Water and Waste
Eaux et déchets

Environment and Climate Change
Environmental Stewardship Division
Environmental Approvals Branch
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April 30, 2025
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
JANUARY 1 – MARCH 31, 2024

This report summarizes progress on the North End Sewage Treatment Plant (NEWPCC) upgrades, operating under Environmental Act Licence No. 2684 RRR, from January 1 to March 31, 2024.

1. INTERIM CHEMICAL PHOSPHOROUS REMOVAL FACILITIES

Update on items from last report:

- Dosing of ferric into the secondary clarifiers remains constant at 200 litres per day. This is 11% of the consultant's recommended dose based on Biowin modelling (the recommended dose).
- On January 2, 2025, issues with leaks in the transfer piping were resolved and dosing into the Waste Activated Sludge (WAS) line (also known as CEPT) resumed at 250 litres per day (5.5% of the recommended dose).
- On January 15, 2025, dosing into the WAS line was increased to 500 litres per day (11.0% of the recommended dose).
- The estimated phosphorous concentrations throughout various stages of the NEWPCC upgrades are provided in Table 2 in the Appendix.
    - Figure 1 in the Appendix provides a historic 30-day rolling average total phosphorus effluent levels from August 21, 2021, to March 31, 2025.
    - The average final effluent phosphorous level over the past three-month period is 2.2 mg/L. Phosphorous concentrations have come down due to chemical phosphorous dosing at the South End Sewage Treatment Plant (SEWPCC) and due to dilution from spring melt.

Next steps:

- The final dosing point, at the trucked sludge line, will be brought online. This will test both the ferric and sodium hydroxide dosing systems.
- Solids loading into the digesters is being monitored as Spring is typically when the system sees its highest loads. If needed, adjustments will be made to ferric chloride dosing in the WAS line.

Schedule update:

- The current project schedule is provided in Table 1 in the Appendix.

2. HEADWORKS FACILITIES

An overall site plan for the headworks project is provided in Figure 2 in the Appendix.

Update on items from last report:

- Issued for Construction (IFC) Design submission packages are complete.
- Tunnels and Chambers:
    - Raw Sewage Pump Station Chamber:
        - Installation of discharge piping supports and erection of the building steel structure is complete. Concrete pours for interior structures of the Raw Sewage Pumping Station continue. Installation of cable trays, electrical conduits, wiring, and lighting fixtures in the stairwell is ongoing.
    - H1 Junction Chamber:
        - Tunneling between the H1 and Y5 chambers is complete. Construction of the concrete liner wall and interior structures in the H1 Chamber is ongoing with multiple pours to occur over several months.
- Grit Building: Installation of exterior cladding, pipe supports, process piping, cable trays, cables, and steel structure continues.
- Fine Screening Area: Installation of fine screens and roofing membrane is complete; installation of cable trays, cables, lighting, and exterior wall insulation and membrane is ongoing.
- Solids Handling and Mechanical Rooms: Installation of the roofing membrane is complete; installation of exterior wall insulation, metal cladding, and interior walls is ongoing; installation of transformers, cable trays, conduit, cables, control panels, and switches is also ongoing.
- Y4 Gallery Connection: Concrete repair and polyurethane injection to address water seepage from the control joints was undertaken; monitoring of water seepage continues.
- Main Control Building: Construction of the interior walls and application of firestopping is ongoing. Installation of electrical panels and exterior lighting fixtures is ongoing.
- Standby Generator Building: Installation of all medium and low voltage electrical equipment is complete. Installation of cables and smoke detection system is ongoing.
- Overflow Piping: Manhole construction and connection to the existing outfall remains outstanding.
- Existing NEWPCC Grit Area Modifications: Modifications to existing grit tanks are complete.
- Odour Control Facility: Backfilling of sump pit is complete. Concrete placement for building is ongoing.

Next steps:

- Raw Sewage Pumping Station: Complete hollow core grouting, mezzanine, and precast backup wall. Install rainwater scuppers, roofing membrane, cable trays, and electrical equipment. Apply fireproofing.
- Grit Removal Building: Install electrical systems. Complete steel structure on roof and install monorail; Complete hydro testing of effluent channel.
- Fine Screening Area: Install electrical systems, sanitary lines, aeration system brackets in channels, roofing membrane, and exterior cladding. Complete painting of main floor.

- Solids Handling and Mechanical Rooms: Complete painting of walls. Install electrical systems, HVAC ducting, interior doors, and exterior cladding on the east and south sides.
- Odour control system: Install rebar and formwork for walls and complete preparatory work for stack foundation construction.
- Transformer Yard: Install cable trays.

