AECOM

NEWPCC Upgrade: UV Facility
City of Winnipeg
29-Apr-2025
60711772

FINAL

S1298-00PD-PLA-0001
Construction Management Plan

Revision 1 – 29-Apr-2025
Prepared for – City of Winnipeg

FINAL

Construction Management Plan

Client: City of Winnipeg

Prepared by

Mark Dawoud

April 29, 2025

Project No. 60711772

F I N A L

Quality Information

Document	Construction Management Plan
Ref	Project No. 60711772
Date	25-Apr-2025
Prepared by	Mark Dawoud, E.I.T.
Reviewed by	Paul Barsalou, P.Eng.

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	April 10, 2025	DRAFT	Mark Dawoud	
1	April 29, 2025	FINAL	Paul Barsalou	

2025-04-29

Table of Contents

1.0 Purpose

The purpose of the Construction Management Plan is to define a consistent approach to the management of the construction activities and administration of the construction contract for the delivery of the project and to provide a clear guidance document for use by the City of Winnipeg (City) and the Contractor.

The Construction Management Plan assembles the elements of the construction management procedures and workflows to act as a high-level reference that outlines the key activities of the project teams with respect to construction management.

The Notice of Alteration provided by the Province of Manitoba for the bypass period must be adhered to in completion of the work.

2.0 Scope

The scope of the construction management services under AECOM's contract are defined under clause 2.4.7 of AECOM's NEWPCC Upgrade: UV Facility project proposal. The Construction Management Plan includes sequencing requirements and mitigation of site constraints while considering NEWPCC operational requirements and other project work at NEWPCC such as the Headworks Facilities Project and the DCS Migration Project.

In general, the Construction Management Plan details;

a) Site Safety
b) Contractor laydown area(s);
c) Site access;
d) Construction impacts and mitigations;
e) NEWPCC operations impacts and mitigations;
f) Seasonal work;
g) Process, HVAC, electrical and automation tie-ins;
h) Coordination requirements with other NEWPCC projects;
i) Plant or process shutdowns (bypass);
j) Schedule, incorporating the items above as well as commissioning duration;
k) Pre-bypass requirements;
l) Operational notifications;
m) Contractor responsibilities;
n) NEWPCC operations responsibilities; and
o) Approximate bypass schedule.

The Plan provides details for construction management activities from site establishment up to and including pre-commissioning and handover to the City. It will be used by all members of the Delivery Team, including the City, AECOM and the Contractor.

Review and modification of the Construction Management Plan will be the responsibility of AECOM in coordination with the City. For clarity, the Contractor is not required to submit their own Construction Management Plan.

3.0 Abbreviations

Common abbreviations are given below.

Term	Definition
NEWPCC	North End Water Pollution Control Center
RFI	Request For Information
SI	Site Instruction
ITP	Inspection and Testing Plan
UV	Ultraviolet
MCC	Motor Control Centre

4.0 Site Safety

The Contractor will provide a safety plan for the site. It is anticipated that it will contain a daily pre-start meeting and a weekly toolbox meeting to be held with all Contractor personnel on site. The Contractor will manage, arrange and lead both pre-start and toolbox meetings.

Pre-start meetings will address activities of the day focussing on what each work group will be doing and interface required between themselves and any other external contracting groups or the City operations. Each pre-start meeting will also address any issues from the previous day's activities and instigate control measures as appropriate.

Toolbox meetings will be used to tackle a safety, health or environmental topic and facilitate a general discussion on safety performance looking at the previous week's activities. The toolbox meetings will also allow meeting attendees to comment on any aspect that indicates an awareness of safety and the value of that awareness looking forward to the coming week.

5.0 Laydown Area and Site Access

The Contractor laydown area for this project is strategically located near the UV Building and encompasses an approximate area of 4,500 m², as highlighted in **Figure 1**. This designated space will serve as the primary staging ground for construction material, equipment storage, site trailers and site operations during construction. Equipment storage shall include an indoor storage area for the pre-purchased equipment that follows manufacturers' storage requirements and recommendations. The Contractor may provide on-site storage or use an off-site facility.

Proximity to the UV disinfection facility and entrance through 2230 Main Street ensures convenient access for construction activities while minimizing disruptions to the surrounding operating NEWPCC plant areas and traffic flow. Traffic management will comply with relevant site requirements. Specific traffic management plans may be required to be developed for movement of large equipment or high traffic volumes that will adversely affect site traffic movements. These plans will be reviewed and approved by the Contract Administrator in consultation with site personnel. Plans will be distributed by the Contractor to all other Subcontractors on site for their general information and planning.

The main entrance and exit for NEWPCC, through Main Street, will also be used for construction of this project. The main entrance is used frequently by trucks for liquid sludge hauling, biosolids cake hauling, sewage receiving, and as entrance for plant personnel and material receiving. The Contractor shall use the north branch of the entrance for site access into the Laydown area. The south branch shall remain clean and undisturbed to accommodate the high traffic flow of NEWPCC. The outlined boundaries in **Figure 1** provide sufficient capacity for organized material handling and secure storage, ensuring efficiency and safety during this project.

