Minute No. 49
Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – November 22, 2018

Item No. 5 Winnipeg Sewage Treatment Program 2017 Annual Report Program Agreement Between The City Of Winnipeg and VWNA Winnipeg Inc. (VEOLIA)

COUNCIL DECISION:

Council concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and adopted the following:

1. That this report be received as information.

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – November 22, 2018

DECISION MAKING HISTORY:

Moved by Councillor Gilroy,

That the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment be adopted by consent.

Carried

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On December 5, 2018, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and submitted the matter to Council.

STANDING COMMITTEE RECOMMENDATION:

On November 22, 2018, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service and submitted the matter to the Executive Policy Committee and Council.

ADMINISTRATIVE REPORT

Title: **WINNIPEG SEWAGE TREATMENT PROGRAM 2017 ANNUAL REPORT PROGRAM AGREEMENT BETWEEN THE CITY OF WINNIPEG AND VWNA WINNIPEG INC. (VEOLIA)**

Critical Path: **Standing Policy Committee on Water and Waste, Riverbank Management and the Environment - Executive Policy Committee – Council**

AUTHORIZATION

Author	Department Head	CFO	CAO
L. Szkwarek, CPA, CGA Manager Finance and Administration	M. L. Geer, CPA, CA, Director, Water and Waste Department	M. Ruta	D. Wardrop, Acting CAO

EXECUTIVE SUMMARY

This Annual Report to Council summarizes the accomplishments and financial results that were realized in 2017, the seventh year of the 30-year program, as well as the plans and objectives that have been set for 2018.

The Veolia personnel augment the City's team and bring capacity and worldwide expertise to the Winnipeg Sewage Treatment Program (WSTP). Through Veolia's global network the City will benefit from strategic procurement strategies and extensive experience in operations and maintenance of the upgraded sewage treatment plants. Veolia's earnings are performance based and remain at risk for the duration of the agreement.

The WSTP day-to-day operations are governed by the program's Management Team (MT). The MT provides advice and recommendations on the WSTP activities to the Director of the Water and Waste Department (Director), and on the administration of the WSTP to the Leadership Team (LT). The City retains full ownership and control of the sewage treatment plant facilities. The membership of the MT and LT are attached as Appendix A.

In 2017 the WSTP continued to innovate and make progress in administration, operations and maintenance, capital project delivery, and compliance with Environment Act Licenses.
Each year the Director of Water and Waste approves the WSTP's performance goals, and key performance indicators (KPI) as outlined in an Annual Program Plan (APP). The 2018 APP remains focused on activities for the delivery of the major capital projects (SEWPCC Upgrade and Expansion, and NEWPCC Upgrade and Power Supply) with continued support for compliance, maintenance improvement, and operational readiness to receive the new works.

RECOMMENDATIONS

That Council receives this report as information.

REASON FOR THE REPORT

A 30-year consulting services agreement with VWNA Winnipeg Inc. (Veolia) was executed on April 20, 2011. This agreement requires the City to report on results of the WSTP to City Council on an annual basis.

IMPLICATIONS OF THE RECOMMENDATIONS

There are no implications as this report is being received as information.

HISTORY/DISCUSSION

On April 20, 2011, the City entered into a consulting services agreement with VWNA Winnipeg Inc. (Veolia). The scope of the agreement includes advice on operations and capital upgrades at the City's three sewage treatment plants for the duration of a 30 year agreement.

The City retains full ownership and control of the sewage treatment plant facilities. The City-Veolia contractual relationship abides by the following WSTP principles:

- City employees are managing and operating the facilities;
- Decisions are being made on the basis of whole-life costs;
- Best for job and best for Program decisions are being made;
- Open book accounting and audit of direct costs continues;
- The City and Veolia work collaboratively, openly and honestly within a no fault/no blame culture; and
- Compensation based upon performance.

The Winnipeg Sewage Treatment Program (WSTP) is comprised of key participants from the Water and Waste Department's (WWD) Engineering Services, Wastewater Services, and Finance and Administration Divisions, along with dedicated on-site Veolia staff members.

The WSTP day-to-day operations are governed by the program's Management Team (MT). The MT provides advice and recommendations on the WSTP activities to the Leadership Team (LT) and the Director of Water and Waste Department, and on the administration of the WSTP.

