence								
Driven	466.00		26.94		168.06	-	195.00	271.00
Other	103.37							103.37
Estimated Program Costs	**569.37**		**26.94**		**168.06**	**-**	**195.00**	**374.37**

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

WSTP All Projects		Funded to Date		Funding Pending		Total Funding		City Share of
(in $millions)	Total Cost	Canada	Manitoba	Canada	Manitoba	Canada	Manitoba	Costs
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	2.11	6.08	40.23	11.00	42.34	17.08	276.18
NEWPCC Nutrient Removal/Upgrade	569.37		26.94		168.06		195.00	374.37
Estimated Program Costs	**990.28**	**12.77**	**55.75**	**40.23**	**179.06**	**53.00**	**234.81**	**702.47**

Notes:

- WEWPCC Biological Nutrient Removal and NEWPCC Centrate and UV Disinfection have been completed.
- The City's share of the NEWPCC project costs will be funded by cash ($82.7 million) and debt financing ($291.7 million). The funding distribution is subject to change, depending on the actual timing of spending and prevailing borrowing.