Schedule update:

- The re-baselined schedule that incorporates the schedule extension has been reviewed and indicates the new Headworks facility will be operational by March 31, 2026. However, decommissioning will not be completed until Q2 2026. The project team is evaluating the contractual impacts of this.
- The current project schedule is provided in Table 3 in the Appendix.

3. BIOSOLIDS FACILITIES

Update on items from last report:

- The Start-Up Period is complete and the Development Partner has achieved Stage Gate #1.
- The Development Partner has commenced the Preliminary Design Period and is working towards Stage Gate #2. By the end of this stage, the City will receive the 30% design.
- The City identified that thermal hydrolysis is no longer the most desirable process in terms of cost and operability. As a result, the City has switched from thermal hydrolysis to thermophilic digestion. This will achieve the same low-pathogen product to be used for land application and soil manufacturing. The resultant end product would still remain in-line with the Manitoba Water Quality Standards, Objectives and Guidelines: Tier 1 Water Quality Standards for beneficial reuse of biosolids. The City notified the Regulator of this decision on April 7, 2025.
- The NEWPCC Piping Installation, Soil Remediation, and Site Compound Development construction continues. The quantities of contaminated soil encountered have been higher than anticipated. Soil testing is ongoing to identify the limits of the contamination.
- The preliminary design for the land drainage system (LDS) is complete and detailed design has commenced. The subsurface railway crossing application was submitted to CP Rail on February 21, 2025.

Next steps:

- Once Stage Gate #2 is complete, the Development Partner will start the Intermediate Design Phase in Q3 2025.
- Construction work will continue on the NEWPCC Piping Installation, Soil Remediation, and Site Compound Development tender. This construction is anticipated to be completed by Q4 2025.
- The tender for the LDS is anticipated to go out in Q3 2025 and construction to begin in Q4 2025.

Schedule Update:

- The current project schedule is provided in Table 4 in the Appendix.
- Due to the recommendation of thermophilic digestion, a three-month delay is anticipated for the Development Phase Agreement due to re-design. This delay should not impact the

substantial completion date of December 2030 as thermophilic digestion facilities are quicker to build and commission.

4. NUTRIENT REMOVAL FACILITIES

Update on items from last report:

- A project delivery model assessment has been completed and a progressive design build (PDB) delivery model has been selected.
- The revised project budget was considered by Council in March 2025. External funding continues to be sought to limit impacts to rate payers.
- A technical, commercial, and constructability review of schedule acceleration was completed. Detailed information was provided in the 2024 NEWPCC Upgrade Plan Update, issued to the Province on February 28, 2025.
- The procurement phase was initiated and development of the procurement and contract documents is ongoing.
- A project term sheet was developed and issued publicly through a Notice to Bidders.

Next steps:

- Additional market soundings will be held in April 2025.
- Posting of the RFP Step 1 is anticipated for August 2025.

Schedule Update:

- The current project schedule is provided in Table 5 in the Appendix.

5. NEWPCC UPGRADE PLAN UPDATE

The report was issued to Manitoba Environment and Climate Change on February 28, 2025. It included a summary of the schedule acceleration options and constructability review for the Nutrient Removal Facilities. The report is being reviewed by the Province.

If you have any questions, please contact me at 204-986-5210 or by email at cwiebe@winnipeg.ca.

Sincerely,

[redacted]

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

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Table 1: Interim Chemical Phosphorous Removal Facilities - Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Consultant RFP Award	100%					
Preliminary Design	100%			Feb 3, 2022	Mar 31, 2022	Feb 2, 2022
Detailed Design	100%			May 18, 2022	Jun 30, 2022	May 18, 2022
Construction Tender Award	100%			Jul 15, 2022		Sep 22, 2022
Substantial Completion*	100%			Jun 30, 2023	July 2, 2024	Jul 2, 2024
Total Completion*				Sep 30, 2023	Aug 28, 2024	Aug 28, 2024
Full-Scale Testing and Implementation				Dec 31, 2024	Aug 28, 2025	