A suggested site access path is shown in **Figure 2**. Entrance and exit from the site must be through Main Street, but the pathway can be changed as needed. If the Contractor requires more space, an area has been identified and highlighted in **Figure 3**, as a potential area for parking and storage, provided that the plant entrance remains clean and unobstructed. If the **Figure 3** area is used, the Contractor is to provide signage and personnel for traffic safety while crossing the road. For road crossings, the Contractor is to provide a plan, complete with safety and access requirements. Pending City approval, some trees within the laydown area can be removed, if they are obstructing construction works.

Figure 1: Contractor Laydown Area

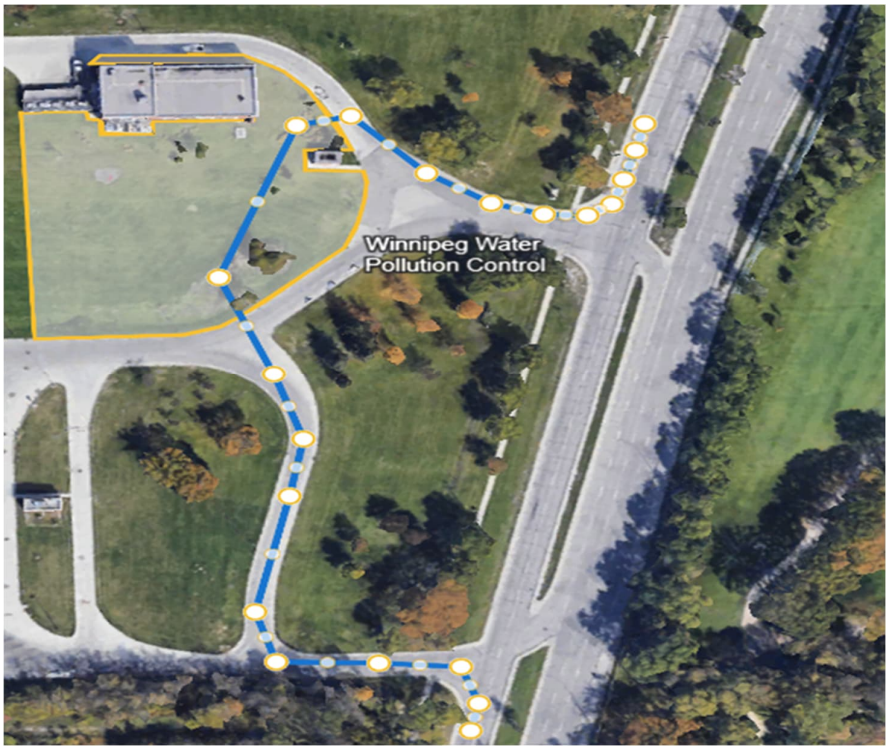


Figure 2: Site Access Path

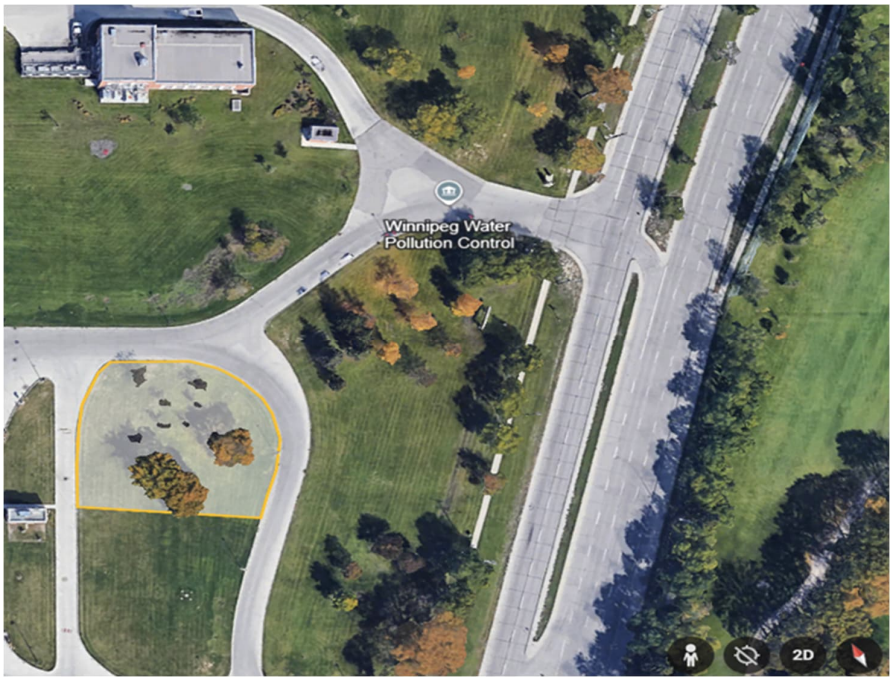


Figure 3: Potential Parking or Storage Area for the Contractor

6.0 Site Facilities and Requirements

6.1 Temporary Facilities

Temporary construction office facilities need to be established on site in accordance with Section 01 52 00 – Construction Facilities. This will accommodate site personnel necessary to oversee construction activities. Site offices will be located within existing facilities or as close as possible to the works and will be arranged and managed by the Contractor.

