



Environment and Climate Change  
Environmental Stewardship Division  
Environmental Approvals Branch  
Box 36 14 Fultz Blvd  
Winnipeg, MB R3Y 0L6

November 3, 2023  
Client File No.: 1071.10  
Our File No.: S-972, S-1146, EMS  
020-17-08-11-00  
020-17-08-11-0N

Attention: Agnes Wittmann, Director

**RE: QUARTERLY PROGRESS REPORT FOR NEWPCC UPGRADES:  
JULY 1 – SEPTEMBER 30, 2023**

---

The City of Winnipeg is pleased to submit the 2023 Quarter 3 Progress Report for the North End Sewage Treatment Plant (NEWPCC) operating under Environmental Act Licence No. 2684 RRR as required by Manitoba Conservation and Climate on May 28, 2021 and the Investing in Canada Infrastructure Program GIS-EQ-1087 letter dated June 2, 2021. This report summarizes work conducted on key upgrade projects at NEWPCC for the period of July 1 to September 30, 2023.

## 1. HEADWORKS FACILITIES

An overall site plan for the headworks upgrades is provided in the Appendix – Figure 1.

### Progress Update:

- Submission of various 60%, 90% and Issued for Construction (IFC) Design Submission packages: work continues as the design build (DB) project progresses; 60% submissions are nearing completion
- Loading and hauling of impacted soil materials is ongoing until excavation work is complete; reusable soil is being stored on site for future use
- Tunneling work resumed at the Raw Sewage Pump Station on September 25<sup>th</sup>
  - Tunnel 2 is approximately 75% complete
  - Sludge removal and dewatering work in the shafts continued as required
  - Flooding from rain events occurred until the north west interceptor (NWI) was repaired early October
- Grit Building: all grit chambers are now complete and grit pumps have been installed
- Fine Screening Area: main slab and transition wall concrete pours are complete
- Solids Handling and Mechanical Rooms: main slabs have been poured
- Main Control Building: floor slab and perimeter curbs are complete
- Standby Generator Building: sealing of roof gaps, insulation work, fire proofing and cladding are complete; generator assembly is ongoing
- Y4 Gallery Connection: walls and roof construction are complete
- The archaeology team has completed the majority of their work on site
  - They will continue to monitor intermittent soil sampling work and return next year to monitor excavation of the stormwater storage systems

Next Steps:

- Grit Building: roof slab pouring and installation of process piping will continue
- Fine Screening Area: formwork for channel walls will continue
- Solids Handling and Mechanical Rooms: structural steel is in production off site
- Y4 Gallery Connection: installation of waterproofing and backfilling is ongoing

Schedule Update:

- Contractor is tracking behind schedule based on key milestones but the substantial performance date has not changed
  - Graphical representation in the Appendix – Figure 2: Earned Value compared the performance measurement baseline (schedule for how they intended to progress the work) to the actual schedule
    - It shows the contractor planned to be 69.3% complete by the end of September 2023 but is only 39.0% complete
  - City is working with the contractor to evaluate the impacts and issues outside of their control, such as the NWI failure, and how it will impact the substantial performance date; extent of this is currently unknown and will be determined in the coming months
    - Once complete, the contractor can rebaseline their schedule and options to recover schedule will be evaluated
- An updated project schedule is provided in the Appendix – Table 1

## 2. BIOSOLIDS FACILITIES

Progress Update:

- Council approved the use of a Progressive DB procurement model on July 13, 2023
- Request for Proposal Step 1 documents were posted with a close date of September 12, 2023 but was extended to November 7, 2023 based on requests from the market for additional time; work continues on the next phase of procurement documents
- Results from the additional environmental testing for contaminated soils on Parcel A and B were received
- Heritage Resource Impact Assessment on Parcel C was completed this summer and the results indicated a low chance of heritage concerns
- Three subsurface applications for Canadian Pacific Railway (CPR) have been submitted
- Negotiations for Ostara and Cambi contracts are ongoing
- Council amended the project budget to \$1.035 billion on September 29, 2023

Next steps:

- Archeological investigations on the Chief Peguis Trail right of way continue
- Detailed design for early works packages, such as land drainage, water main extensions, and utilidor construction continue

Schedule Update:

- An updated project schedule is provided in the Appendix – Table 2

### 3. NUTRIENT REMOVAL FACILITIES

#### Progress Update:

- Work on the enhanced preliminary design (EPD) has begun and will be ongoing for the next number of months
- A technical memo reviewing nutrient removal technologies was received and is under review