Table 1: Estimated Phosphorous Concentrations through NEWPCC Upgrade Stages

Stage	Period	Estimated Total Phosphorous Concentration in NEWPCC Final Effluent [1]	Monitoring Data: Total Phosphorous (NEWPCC Final Effluent)
Stage 1: 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)
Stage 2: Maximized phosphorous reduction through optimization with existing infrastructure	Aug 2021 to June 24, 2024	Approximately 3.5 mg/L on average	2.5 mg/L (Average from 2022 to June 24, 2024)
Stage 3: Phosphorous reduction with Interim Chemical Phosphorous Facilities	June 25, 2024 to Dec 2030	Approximately 2.5 to 3.0 mg/L on average [2]	2.6 mg/L[4]
Stage 4: Phosphorous reduction with commissioned Biosolids Facilities	Jan 2031 to Jan 2032	1 mg/L until Jan 2032 [3]	
Stage 5: Ongoing phosphorous reduction with commissioned Nutrient Removal Facilities	TBD	1 mg/L	

[1] Based on the 'NEWPCC Interim Phosphorous Removal and Detail Review and Bench Scale Testing Report, December 2020
[2] Phosphorous levels may increase as City growth consumes sludge processing capacity
[3] Phosphorous levels may increase after January 2032 dependent on sludge loading levels (assuming maximum sludge generating scenario)
[4] Average final effluent phosphorous level for June 25, 2024 to March 31, 2025

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

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

Figure 1: 30-Day Rolling Average Total Phosphorous in the NEWPCC Final Effluent from August 21, 2021 to March 31, 2024