Temporary Utilities shall be arranged in accordance with Section 01 51 00 – Temporary Utilities.

7.0 Working Hours

Working hours for Contractor personnel will be managed by Contractor. In general, they will adhere to regulatory requirements and will minimize disruptions to surrounding community. Extended working hours can be implemented during the bypass period to meet critical scheduled activities deadlines. Working hours may also be altered due to seasonal variability, such as daylight savings and severe weather conditions. Local noise and environmental regulations need to be met at all times. NEWPCC plant working hours for operations and maintenance are Monday to Friday from 7:30 am to 3:30pm, however a skeleton crew with a reduced number of operations staff will operate the plant outside of NEWPCC plant working hours.

8.0 Material Receipt and Storage on Site

All materials received on site are to be controlled by the Contractor Project Manager. Receipt and issue will comply with the site operational requirements. The Contractor will be required to control and maintain their own laydown areas in a clean and organized manner and will be responsible for their own security for plant work area, equipment and materials on site.

9.0 Construction Sequencing

The construction process has been planned in three phases: Prior to Bypass, During Bypass, and Post-Bypass. Each phase includes detailed activities to ensure efficient execution, risk mitigation, and adherence to project timelines.

1. Prior to Bypass:

Before initiating the bypass period, several activities will be undertaken to ensure that construction proceeds efficiently and safely:

- Temporary heat and electrical feed installations will be completed to maintain operation of the existing UV Facility and Sample Building, and support construction needs;
- Access doors will be installed on the north and east walls to facilitate movement of personnel and equipment;
- The pre-cast driven piles and concrete pad will be constructed east of UV Facility to serve as a foundation for the storage room; and
- Pre-purchased equipment, including gates, UV systems, transformers, and MCCs, will be received and inspected on-site. However, if any items are stored off site, the Contractor along with the Contract Administrator will inspect the equipment once they are received from the supplier for storage and again when received on site in preparation for installation. If these items are not received prior to initiating the bypass, their delivery dates must be well established to meet construction scheduling requirements.

2. During Bypass:

Once the 4-month bypass period begins, critical equipment installations and replacements will be executed:

- Deactivate lift pumps and install a bulkhead to prevent flow into UV Facility;
- Optional installation of a second bulkhead as backup will be at discretion of the Contractor;
- Install a bypass pipe to divert flow to the Headworks facility. This is to be completed by the Headworks contractor, but it will need to be coordinated between UV and Headworks;
- Remove and replace three upstream gates;
- Remove UV systems from all three channels to install new channel floors in all three channels;
- Remove and replace three downstream gates;
- Install new UV systems in at least 2 UV channels. Contractor may choose to work on all three channels simultaneously;
- Replace electrical systems, including transformers and switchgear with motor control centres (MCCs);
- Replace transformers depending upon their delivery date;
- Remove existing cable tray to install new cable trays and run control and power cables, terminate the cables as the equipment become available and installed.
- Run communication cables between UV equipment per vender shop drawings, connect all communication cables to network switches as shown in the design drawings.
- Allow Headworks contractor to operate lift pumps as necessary to provide flow to Headworks for commissioning activities during the bypass period;
- Install piping to accommodate future flushing water usage;
- Remove bulkheads to allow flow to enter the UV channels. If channel isolation is required, the new upstream gates will be used.
- Functional testing of new UV and electrical equipment and gates; and
- Complete limited commissioning and bacteriological performance tests to confirm disinfection is occurring. Final commissioning will occur once all three channels are complete according to specifications.

3. Post-Bypass:

After completing the bypass period, the UV Facility will be transitioned back to operational status:

- Operate on two channels to meet disinfection requirements, while the third channel is being completed;

- Once the third UV channel has been fitted with the new UV system, commissioning with operations staff will be conducted to meet licensing requirements, ensuring disinfection compliance. This will be completed according to Appendix B – UV Systems of the tender;
- Construct the storage building on the newly installed concrete pad;
- Construct UV Building roof;
- Complete HVAC work including installation of the channel ventilation fans;
- Construct fencing around the transformers; and
- Construct an access road to the storage building.

- After Substantial Completion, the Contractor shall restore the site to a condition equal or better than its existing condition, except for landscaping, the disturbed Project's land shall be restored and finished with topsoil and seeding per the Project's specifications. Site restoration includes but is not limited to landscaping, and removal of temporary site offices, temporary utilities, all debris, rubbish and stockpiles.

