



Marine Users Working Group

Presented By: Fraser Crossing Partners and
Transportation Investment Corporation

July 25, 2024

Welcome

- Review of June 27 Meeting Minutes
- Navigation Log
- Project Update
- River Monitoring Results
- Cantilever Construction Update
- 4 Week Look-Ahead Schedule
- Roundtable Discussion
- Next Steps

Review of Meeting Minutes

June 27, 2024

Meeting Minutes – June 27, 2024

- FCCGP provided a Project update and overview of upcoming works
 - Installation of first segments of the S1 pier table section are complete – work will continue with SMO2 and SPO2
 - N1 pier cap construction underway
- FCCGP provided an update on the River Monitoring Program
 - Comparison of the January 4, 2024 and June 3, 2024 bathymetry results reveals the migration of depositions where the water lots are a known concern of the Council of Marine Carriers
 - The impact of this freshet on resolving some of the sedimentation issues will be better understood as we move forward
- FCCGP provided an overview of cantilever construction
 - Lifting gantries are current out of commission – to maintain progress with SM-02 and SM-03, derrick barges will be needed to hoist structural steel and precast panels
 - Where possible, work will be done concurrently with CN to take advantage of planned closures – any interferences will be communicated via weekly NAVWARNs
- FCCGP provided a 4-week look ahead
 - SM-02 will occur late June – mid-July
 - SM-03 will occur mid-July – mid-August
 - FCCGP anticipates that the lifters will be operational by July 21 – if not, “the beast” or similar type of rig will be used.
 - If the lifters are not operational, 5-6 days will be required for girder erection (compared to 1-2 days), followed by 1-2 days for pre-cast panel erection.
 - Pier S2 soil densification works are on hold for at least a month, and may be delayed to 2024 – consideration being given to performing this work once the trestle is removed in Phase 2 of the soil densification work

Navigation Log

Marine Occurrences as a Result of the Project

**No updates to report*

Project Update

Works in Progress

Project Update

S1 Tower and Cantilever Construction



Photo 1: Pier S1, looking northwest



Photo 2: Pier S1, looking northeast

Project Update

S1 Tower and South Approach



Photo 3: Looking northeast towards Pier S1 – South approach girder and deck installation works ongoing