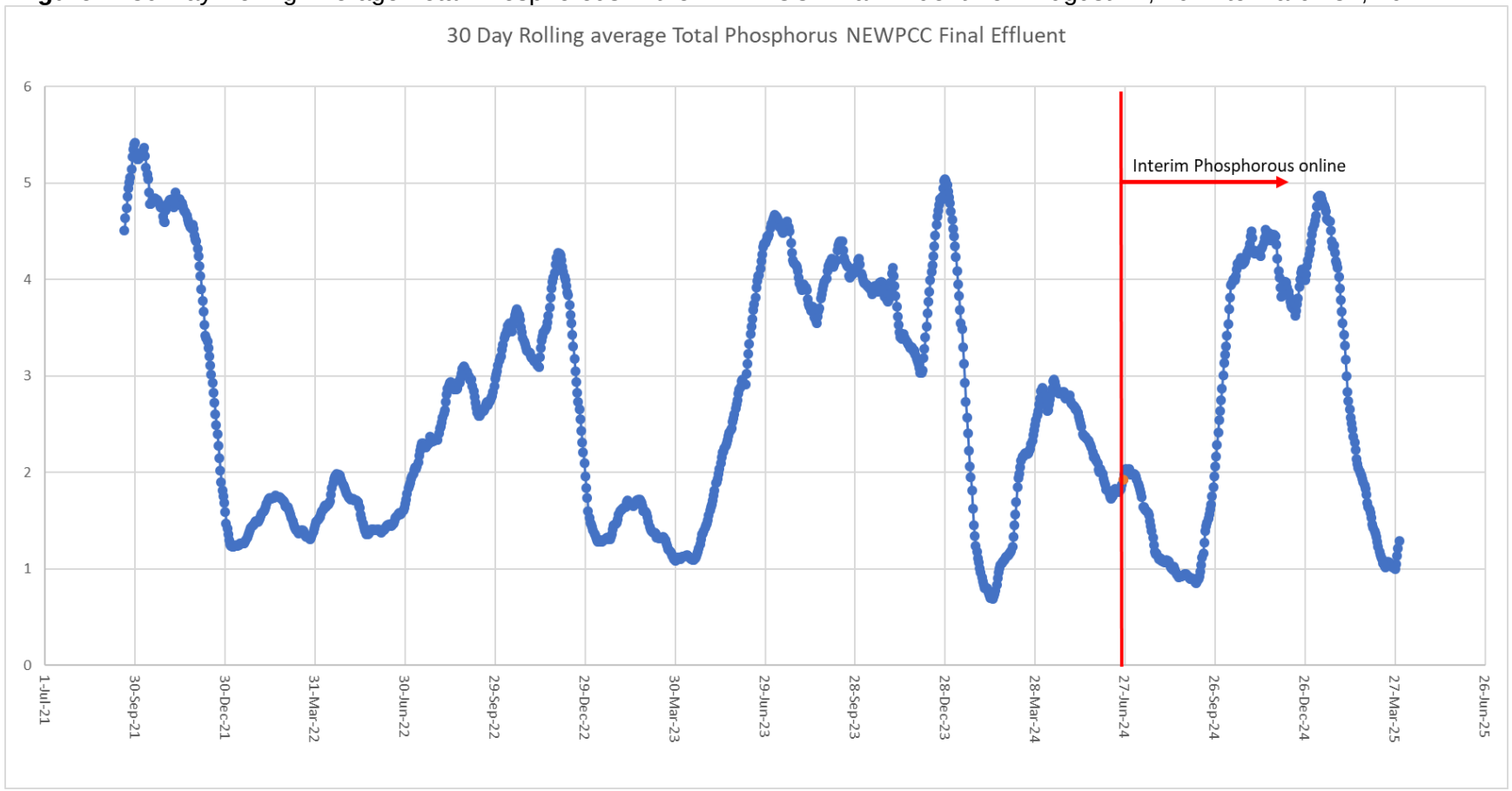
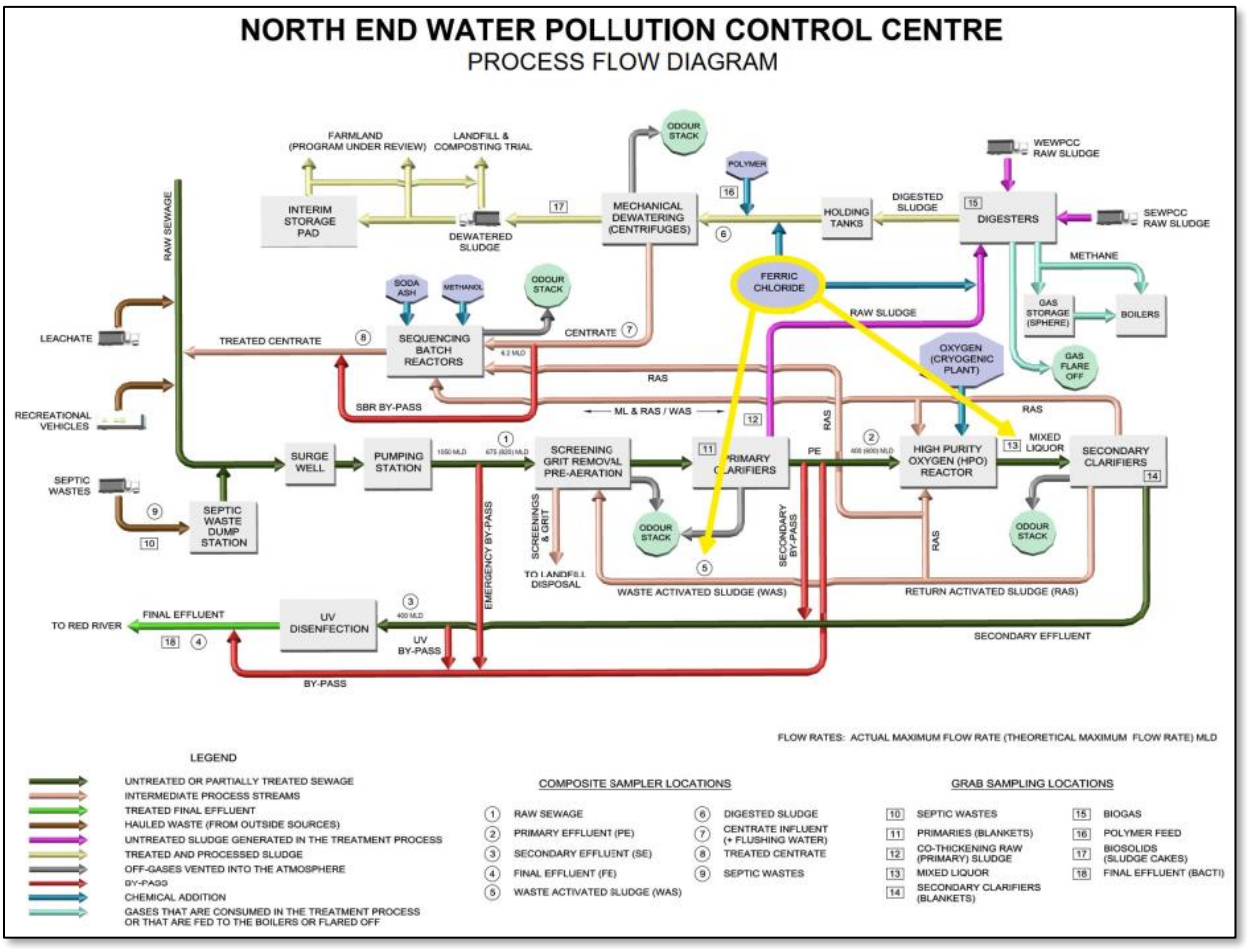