10.0 Construction Impacts and Mitigations

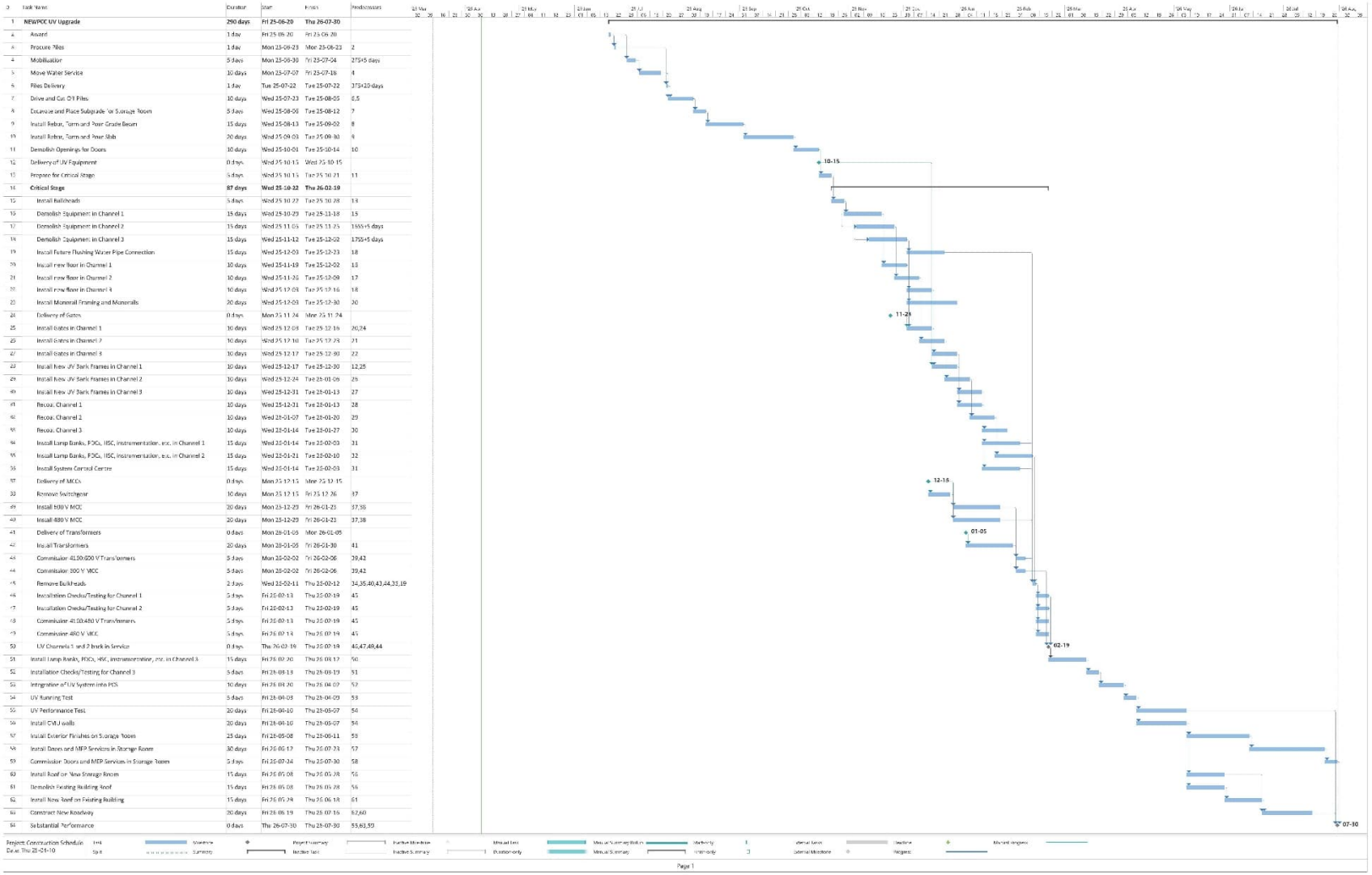
Construction will need to be staged to minimize impact on the City and the existing facility. All scheduling, plans, layouts, and routing are to be coordinated with the Contract Administrator. The Contractor is to update the project schedule to maintain effective construction flow and to avoid congestion on site. The schedule provided by the Contractor is required to be very detailed for the 4-month bypass period including work, start-up and a two-week buffer period to accommodate unforeseen delays. This scheduling approach ensures flexibility while maintaining project deadlines.

The City has taken proactive measures, including pre-purchase of the UV system, the MCCs, transformers and gates so that there can be early delivery and early review of shop drawings. This approach ensures that the connection details are known, and equipment are procured in advance of construction.

As an additional contingency, work associated with the third UV channel, aside from the isolation gates can be deferred until after the bypass if work cannot be completed during the planned time frame. The other two channels will provide sufficient disinfection capacity during this period.