The LT is comprised of senior leaders from Veolia North America and City of Winnipeg. The LT provides advice and recommendations to the Director on the efficient delivery of all aspects of the Program. Within City delegated authority, it is the Director who approves all final decisions related to the WSTP (see Appendix 1 for the current composition of the MT and LT).

The Annual Program Plan (APP) is developed by the WSTP with input and review from the MT and LT, and submitted for approval to the Director.

ANNUAL PROGRAM REPORT 2017

A. Program Management Initiatives:

1. Communication
   The development of an external website, expected to go live in 2018, was the primary focus for 2017 which included a site map and business process to ensure content is current and relevant. Marketing of the NEWPCC Upgrade Project to the construction industry continued with the Program being presented at the Design Build Institute of America (DBIA) Conference in Minneapolis and the American Concrete Institute (ACI) Conference in Winnipeg.

2. Risk Management
   Risk identification, analysis and ongoing assessment of mitigation strategies continue to be central to the Program. A comprehensive risk profile was developed for the NEWPCC Upgrade Project which outlines the major risks and mitigation actions.

3. Benefits Register
   A Benefits Register has been established as a tool to document Program achievement and success. In 2017 the focus was on creating and populating the database and reviewing the benefits at the MT level. Experience gained has resulted in improvement to training and proper documentation of program performance.

4. Knowledge Transfer
   Knowledge transfer is a key benefit of the program as the City has access to Veolia's expertise from operating approximately 8000 plants worldwide. This relationship has benefitted the WSTP through the completion of the following activities:

   a) Advanced Design Build (DB) Training
      Five design build training sessions were delivered to City staff to gain a better understanding of the DB project delivery methodology.

   b) Maintenance Planning
      Best practice maintenance plans were established for NEWPCC. A reliability centered maintenance model incorporates planning and scheduling for proactive maintenance as well as predictive maintenance routines.

   c) Inventory Management
      An inventory management assessment was undertaken in accordance with best inventory practices defined by the *Supply Chain Council*. The assessment has identified opportunities to better meet the business needs and implement changes in governance, processes and performance measurement.

   d) Operational Readiness
      Operational readiness is a key factor in commissioning and operating the updated SEWPCC. The program team conferred with other jurisdictions (via Veolia's international networks) to gather intelligence and lessons learned on implementing new sewage treatment processes and technologies.

B. Compliance and Maintenance

1. NEWPCC Sequencing Batch Reactor (SBR) Diffuser Investigation
   Operational experts from Veolia carried out a design review and an onsite investigation, highlighting design deficiencies in the SBR. Interim strategies have been implemented to mitigate the problem until design changes can be fully implemented.

2. NEWPCC Grit Optimization
   The grit removal process was identified as a risk factor to digester performance. A grit removal monitoring process was implemented to improve digester reliability.

3. WEWPCC CEPT Trial
   Performance of the Chemically Enhanced Primary Treatment (CEPT) system at the WEWPCC facility was identified as an operating risk. A comprehensive study of the CEPT system was undertaken, resulting in changes to Standard Operating Procedures for use during routine maintenance, thereby mitigation of risk of non-compliance with Environment Act License.

4. Wastewater Reporting System

A cloud-based reporting tool to support Process Control Management, was recommended and subsequently procured in 2017. It will be implemented in 2018.

5. Operational Assistance Tool (OAT)
   A planning tool has been put in place to facilitate operations and maintenance resource planning. The tool helps operations and maintenance to identify and communicate on resource stress points within the Program.

6. Maintenance Strategy
   The development of a best practices maintenance strategy was ongoing in 2017 through collaborative knowledge transfer between Veolia and the City. This included:

   a) A maturity assessment and a three year road map to align long term priorities with a focus on criticality, financial, maintenance organization, and maintenance quality, utilizing industry proven methodologies.

   b) Development of foundation documents for inventory management, predictive maintenance, asset classification, criticality and maintenance philosophy.

   c) Development of an asset hierarchy for the SEWPCC facility.

7. Deferred Operational Projects
   Focusing on capital project support resulted in two operational optimization projects being deferred to 2018. The projects deferred were the NEWPCC electricity feasibility study and the NEWPCC Ultraviolet disinfection optimization.