Figure 2: NEWPCC Ferric Chloride Dosing Points



Blue Arrows: Pre-existing active Ferric Chloride Dosing Points
Yellow Arrows: Additional dosing points added as part of Interim P project

Figure 3: Headworks Facilities – Site Plan

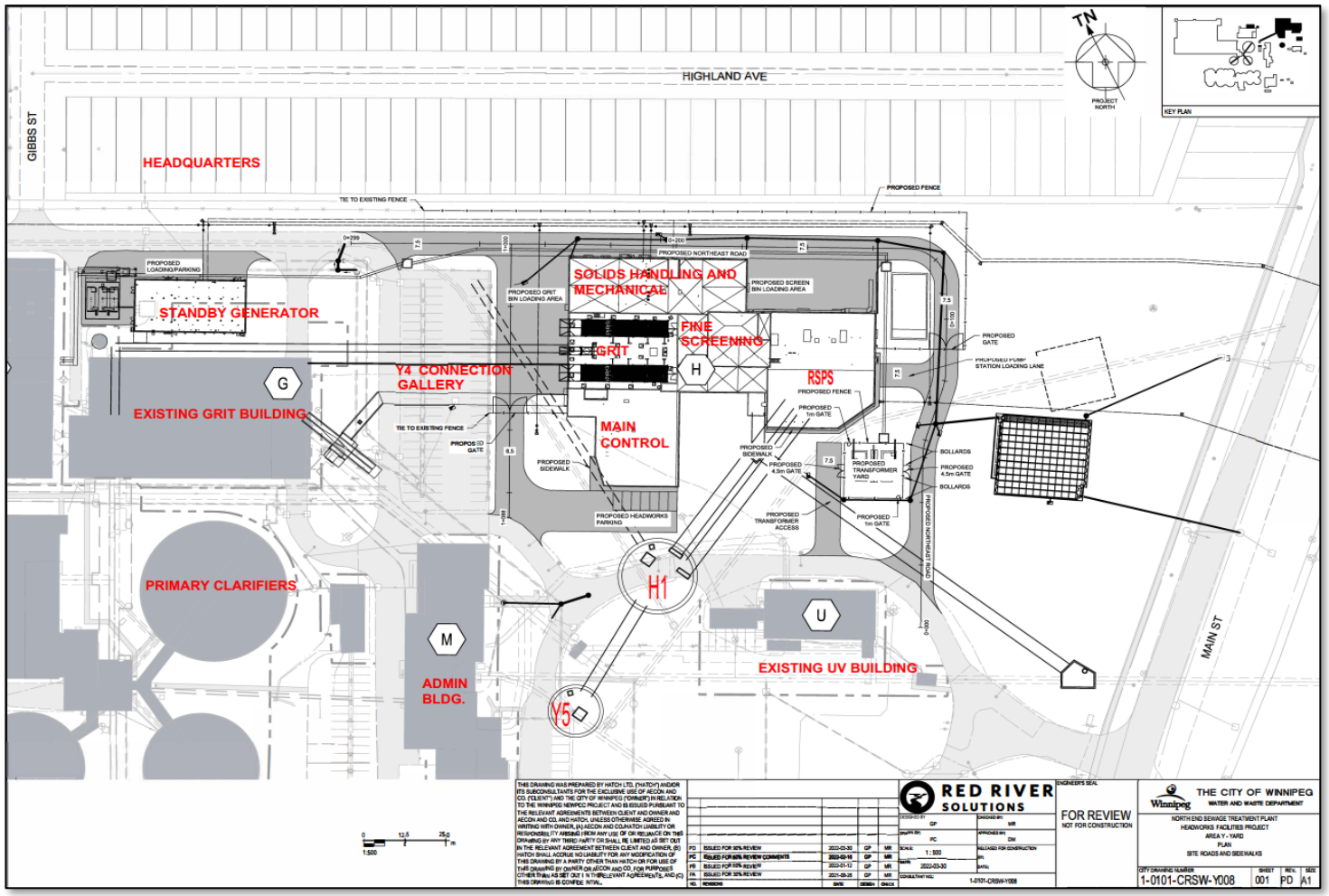


Table 2: Headworks Facilities – Project Milestones

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Procurement and Contract Award	100%			Jun 30, 2021		Jun 11, 2021
DB Mobilization Complete	100%			Dec 31, 2021		Dec 15, 2021
30% Design	100%			Dec 14, 2021		Dec 14, 2021
60% Design	100%			Sep 30, 2022		May 22, 2024
90% Design	100%			Jan 23, 2023	Nov 30, 2024	Oct 29, 2024
IFC Design	100%			Apr 17, 2023	Jan 30, 2025	Jan 6, 2025
Driven Piles (All Areas)	100%			Aug 19, 2022		Mar 14, 2023
Secant Piles (H2, H1, Y5)	100%			Sep 29, 2022		Jan 13, 2023
Microtunneling (H1 to H2 and H1 to Y5)	65%	65%	100%	Dec 20, 2022	Feb 28, 2025	Mar 24, 2025
Generator Building, Structural and External Finishes	89%	89%	89%	Mar 14, 2023	May 30, 2025	
Standby Generators, Install	100%			Aug 3, 2023		Oct 30, 2022
Raw Sewage Pumping Station (H2), Concrete	92%	92%	95%	Aug 7, 2023	May 30, 2025	
H1 Chamber	65%			Sep 5, 2023	Aug 28, 2026	

Table 3: Headworks Facilities – Project Milestones continued…

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Standby Generator Facility and Fuel Storage System	86%	87%	89%	Sep 15, 2023	May 30, 2025	
Grit Removal System, Install	100%			Sep 18, 2023	Jul 31, 2024	Jul 19, 2024
Y5 Chamber	28%	28%	28%	Dec 7, 2023	Aug 28, 2026	
Raw Sewage Pumps, Install	100%			Jan 23, 2024	Nov 25, 2024	Oct 23, 2024
Fine Screens, Install	100%			Mar 26, 2024	Jan 17, 2025	Nov 25, 2024
Headworks Building, Structural and External Finishes	32%	34%	36%	Jun 7, 2024	Jun 30, 2025	
Odour Control System, Install	10%	12%	15%	Jul 8, 2024	Aug 29, 2025	
Civil Works and Landscaping	0%	0%	0%	Jul 26, 2024	Aug 28, 2026	