A preliminary construction schedule is provided as **Figure 4.**

F I N A L



	Task Name	Duration	Start	Finish	Predecessors
1	**NEWPCC UV Upgrade**	**290 days**	**Fri 25-06-20**	**Thu 26-07-30**	
2	Award	1 day	Fri 25-06-20	Fri 25-06-20	
3	Procure Piles	1 day	Mon 25-06-23	Mon 25-06-23	2
4	Mobilization	5 days	Mon 25-06-30	Fri 25-07-04	2FS+5 days
5	Move Water Service	10 days	Mon 25-07-07	Fri 25-07-18	4
6	Piles Delivery	1 day	Tue 25-07-22	Tue 25-07-22	3FS+10 days
7	Drive and Cut Off Piles	10 days	Wed 25-07-23	Tue 25-08-05	6,5
8	Excavate and Place Subgrade for Storage Room	5 days	Wed 25-08-06	Tue 25-08-12	7
9	Install Rebar, Form and Pour Grade Beam	15 days	Wed 25-08-13	Tue 25-09-02	8
10	Install Rebar, Form and Pour Slab	20 days	Wed 25-09-03	Tue 25-09-30	9
11	Demolish Openings for Doors	10 days	Wed 25-10-01	Tue 25-10-14	10
12	Delivery of UV Equipment	0 days	Wed 25-10-15	Wed 25-10-15	
13	Prepare for Critical Stage	5 days	Wed 25-10-15	Tue 25-10-21	11
14	**Critical Stage**	**87 days**	**Wed 25-10-22**	**Thu 26-02-19**	
15	Install Bulkheads	5 days	Wed 25-10-22	Tue 25-10-28	13
16	Demolish Equipment in Channel 1	15 days	Wed 25-10-29	Tue 25-11-18	15
17	Demolish Equipment in Channel 2	15 days	Wed 25-11-05	Tue 25-11-25	16SS+5 days
18	Demolish Equipment in Channel 3	15 days	Wed 25-11-12	Tue 25-12-02	17SS+5 days
19	Install Future Flushing Water Pipe Connection	15 days	Wed 25-12-03	Tue 25-12-23	18
20	Install new floor in Channel 1	10 days	Wed 25-11-19	Tue 25-12-02	13
21	Install new floor in Channel 2	10 days	Wed 25-11-26	Tue 25-12-09	17
22	Install new floor in Channel 3	10 days	Wed 25-12-03	Tue 25-12-16	18
23	Install Monorail Framing and Monorails	20 days	Wed 25-12-03	Tue 25-12-30	20
24	Delivery of Gates	0 days	Mon 25-11-24	Mon 25-11-24	
25	Install Gates in Channel 1	10 days	Wed 25-12-03	Tue 25-12-16	20,24
26	Install Gates in Channel 2	10 days	Wed 25-12-10	Tue 25-12-23	21
27	Install Gates in Channel 3	10 days	Wed 25-12-17	Tue 25-12-30	22
28	Install New UV Bank Frames in Channel 1	10 days	Wed 25-12-17	Tue 25-12-30	12,25
29	Install New UV Bank Frames in Channel 2	10 days	Wed 25-12-24	Tue 26-01-06	25
30	Install New UV Bank Frames in Channel 3	10 days	Wed 25-12-31	Tue 26-01-13	27
31	Recoat Channel 1	10 days	Wed 25-12-31	Tue 26-01-13	28
32	Recoat Channel 2	10 days	Wed 26-01-07	Tue 26-01-20	29
33	Recoat Channel 3	10 days	Wed 26-01-14	Tue 26-01-27	30
34	Install Lamp Banks, FOCs, IISC, Instrumentation, etc. in Channel 1	15 days	Wed 26-01-14	Tue 26-02-03	31
35	Install Lamp Banks, FOCs, IISC, Instrumentation, etc. in Channel 2	15 days	Wed 26-01-21	Tue 26-02-10	32
36	Install System Control Centre	15 days	Wed 26-01-14	Tue 26-02-03	31
37	Delivery of MCCs	0 days	Mon 25-12-15	Mon 25-12-15	
38	Remove Switchgear	10 days	Mon 25-12-15	Fri 25-12-26	37
39	Install 600 V MCC	20 days	Mon 25-12-29	Fri 26-01-23	37,38
40	Install 480 V MCC	20 days	Mon 25-12-29	Fri 26-01-23	37,38
41	Delivery of Transformers	0 days	Mon 26-01-05	Mon 26-01-05	
42	Install Transformers	20 days	Mon 26-01-05	Fri 26-01-30	41
43	Commission 4150:600 V Transformers	5 days	Mon 26-02-02	Fri 26-02-06	39,42
44	Commission 600 V MCC	5 days	Mon 26-02-02	Fri 26-02-06	39,42
45	Remove Bulkheads	2 days	Wed 26-02-11	Thu 26-02-12	34,35,40,43,44,33,19
46	Installation Checks/Testing for Channel 1	5 days	Fri 26-02-13	Thu 26-02-19	45
47	Installation Checks/Testing for Channel 2	5 days	Fri 26-02-13	Thu 26-02-19	45
48	Commission 4150:480 V Transformers	5 days	Fri 26-02-13	Thu 26-02-19	45
49	Commission 480 V MCC	5 days	Fri 26-02-13	Thu 26-02-19	45
50	UV Channels 1 and 2 Back in Service	0 days	Thu 26-02-19	Thu 26-02-19	46,47,48,44
51	Install Lamp Banks, FOCs, HSC, Instrumentation, etc. in Channel 3	15 days	Fri 26-02-20	Thu 26-03-12	50
52	Installation Checks/Testing for Channel 3	5 days	Fri 26-03-13	Thu 26-03-19	51
53	Integration of UV System into PCS	10 days	Fri 26-03-20	Thu 26-04-02	52
54	UV Running Test	5 days	Fri 26-04-03	Thu 26-04-09	53
55	UV Performance Test	20 days	Fri 26-04-10	Thu 26-05-07	54
56	Install CWJ walls	20 days	Fri 26-04-10	Thu 26-05-07	54
57	Install Exterior Finishes on Storage Room	25 days	Fri 26-05-08	Thu 26-06-11	56
58	Install Doors and MEP Services in Storage Room	30 days	Fri 26-05-17	Thu 26-07-23	57
59	Commission Doors and MEP Services in Storage Room	5 days	Fri 26-07-24	Thu 26-07-30	58
60	Install Roof on New Storage Room	15 days	Fri 26-05-08	Thu 26-05-28	55
61	Demolish Existing Building Roof	15 days	Fri 26-05-08	Thu 26-05-28	55
62	Install New Roof on Existing Building	15 days	Fri 26-05-29	Thu 26-06-18	61
63	Construct New Roadway	20 days	Fri 26-06-19	Thu 26-07-16	62,60
64	Substantial Performance	0 days	Thu 26-07-30	Thu 26-07-30	55,63,59