C. Asset Refurbishment and Replacement (ARR) Program

An ARR Delivery Tracking Report was created to monitor the Program and has grown and matured due to joint efforts between the City and Veolia. This strategy has improved long-term capital planning and reduced asset performance risk. As of the end of 2017, there are five projects in the delivery phase and two projects in the procurement phase.

Delivery Phase:

1. NEWPCC Return Activated Sludge Pipe Inspection
2. WEWPCC Fermenter Inspection
3. WEWPCC Grit Classifiers
4. NEWPCC Main Building HVAC Replacement
5. NEWPCC Sequence Batch Reactors Optimization

Procurement Phase:

1. SEWPCC Primary clarifiers refurbishment
2. SEWPCC UV Facility repairs

D. North End Sewage Treatment Plant (NEWPCC)

Two major capital projects are being carried out at the NEWPCC, the Power Supply Upgrade Project and the NEWPCC Upgrade Project. The Power Supply Upgrade will ensure there is adequate electrical power to operate the upgraded facility, and the NEWPCCC Upgrade will enable the facility to meet new regulatory licence requirements associated with nutrients and biosolids reuse and new effluent limits for nitrogen and phosphorus.

1. The Power Supply Upgrade design-build project is being delivered in advance of the NEWPCC Upgrade to ensure the required power is available when needed. Work completed in 2017 includes:
   - Two RFP proponent submissions were received and evaluated.
   - Third-party cost estimate was prepared and utilized in planning Target Costs.
   - Utilized Manitoba Hydro's Load Interconnection Facilities Study (LIFS) report to re-phase the work and reduce cost.
   - Environmental assessment was conducted to mitigate the risk of potential contamination from Manitoba Hydro's substation.

2. Under the NEWPCC Upgrade Project, the City received an updated conceptual design project cost estimate from the design consultant indicating higher costs than the currently approved budget. The procurement strategy is taking increased cost estimates into consideration.
   - The Project Definition Report (PDR) was completed for the scope and design of the NEWPCC upgrade. The PDR has been used as the basis for the development of an Enhanced Preliminary Design (EPD). A Project Implementation Plan (PIP) was developed to report on construction, logistics and planning concerns associated with the project. In addition, technical requirements for the subsequent design build agreement are being developed.
   - The following tender documents are being prepared:
     - Request for Qualifications is substantially complete and waiting for final review.
     - Request for Proposal is substantially complete and pending detailed review.
     - Design Build Agreement was initiated with the engagement with the City's legal counsel, and is progressing well.

E. South End Sewage Treatment Plant (SEWPCC)

The SEWPCC BNR Upgrade and Expansion Project is required to meet the new regulatory licence requirements and to increase the plant capacity to meet demands from growth of the City. The project is being delivered as a design-bid-build project. A staged approach to the construction was adopted to allow work to proceed as design was completed. Construction began in the fourth quarter of 2014 and is phased through four major contracts. Project highlights include:

- **Contract 1**
  Earthwork and piling required for treatment tanks. From 2014 to 2016, 2,000 concrete piles were driven and excavations for the bioreactors and secondary

clarifiers were completed. Total performance was achieved in 2017 and the Project team is working towards contract closure.

- **Contract 2**
  The high-rate clarifier building and grit removal facilities are ready for commencement of the next phase of work for the mechanical and electrical installation, which is part of Contract 4.
- **Contract 3**
  This phase includes structural and concrete work for the bioreactors, blower building and secondary clarifiers and installation of the new by-pass line. The work progressed throughout 2017 and approximately 90% of the concrete work has been completed.
- **Contract 4**
  This contract will complete the construction of the facility and is comprised of the work to erect the chemical/electrical building and the grit facilities as well as all the related mechanical, structural, electrical and controls for the entire plant upgrade. The Project team undertook a comprehensive review of the documentation which resulted in a high quality tender package as recognized by the contracting community. The design phase for Contract 4 was completed and the contract awarded in 2017.

F. Operations and Maintenance Readiness

The Operational Readiness Program is a strategic activity supporting staff to be fully prepared to assume ownership of the new assets at handover, prior to the commencement of operations. The Readiness program has evolved into seven categories:

- project governance;
- communication and education;
- training;
- maintainability and operability input;
- commissioning and performance testing;
- organizational readiness; and
- handover readiness.

Goals for each category area were developed with operations and maintenance management staff.