#### Next steps:

- A revised class 3 estimate is being developed concurrent with the EPD work
- Select nutrient removal technology to use to progress the EPD

#### Schedule Update:

- An updated project schedule is provided in the Appendix – Table 3

### 4. INTERIM CHEMICAL PHOSPHOROUS REMOVAL FACILITIES

#### Progress Update:

- All foundation work has been completed
- Building envelope work is ongoing and is 20 – 70 percent complete, depending on the building; brickwork is nearing completion on two of the three buildings
- Chemical storage tanks were delivered to site, prepared for installation (e.g. painted with chemical resistant paint), installed, and leak tested
  - interference between the floor grating surrounding the ferric chloride tanks required some rewelding and reconfiguration
- Electrical and mechanical works continue
- Shutdowns for valve replacements were scheduled in this reporting period; the work is ongoing
- Railway work has begun and will continue through October and into November, weather permitting
  - In September, CPR issued the City a temporary stop work order pending further discussions on overall railway strategy within the city
  - The City was allowed to restart work on October 12, 2023

#### Next steps:

- The final inspection report for the chemical tanks is pending
- Brickwork for the third building will be started in October. Electrical work, mechanical work, and piping installations also continue

#### Schedule Update:

- The substantial performance date has been revised to January 26, 2024 due to delay in material supply and redesign work that was required due to interference between structural building components and the ferric chloride tanks

- A schedule review will be undertaken in October to determine if there were any impacts due to delays in railway work
- An updated project schedule is provided in the Appendix – Table 4

#### Phosphorous Optimization

- The NEWPCC Operators have maximized ferric dosing to the sequencing batch reactors (SBRs) and digesters based on the existing ferric chloride pumping capacity
  - The average SBR effluent phosphorous load for Q1 2023 is 51 kg/day which corresponds with an average effluent concentration of 22 mg/L
- The higher effluent levels caused by ongoing operational adjustments and recalibrations for the SEWPCC BNR continue to be monitored and compensated for in the SBR
  - SBR phosphorous levels are slowly coming down as operators learn and adjust
  - The phosphorous average for centrate in September was 14 mg/L (32 kg/day).
  - The SBRs are performing better than intended in their original design and are below the licence limit of 119 kg/day of phosphorous specified in Clause 27 of the NEWPCC Licence No. 2684 RRR
- Estimated phosphorous concentrations through various stages of the NEWPCC upgrades are provided in the Appendix – Table 5

## 5. NEWPCC UPGRADE PLAN UPDATE

#### Progress Update:

- A consultant was engaged to assist with the Upgrade Plan review
  - NEWPCC background information and review of all documents related to the upgrade projects is complete
  - NEWPCC constructability review kick off meeting and associated site tour was completed on September 29, 2023 with the City, Veolia, and the consultant
  - Schedule efficiency kick off meeting was conducted on October 10, 2023 and optimization of schedule is ongoing

#### Next steps:

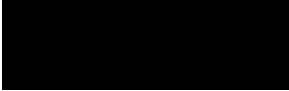
- The City, Veolia and consultant are actively working on the NEWPCC Constructability report; work includes updates and/or reviews to:
  - affected site utilities for nutrient removal (NR), NR funding models, contract delivery models, site logistics and the availability of contractors, trades staff and consultants
- Schedule efficiency workshop to be conducted in second half of October 2023
- Draft report for City review and feedback
- Preparation and submission of an updated NEWPCC Upgrade Plan, inclusive of a constructability review, to the Province
- The City continues to participate with other stakeholders on the Task Force on City of Winnipeg Waste Water Infrastructure and will be working with the Province to identify funding strategies to complete the NEWPCC Upgrades

#### Schedule Update:

- An updated schedule is provided in the Appendix – Table 6

Should you have any questions, please contact Cynthia Wiebe at 204-986-5210 or by email at [cwiebe@winnipeg.ca](mailto:cwiebe@winnipeg.ca).