Figure 4: Preliminary Construction Schedule

11.0 NEWPCC Operations Impacts and Mitigations

Construction activities at the NEWPCC will temporarily impact its operations. These impacts should be considered and minimized in every aspect of construction as NEWPCC must remain continuously operable (24 hours a day, 365 days a year). During the period where all secondary effluent flow is being redirected to Headworks, the City may need to alter their sampling locations. The Contractor will need to work with the City to provide access if needed.

Construction activities, including material storage and equipment installation staging, may limit access to certain areas, which could impact maintenance or operations staff. During construction, access to effluent sampling building needs to be maintained and accessible to plant staff at all times.

The fire alarm system will be temporarily disabled for necessary modifications. The Contractor is required to coordinate the period where fire alarm system is disabled with City and to keep it as short as possible.

12.0 Seasonal Work

The Contractor is required to consider seasonal limitations to account for weather-dependent activities and minimize potential delays. The project timeline has been structured to align with more favorable conditions for critical tasks.

- Construction of the concrete pad for future storage shall be scheduled during warmer months to ensure optimal curing conditions and avoid complications due to freezing temperatures;
- Excavation, backfilling, and flushing water connection installation shall be planned to be completed within the bypass period from late October 2025 to late February 2026. Flow will be bypassed from the UV Facility and the UV effluent conduit will be empty. This will mitigate flooding risk;
- Installation of gates, piping, and indoor UV systems will be scheduled during the bypass period/low flow conditions, to minimize the amount of effluent discharged without disinfection;
- Installation of the 480 V and 600 V MCCs and at least one 4160 / 600 V transformer are required to allow the existing 600 V low lift pumps to operate and at least one 4160 / 480 V transformer is required to allow the UV system to operate. This will also be scheduled to be installed during the bypass period. Maintenance as recommended by manufacturer and temporary heating will be required;
- UV channel modifications will mostly occur during the bypass period. However, if the third channel was not completed during the bypass period, due to unforeseen circumstances, it can be worked on after the bypass period assuming the completed two UV channels are running and able to accommodate incoming flows. The UV Facility will not have power during the duration of the 600 V power outage; considerations for temporary power and heating will need to be arranged by Contractor;
- Construction of fencing, the storage building and the UV building roof will be planned for late spring or early summer to avoid interruptions due to winter conditions; and
- Seasonal work considerations should also include:
    1. Temporary heating and insulation for cold-weather operations, such as electrical installations and concrete work;
    2. Snow and ice removal plans will be implemented to maintain safe access to site and working areas;
    3. Drainage systems and dewatering measures will be employed to manage water and ensure continuous working conditions;
    4. Seasonal construction activities such as landscaping, fencing, and final grading will be completed during summer to early fall for improved soil conditions; and
    5. Account for seasonal fluctuations in temperature and humidity in material storage. Store sensitive materials, such as electrical components and UV systems, in climate-controlled environments until installation.