Photo 4: Looking northeast towards Pier S1

Project Update

N1 Pier Cap construction



Photo 5: N1 Pier Cap construction, looking south

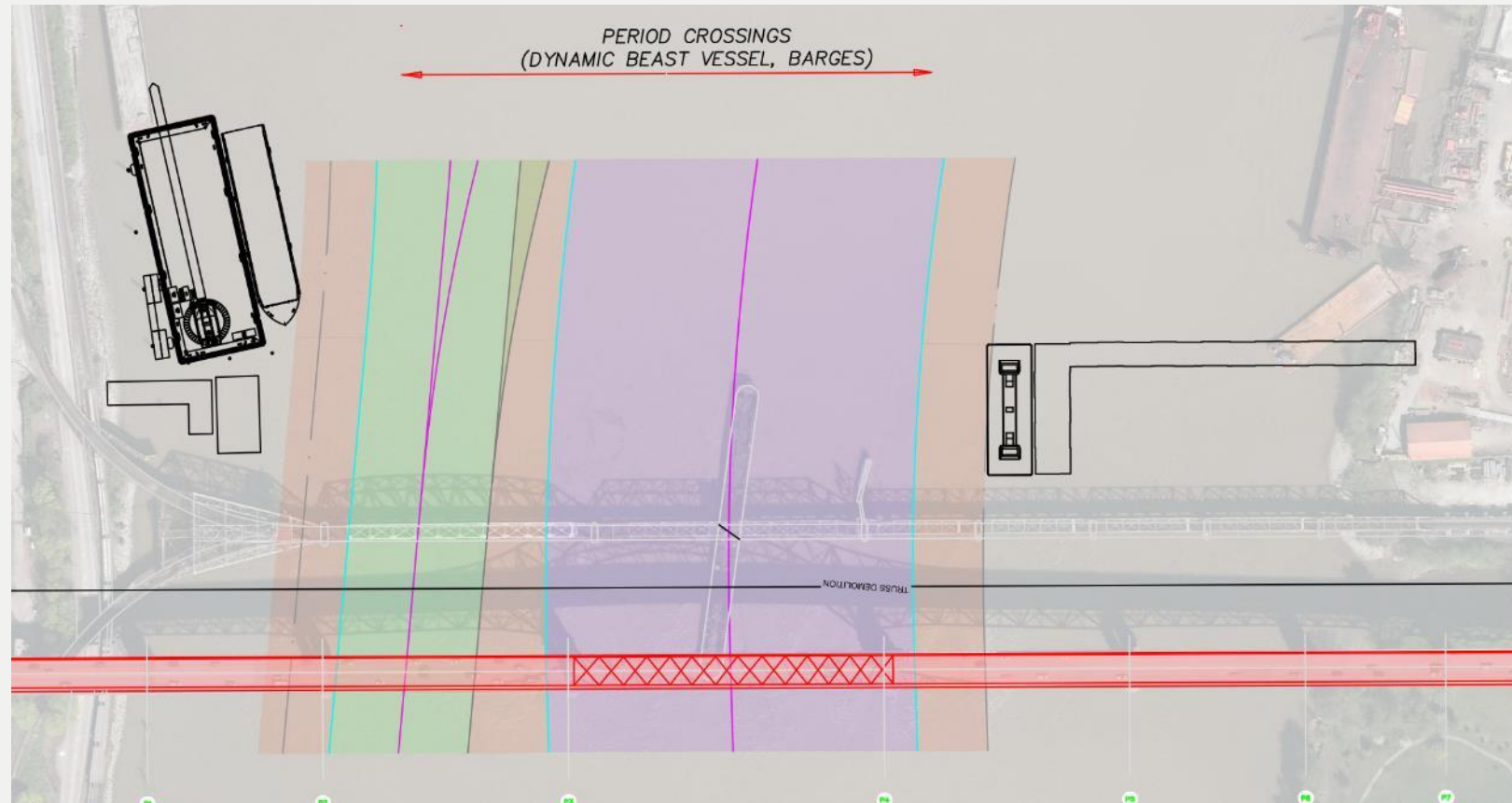


Photo 6: N1 Pier Cap construction, looking north

Project Update

Girder offload and installation for the North Approach and South Approach

- Offloading girders continue
- Occasional barge crossings across the main nav channels are required