G. Key Performance Indicators Results

Key Performance Indicator	Description	Value Achieved
NEWPCC Switching Procedures	Completed charter and 15 procedures.	✓
Advanced Design Build Training	Finalized plan and completed 5 training sessions.	✓
Condition Monitoring Strategy	Completed project charter, created guidance documents, identified predictive maintenance techniques and associated training requirements.	✓
Inventory Optimization	Completed project charter, introduced recommendations for inventory naming conventions, standard inventory process and governance, and via a technical report provided recommendations for an inventory classification system.	✓
Communication	Completed project charter, developed external internet sitemap, business process for creation and editing, designed draft page wireframe layout, developed content for NE and SE treatment plants, and provided ready to deploy website.	✓
Maintenance Planning Implementation	Developed an implementation plan for integrating electrical and instrumental activities into maintenance planning function including staged introduction for the WE and SE treatment plants.	✓

H. 2017 Financial Results

Veolia's compensation remains at risk for the entire duration of the agreement. Compensation is accrued from:

- meeting key performance indicators;
- fees on aggregate program target costs;
- gain share/pain share allocations; and
- interest adjustments.

Compensation earnings in any given year are credited to the Earnings At Risk Account (EARA) and earn interest. The balance in the EARA account is reflected in the City's financial statements as a liability. EARA categories are itemized in the following table.

Earnings At Risk Account Summary ($thousands)	**December 31, 2017**		December 31, 2016	
Balance, beginning of year		**$7,273**		$5,535
Compensation earned				
Key performance indicators	**$ 857**		$ 813	
Fees	**764**		848	
Share of gain/(pain) on operations	**281**		(116)	
Interest on funds held	**207**	**2,109**	193	1,738
Balance, end of year		**$9,382**		$7,273

The EARA is compared to the At Risk Amount (ARA) to determine if Veolia is entitled to withdraw any of those earnings. The ARA represents numerically the amount of risk remaining in the Program over the balance of the contract, and includes best estimates

of operating and capital expenditures. Veolia can only withdraw funds from the EARA at such time as the EARA balance exceeds the ARA balance.

As at December 31, 2017, the ARA balance was $33.8 million ($35.1 million, 2016) and the EARA balance was $9.4 million ($7.3 million, 2016). Veolia is not currently eligible to draw compensation from the EARA account.

As required by the agreement, Veolia has posted $50 million security ($25 million letter of credit and $25 million performance bond). There is also a Parental Guarantee in place to protect the City whereby Veolia North America guarantees all of Veolia's obligations under the agreement.

The financial summary for 2017 with comparative figures for 2016 is as follows:

Financial Summary ($millions)	**December 31, 2017**	December 31, 2016
Reimbursement of Veolia direct costs	**$ 3.2**	$ 2.9
Earnings At Risk Account (EARA) balance	**$ 9.4**	$ 7.3
At Risk Amount (ARA) balance	**$ 33.8**	$ 35.1
Performance Security posted by Veolia	**$ 50.0**	$ 50.0

I. 2018 Annual Program Plan Deliverables:

The priorities of the Program for 2018 focus on operation, maintenance, upgrade and improvement of the City of Winnipeg's sewage treatment facilities.

1. Program management initiatives
   - Program maturity model – perform planning at the Program level with the objective to improving future Annual Program Plans.
   - Communication plan - enhance and improve internal communication as well as aid outreach and external engagement.
   - Benefits register – a tool to document Program achievement and success, and communicate to contributors. 2018 will focus on completion of populating the database and making the register a part of regular Program activity.
   - Change management - continue activities to promote successful change.
   - SEWPCC BOTC adjustment - plan for development of a baseline operating target cost (BOTC) adjustment required as a result of the SEWPCC upgrade and expansion.
   - Veolia resource requirements – further define anticipated roles to match needs at various stages of the program lifecycle.

2. NEWPCC major design-build capital project
   - Power supply upgrade project – award the DB agreement and initiate contract administration.
   - BNR upgrade project – obtain a class 3 estimate, update budget, finalize contracting strategy, issue RFQ, and prepare first construction package RFP.
   - Operational readiness – review of enhanced preliminary design and technical requirements to further the understanding of operations and maintenance requirement for each proposed system.
   - Risk management – improving process for managing risk mitigation and accounting for risk in contingency planning.