13.0 Tie-In Management

The tie-in phase of construction involves connecting new systems and infrastructure to existing operational systems. These activities are critical to ensure seamless integration without disrupting ongoing operations. The Contract Administrator will be responsible for coordinating tie-ins with operations staff and the Contractor to ensure minimum impact on existing operations during execution of tie-ins. For clarity, a deliverable from the Contractor is not required.

The critical tie-ins will be performed during the bypass period when the UV Building will be isolated from both flow and power and as described in the Critical Stage of work in the Tender. Planning and scheduling of these scopes of work during the bypass period will be coordinated between the Contractor and the Contract Administrator.

14.0 Coordination with Other NEWPCC Projects

NEWPCC is undergoing several major upgrades through different projects by different contractors, while remaining in operation. Collaboration with other ongoing NEWPCC projects including Headworks and Primary Scum Dewatering is essential to the success of this construction project. Coordination between NEWPCC projects will have to be through the Contract Administrator, as point of contact for this project.

15.0 Flow Diversion Schematic

The flow at the UV Facility is summarized in the schematic shown in **Figure 5** for both normal operation and during the bypass period.

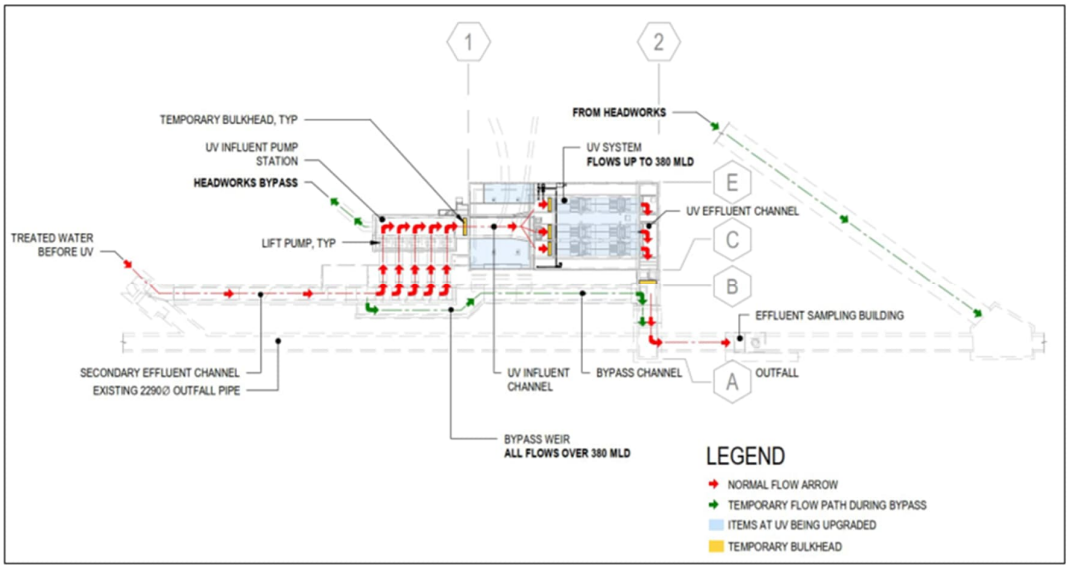


Figure 5: UV System with Flow Diversion

16.0 Bypass Procedure

The bypass procedure is an important part of construction management, ensuring that existing systems can be deactivated safely to facilitate construction activities, and can be effectively returned to service after the bypass period. The following outlines steps and considerations for an efficient bypass process.

16.1 Pre-Bypass Requirements

Effective coordination with plant staff and the City is essential to ensure successful execution of construction, while maintaining uninterrupted plant operations and adherence to project goals.

A pre-bypass planning meeting between the City, Contract Administrator, plant staff and construction team will be held to verify the bypass period work sequence, roles, and responsibilities. The pre-bypass meeting will also address any systems affected, risks and any mitigation measures to minimize those risks. The Contractor is to collaborate with City to ensure that all construction activities comply with environmental regulations, safety standards, and operational licensing requirements.

The Contractor Project Manager will coordinate directly with the Contract Administrator, who will serve as the primary point of contact for City and plant staff, ensuring consistent communication and streamlined issue resolution. The Contract Administrator will maintain open communication channels with the City and plant staff to address issues promptly and make informed decisions that keep the project on schedule.

Contingency plans will be developed in collaboration with the City to mitigate risks and ensure project continuity in the event of unexpected delays or challenges.

16.2 Operational Notifications

The Contractor is required to provide written notice of a shutdown to the City at least fourteen (14) days prior to the shutdown. This notice shall be distributed to the City, Plant Operators, Contract Administrator, and any impacted third parties.

Regular progress reports will be submitted to City, including updates on construction activities, potential risks, and mitigation strategies.