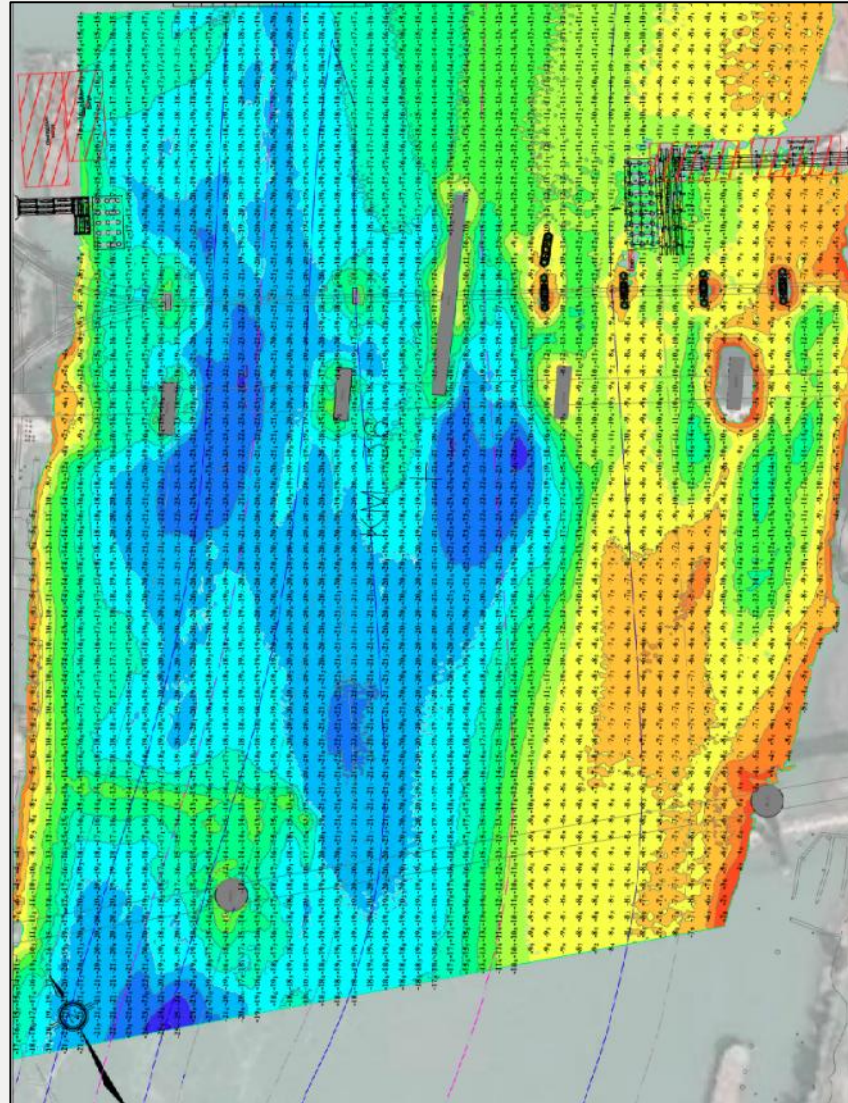
Update on River Monitoring Program

Bathymetric Survey Results – Monthly Update and Comparison by Cross Sections (Post-freshet)

Bathymetric Results

- Monthly bathymetric survey results being shared at IMUWG and MUWG meetings
- Post-freshet comparison by cross sections (A-F)
 - a) Current Bathymetric Survey Results (Jul 2, 2024)
 - b) Existing Condition (pre-Construction)
 - CN Rail Bridge without seismic retrofit, Pattullo Bridge, SkyTrain Bridge
 - c) Worst Case Construction Condition (Construction)
 - CN Rail Bridge with seismic retrofit, Patullo Bridge, SkyTrain Bridge, NFRB, Pier S1 and N1 scour protection, S1 and N1 TWP, CN3/CN4/CN5 scour protection, north bank erosion protection

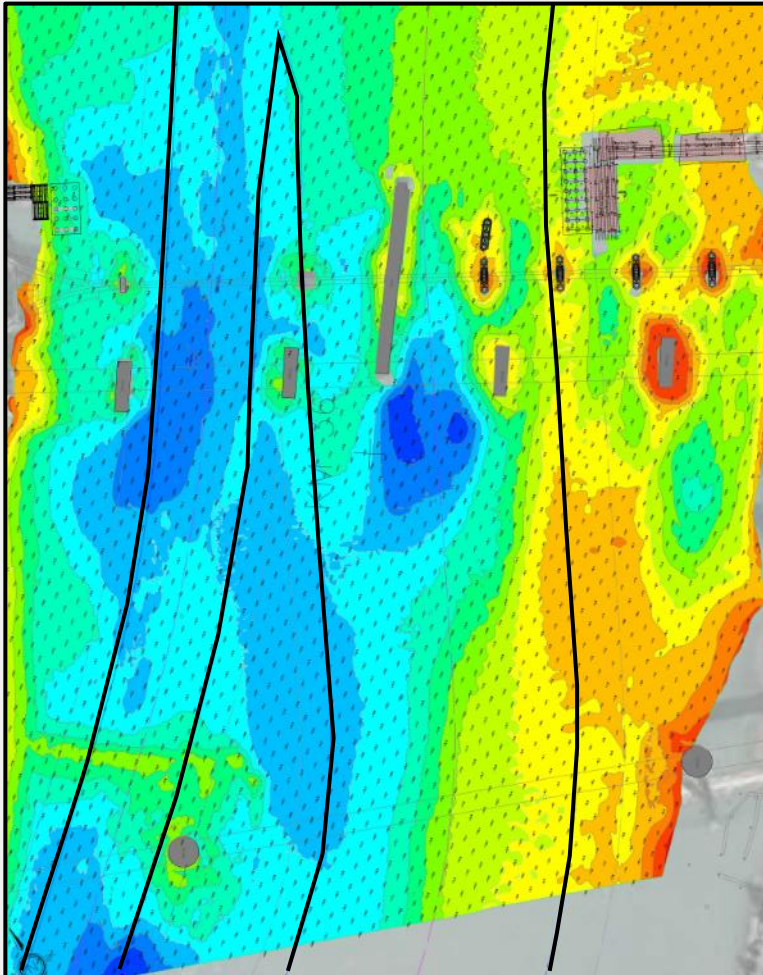
Bathymetry Monitoring Survey – July 2, 2024