Sincerely,



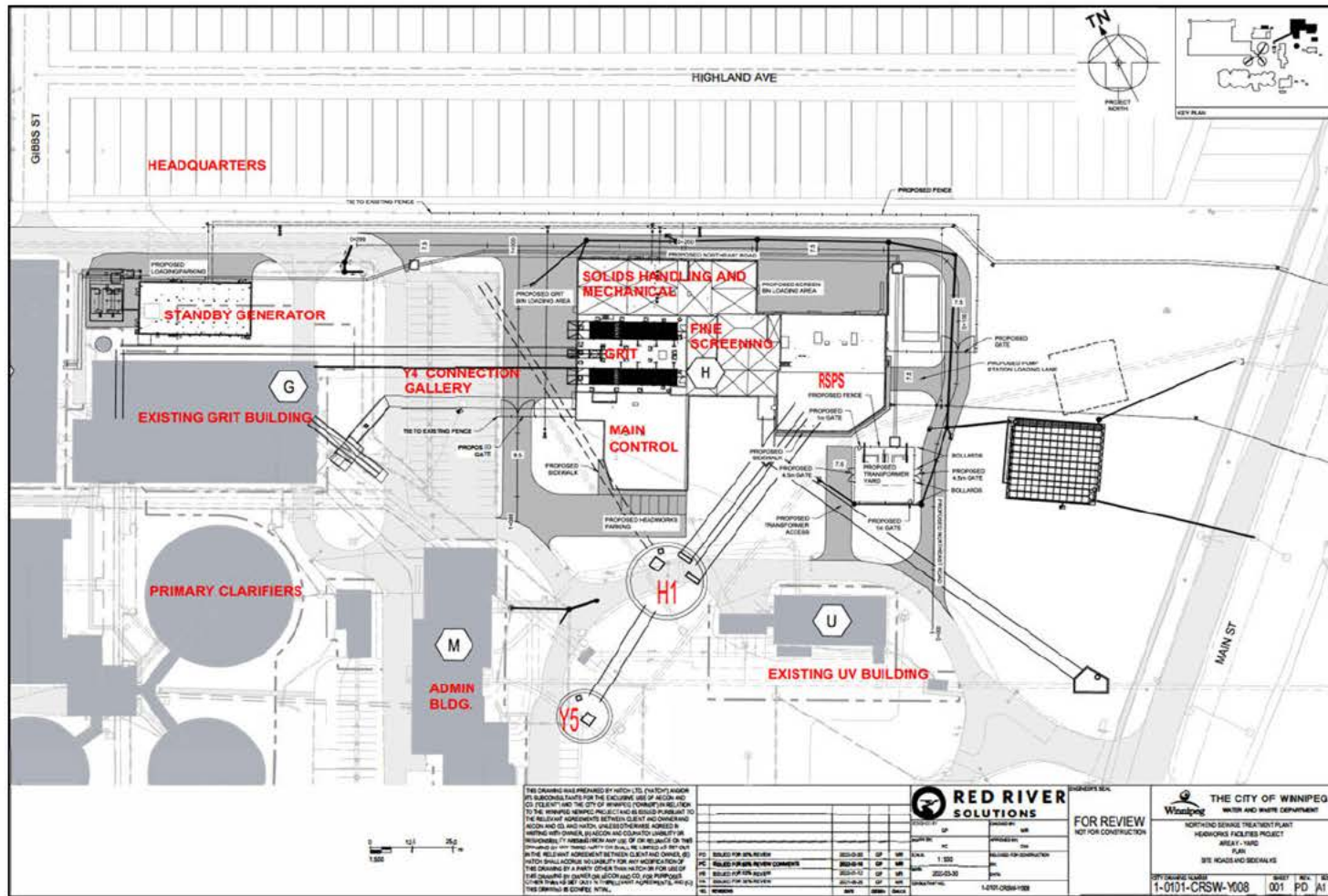
Cynthia Wiebe, P. Eng., CAMP  
Manager of Engineering Services

**ATTACHMENTS: Figures and Tables**

CW/jkm

- c:
- Y. Hawryliuk, MSc, Environment and Climate (email)
  - S. Burland-Ross, P.Eng., Environment and Climate (email)
  - N. Suresh, P.Eng., Environment and Climate (email)
  - S. Adams, Consumer Protection and Government Services (email)
  - T. Parsons, MSc, P.Eng., Consumer Protection and Government Services (email)
  - T. W. Shanks, M. Eng., P. Eng., Water and Waste Department (email)
  - L. McCusker, P. Eng. Water and Waste Department (email)
  - C. Carroll, P. Eng., Water and Waste Department (email)
  - A. Weiss, P. Eng., Water and Waste Department (email)
  - L. Obach, P.Eng., Water and Waste Department (email)
  - M. Paetkau, P. Eng., Water and Waste Department (email)