16.3 Contractor Responsibilities

Contractor responsibilities include:

- Developing bypass plans in consultation with City;
- System isolation and flow diversion;
- Providing and maintaining access to plant staff for sampling building during construction;
- Developing safety protocols within UV Facility / construction areas to be communicated and enforced to protect both construction personnel and plant staff;
- Plant staff are to be actively involved in commissioning to ensure seamless integration of new systems;
- Providing temporary power and heating to UV Facility during construction;
- Coordination with equipment manufacturers for proper installation and presence of their representatives, as necessary;
- Quality assurance and control activities, including inspections, hydrostatic and leak testing;
- Safely powering down and isolating electrical components;
- Reactivation and testing of UV systems once critical stage construction are completed; and
- Providing training sessions for plant staff on operation and maintenance of new equipment and systems.

17.0 Inspection and Test Plans

The Contractor will be required to provide Inspection and Test Plans (ITP) or equivalent documents for each portion of the works. The aim of ITP and checklists is to ensure that inspection status and test plans are known at all times and to provide evidence of the satisfactory completion of a test.

The Contractor will provide ITP and checklists for review and approval, prior to the works being carried out. The City Project Manager and Contract Administrator will mark up any witness and hold points for inspection activities on the plans. ITP, checklists and test records will be signed off progressively as work progresses. Completed ITP and checklists will form part of the verification records for the works and are compiled into a site records dossier and to be provided to Operations on completion of this project.

Furthermore, the construction team will develop ITP where gaps are identified in inspection and test plan regime. Examples include during the tie-in and commissioning works, and where works may be conducted simultaneously by two or more Subcontractors if such ITPs exceed the individual Subcontractor’s scope of work.

18.0 Quality Assurance and Control

18.1 Quality Management Plan

Construction quality assurance and quality control procedures for the projects will be prepared by the Contractor.

18.2 Site Activities

The Contract Administrator will ensure that Contractor crews will implement and maintain their approved QA/QC program through surveillance and agreed audit activity.

The Contract Administrator will coordinate flow of technical information, including interpretation of drawings and specification requirements.

If a quality control or compliance issue arises that may affect design integrity, the Contractor Project Manager will coordinate with the Contract Administrator to ensure that design integrity is not compromised. All such issues will only be resolved with the approval of the Contract Administrator.

18.3 Insurances and Securities

Prior to granting the Contractor access to NEWPCC site, the Contractor shall submit details of its insurances, which are required to be enforced under the Contract. Prior to certification of any payments, Contractor will provide the contract securities required under the Contract. The City Project Manager will review these against the Contract requirements.

18.4 Change Management

Change management provides project management team with early warnings of conditions that might affect project cost or schedule. The change management process allows the project management team to minimize or negate impacts of potential change.

The change management process defines identification, creation, and handling of deviations to approved baselines of this project. Deviations may be caused by design growth factors, pricing variances or scope change.

18.5 Schedule Control

Maintaining and improving on the Master Plan is an essential requirement on this project site. Site staff monitoring the construction schedule are to:

- Keep themselves informed on all activities which will affect overall project schedule;
- Determine strategy and solutions to problems in conjunction with management;
- Carry out detailed planning for specific critical areas;
- Analyse the critical path for discussion at site meetings;
- Evaluate effect of variations on schedule;
- Ensure other site staff who may be affected are aware of program status and resultant effects; and
- Assess extensions of time claims for additional work or unavoidable delays.

This will be updated as specified in the contract and issued for updating with the Master Plan.

The Contractor Project Manager will be responsible for maintaining an overall schedule and reporting delays to the City in a timely manner.

19.0 Vendor Representatives

Where it is requested that a Vendor Representative supervises or checks installation and/or commissions individual equipment, the conditions of the relevant supply contract are to be reviewed and the vendor is to be contacted by the Contractor at an appropriate time to suit progress of work. Vendor Representative activities will be documented in the Contract Administrator's daily reports.

20.0 Site Instructions

No verbal instructions or discussions other than safety matters will be deemed to be site instructions. Site Instructions are to be written and authorised by the Contract Administrator or a duly appointed delegate and are to be used by site staff having responsibilities. These are to be used to confirm or issue instructions regarding contractual obligations, record of events or conversation, corrective actions necessary, and any other general information. Site Instructions will be used where there is no scope or schedule issue that may impact contract value (unless by prior agreement) or overall completion date.

21.0 As-built Drawings

If changes to the “Approved for Construction” drawings are found to be necessary during the site works, relevant Contractor personnel are to mark up their working set of drawings accordingly. These markups are to be kept onsite for a continuous record of construction. At close of the Contract, the project team are to review the as-built drawings received from the Contractor to ensure all changes have been clearly identified and detailed. These are to be forwarded to the Contract Administrator for the as-built revisions to be issued, and these revisions will then be checked for accuracy before final issue to the City.