3. SEWPCC major design-bid-build capital project
   - Contract 3 – actively manage schedule of risks to minimize impact to Contract 4.
   - Contract 4 – works to be built and commissioned progressively with a key focus on completion of mobilization on site, and production of a detailed schedule.
   - Operational readiness – activities for operational readiness will continue with a priority on commissioning readiness.

4. Plant automation
   - Process control strategy – continued support to upgrade the process control systems at the plants by replacing the existing Distributed Control System (DCS) with Programmable Logic Controller (PLC) based system to enhance reliability.
   - Alarm philosophy – creation of a framework and development of change procedures with the goal of developing guidelines and work processes for facility alarm management.

5. Biosolids master plan
   - Continue the pilot with the goal to compost 20% of annual biosolids production.
   - Application to the Regulator for a 3-year land application program with a goal to achieve 20,000 wet tonnes of biosolids land application annually, beginning 2018.

6. Compliance, operation and maintenance
   - Operations strategy - create a plan to complete current chartered projects and support for the major project upgrades.
     - Implementation phase of the wastewater reporting system
     - NEWPCC optimization - grit, UV, and electricity feasibility study
   - Maintenance strategy – update maturity model to create a revised maintenance improvement roadmap and prioritize strategic areas.
   - Training – support the provision of control system training for City maintenance staff.

7. Asset refurbishment and replacement program (ARR)
   - Review NEWPCC asset risk in the context of the evolution of the upgrade delivery strategy.
   - Explore creation of a plan which integrates timelines between priority ARR projects and the NEWPCC BNR and SEWPCC Upgrade and Expansion Projects.

8. Facility master planning
   - Identify gaps between long term facilities needs and the facility requirements of the Power Supply and BNR Upgrade projects, and develop plans to address gaps.

J. 2018 PROGRAM KPI SUMMARY

1. Program Progress Evaluation
   Obtain feedback from key stakeholders as a measure of progress on the performance of the program at achieving goals from the APP.

2. Safety Awareness Training for Project Managers
   A sewage treatment plant and construction safety awareness training package and training session will be developed and delivered to the project managers.

3. Maintenance Planning Manual
   A reference manual for maintenance planning and scheduling procedures will be developed for use at the sewage treatment plants. The Maintenance Planning Manual will support the document management requirements of the Maintenance Maturity Model and related deliverables of the maintenance strategy.

4. Asset Management Manual
   The addition of new asset management practices as well as the implementation of new OWAM Modules requires the development of an updated asset management manual.

5. NEWPCC Asset Risk Mitigation plan
   With a focus on maintenance mitigation, in particular, risk of equipment failure, service interruption and environmental licence non-compliance, this KPI will define the risk methodology, identify the asset inventory at the highest risk level and produce appropriate mitigation plans.

FINANCIAL IMPACT

Financial Impact Statement

Date: November 7, 2018

Project Name:

WINNIPEG SEWAGE TREATMENT PROGRAM 2017 ANNUAL REPORT PROGRAM AGREEMENT BETWEEN THE CITY OF WINNIPEG AND VWNA WINNIPEG INC. (VEOLIA).

COMMENTS:

Financial implications of the Program are discussed in the Financial Results section of the report.

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

CONSULTATION

This Report has been prepared in consultation with:

WSTP Leadership Team

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg policies through

OurWinnipeg Reference: Sustainable Water and Waste Direction Strategy, Environment

SUBMITTED BY

Department: Water and Waste Department
Division: Finance and Administration
Prepared by: Don Blain, CPA, CMA
Date: November 8, 2018
File No.: 020-17-06-10-01

ATTACHMENTS:

Appendix A: Leadership and Management Team Membership

APPENDIX A: LEADERSHIP AND MANAGEMENT TEAM MEMBERSHIP

Leadership Team		Management Team	
Veolia	**City**	**Veolia**	**City**
Senior Vice President Veolia Solutions	Chief Transportation and Utilities Officer	Program Leader	Project Director
Senior Vice President Operations, Canada West	Manager Wastewater Services	Facility Leader	Wastewater Engineer
Vice President Canada	Manager Engineering Services	NEWPCC Upgrade Lead	Wastewater Planning and Project Delivery Branch Head
		Technical Lead	Assistant Controller