**Figure 1: Headworks Facilities – Site Plan**



**Table 1: Headworks Facilities – Project Milestones**

Task Description	% Complete**				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
Procurement and Contract Award	100%	100%	100%	100%	Jun 30, 2021		Jun 11, 2021
DB Mobilization Complete	100%	100%	100%	100%	Dec 31, 2021		Dec 15, 2021
30% Design	100%	100%	100%	100%	Dec 14, 2021		Dec 14, 2021
60% Design	92%	92%	92%	92%	Sep 30, 2022	<del>Jul 24, 2023</del> Nov 11, 2023	
90% Design	50%	50%	50%	50%	Jan 23, 2023	<del>Sep 14, 2023</del> Dec 29, 2023	
IFC Design	14%	20%	24%	36%	Apr 17, 2023	<del>Nov 21, 2023</del> Jan 19, 2024	
Driven Piles (All Areas)	100%	100%	100%	100%	Aug 19, 2022		Mar 14, 2023
Secant Piles (H2, H1, Y5)	100%	100%	100%	100%	Sep 29, 2022		Jan 13, 2023
Microtunneling (H1 to H2 and H1 to Y5)	25%	25%	25%	25%	Dec 20, 2022	<del>Nov 07, 2023</del> Feb 1, 2024	
Generator Building, Structural and External Finishes	0%	50%	70%	80%	Mar 14, 2023	<del>Sep 20, 2023</del> Oct 20, 2023	
Standby Generators, Install	0%	0%	0%	0%	Aug 03, 2023	Mar 05, 2024	
Raw Sewage Pumping Station (H2), Concrete	0%	15%	15%	15%	Aug 07, 2023	<del>Nov 09, 2023</del> Jun 10, 2024	

**Table 1: Headworks Facilities – Project Milestones continued...**

Task Description	% Complete**				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
H1 Chamber	0%	15%	15%	15%	Sep 5, 2023	<del>Jul 22, 2024</del> Sep 3, 2024	
Standby Generator Facility and Fuel Storage System	0%	15%	20%	25%	Sep 15, 2023	Apr 17, 2024	
Grit Removal System, Install	0%	0%	5%	5%	Sep 18, 2023	Jan 10, 2024	
Y5 Chamber	0%	5%	5%	5%	Dec 07, 2023	<del>Oct 23, 2024</del> Dec 5, 2024	
Raw Sewage Pumps, Install	0%	0%	0%	0%	Jan 23, 2024	Apr 25, 2024	
Fine Screens, Install	0%	0%	0%	0%	Mar 26, 2024	Jun 13, 2024	
Odour Control System, Install	0%	0%	0%	0%	Jul 08, 2024	Jul 09, 2024	
Civil Works and Landscaping	0%	0%	0%	0%	Jul 26, 2024	Apr 11, 2025	
Headworks Building, Complete	0%	0%	0%	0%	Nov 05, 2024	Feb 04, 2025	
Commissioning	0%	0%	0%	0%	Mar 31, 2025	May 11, 2025	
Substantial Completion*					June 30, 2025		

\* This is the only milestone that is contractual and cannot slide without penalty

\*\*Data source: Red River Solution's Monthly Report





**Table 2: Biosolids Facilities – Project Milestones**

Task Description	% Complete				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
Updated Preliminary Design and Procurement Strategy	100%	100%	100%	100%	Dec 31, 2021	Apr 1, 2022	Apr 14, 2022 Council Approved Jul 21, 2022
Post RFP Step 1 (Following Council Approval for a PDB procurement strategy)	95%	100%	100%	100%	Jul 13, 2023		Jul 14, 2023
Shortlist Proponents	0%	0%	0%	0%	Sep 30, 2023	Dec 4, 2023	
Post RFP Step 2	75%	80%	85%	90%	Oct 31, 2023	Dec 4, 2023	
Contract Award of Development Phase Agreement	0%	0%	0%	0%	Jun 30, 2024		
Contract Award of Design Build Agreement	0%	0%	0%	0%	TBD		
Substantial Completion					TBD following DBA – by Dec 31, 2030		

**Table 3: Nutrient Removal Facilities – Project Milestones**

Task Description	% Complete				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
Nutrient Removal Technology Selection	0%	0%	0%	90%	Oct 19, 2023		
Updated EPD	0%	2%	5%	8%	Jun 30, 2023		
Revised Class 3 Cost Estimate	0%	0%	0%	0%	Sep 30, 2023		
Procurement and Contract Award	0%	0%	0%	0%	TBD		
Substantial Completion					TBD		