Headworks Building, Complete	32%	34%	36%	Nov 5, 2024	Mar 31, 2026	
Commissioning	0%	0%	0%	Mar 31, 2025	Mar 31, 2026	
Decommissioning – Original Equipment	0%	0%	0%	May 14, 2025	Aug 28, 2026	
Substantial Completion*	0%	0%	0%	Jun 30, 2025	Mar 31, 2026	

*This is the only milestone that is contractual and cannot slide without penalty
**Data source: Red River Solution's Monthly Report

Table 3: Biosolids Facilities – Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Updated Preliminary Design and Procurement Strategy	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)	100%			Jul 13, 2023		Jul 14, 2023
Shortlist Proponents	100%			Sep 30, 2023	Dec 4, 2023	Dec 1, 2023
Post RFP Step 2	100%			Oct 31, 2023	Dec 4, 2023	Dec 11, 2023
Contract Award of Development Phase Agreement (DPA)	100%			Jun 30, 2024	Sep 27, 2024	Sep 23, 2024
DPA Stage Gate 1 – Start-Up Period	95%	100%		Feb 6, 2025		Jan 31, 2025
DPA Stage Gate 2 – Preliminary Period	0%	15%	11%*	Sep 12, 2025	Nov 17, 2025	
DPA Stage Gate 3 – Intermediate Period	0%	0%	0%	Apr 20, 2026	Jun 22, 2026	
Contract Award of Design Build Agreement	0%	0%	0%	Sep 18, 2026		
Substantial Completion				TBD following DBA – by Dec 31, 2030		

*Re-design is required to accommodate the change to thermophilic digestion change thus this percent complete has moved backwards.

Table 5: NEWPCC Upgrade Project Milestones – Nutrient Removal Facilities

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Nutrient Removal Technology Selection	100%			Oct 19, 2023		Oct 12, 2023
Updated EPD	100%			Jun 30, 2024	Oct 18, 2024	Oct 21, 2024
Revised Class 3 Cost Estimate	100%			Sep 30, 2024	Nov 15, 2024	Nov 12, 2024
Procurement – Post RFP Step 1	0%	5%	10%	Aug 22, 2025		
Procurement – Shortlist Proponents	0%	0%	0%	Nov 21, 2025		
Procurement – Post RFP Step 2	0%	0%	5%	Jan 16, 2026		
Contract Award – Development Phase Agreement	0%	0%	0%	Oct 16, 2026		
Substantial Completion				Dec 31, 2032		