**Table 4: Interim Chemical Phosphorous Removal Facilities – Project Milestones**

Task Description	% Complete				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
Consultant RFP Award	100%	100%	100%	100%	Sep 30, 2021		Sep 28, 2021
Preliminary Design	100%	100%	100%	100%	Feb 3, 2022	Mar 31, 2022	Feb 2, 2022
Detailed Design	100%	100%	100%	100%	May 18, 2022	Jun 30, 2022	May 18, 2022
Construction Tender Award	100%	100%	100%	100%	Jul 15, 2022		Sep 22, 2022
Substantial Completion	45%	52%	60%	65%	Jun 30, 2023	<del>Jan 5, 2024</del> Jan 26, 2024	
Total Completion					Sep 30, 2023	<del>Mar 3, 2024</del> Mar 26, 2024	
Full Scale Testing and Implementation					Dec 31, 2024	<del>Mar 6, 2025</del> Mar 26, 2025	

**Table 5: Estimated Phosphorous Concentrations through NEWPCC Upgrade Stages**

Stage	Period	Estimated Total Phosphorous Concentration in NEWPCC Final Effluent <sup>1</sup>	Monitoring Data: Total Phosphorous (NEWPCC Final Effluent)
<b>Stage 1:</b> Phosphorous reduction with existing infrastructure	Until Aug 2021	Approximately 4.0 to 4.5 mg/L on average	3.6 mg/L (Average from 2017 – 2021)
<b>Stage 2:</b> Maximized phosphorous reduction through optimization with existing infrastructure	Aug 2021 to <del>Nov 30, 2023</del> Jan 26, 2024	Approximately 3.5 mg/L on average	2.5 mg/L (Average from 2022 onward)
<b>Stage 3:</b> Phosphorous reduction with Interim Chemical Phosphorous Facilities	<del>Dec 1, 2023</del> Jan 27, 2024 to Dec 2030	Approximately 2.5 to 3.0 mg/L on average <sup>2</sup>	
<b>Stage 4:</b> Phosphorous reduction with commissioned Biosolids Facilities	Jan 2031 to Jan 2032	1 mg/L to Jan 2032 <sup>3</sup>	
<b>Stage 5:</b> Ongoing phosphorous reduction with commissioned Nutrient Removal Facilities	TBD	1 mg/L	

<sup>1</sup> Based on the 'NEWPCC Interim Phosphorous Removal and Detail Review and Bench Scale Testing Report, December 2020

<sup>2</sup> Phosphorous levels may increase as City growth consumes sludge processing capacity

<sup>3</sup> Phosphorous levels may increase after January 2032 dependant on sludge loading levels (assuming maximum sludge generating scenario)

Monitored total phosphorous concentrations at NEWPCC indicate the plant has been outperforming anticipated modelled data. The results have been trending downward, with noticeably lower total phosphorous concentrations for Stage 2. The City is working on decreasing sludge loading to the existing digesters by removing grease, scum, and grit through various projects.

The modelled data is a conservative estimate of total phosphorous concentrations. The model was developed based on historical wastewater loadings and factored in the projected impacts of upgrades at SEWPCC. Actual results are dependent on many variables, such as:

- the overall health and performance of the treatment bacteria;
- the performance of various processes;
- wet weather flow;

- changes in development;
- industrial activity (especially high strength industry);
- ongoing capital improvements

With the commissioning of the Interim Phosphorous facility in Q1 2024, it is anticipated that total phosphorous will further decrease. Based on the better than expected results over the past several years, it is expected that the plant could be at or near licence limits for phosphorous for portions of the year through the use of chemical removal.

The City will continue to optimize phosphorous removal within existing digester capacity to the greatest extent possible with the various dosing points. Actual results will depend on full scale testing following commissioning of the Interim Phosphorous facility and the various factors described above.

Phosphorous concentrations in the final effluent are reported in the NEWPCC's monthly compliance reports and can be found online at [winnipeg.ca/wwcompliance](http://winnipeg.ca/wwcompliance).

**Table 6: NEWPCC Upgrade Plan Update – Project Milestones**

Task Description	% Complete				Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jun	Jul	Aug	Sep			
Engage Consultant	-	-	-	100%	Sep 2023		Sept 11, 2023
Constructability Review Kick off Meeting	-	-	-	100%	Sep 2023		Sep 29, 2023
Schedule Efficiency Kick off Meeting	-	-	-	100%	Oct 2023		Oct 10, 2023
Schedule Efficiency Workshop				0%	Oct 20, 2023		
Draft Constructability Report				0%	Dec 10, 2023		
Submission of Upgrade Plan Update to Province					Dec 31, 2023		