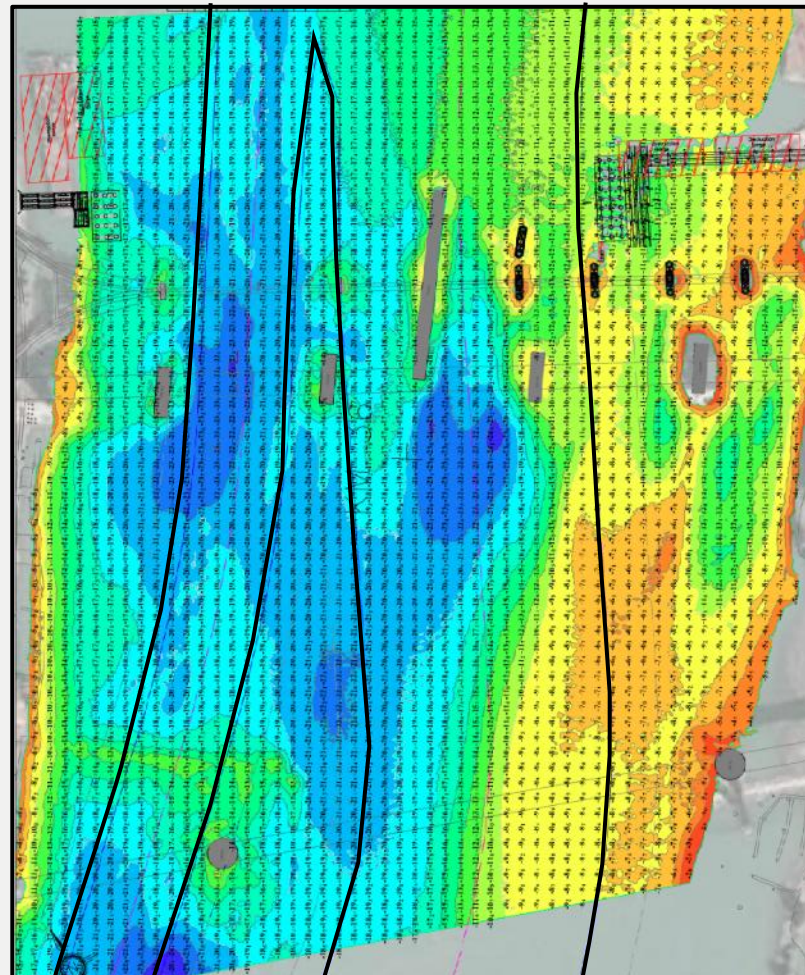
Elevations Table			
Number	Maximum Elevation	Minimum Elevation	Color
14	0.00	-2.00	Red
13	-2.00	-4.00	Orange
12	-4.00	-6.00	Yellow-Orange
11	-6.00	-8.00	Yellow
10	-8.00	-10.00	Light Green
9	-10.00	-12.00	Green
8	-12.00	-14.00	Light Blue
7	-14.00	-16.00	Blue
6	-16.00	-18.00	Dark Blue
5	-18.00	-20.00	Very Dark Blue
4	-20.00	-22.00	Black
3	-22.00	-24.00	Dark Grey
2	-24.00	-26.00	Black
1	-26.00	-28.00	Black

Bathymetry Results: Comparison from January – July 2024

Local Area Survey Jan 4/24

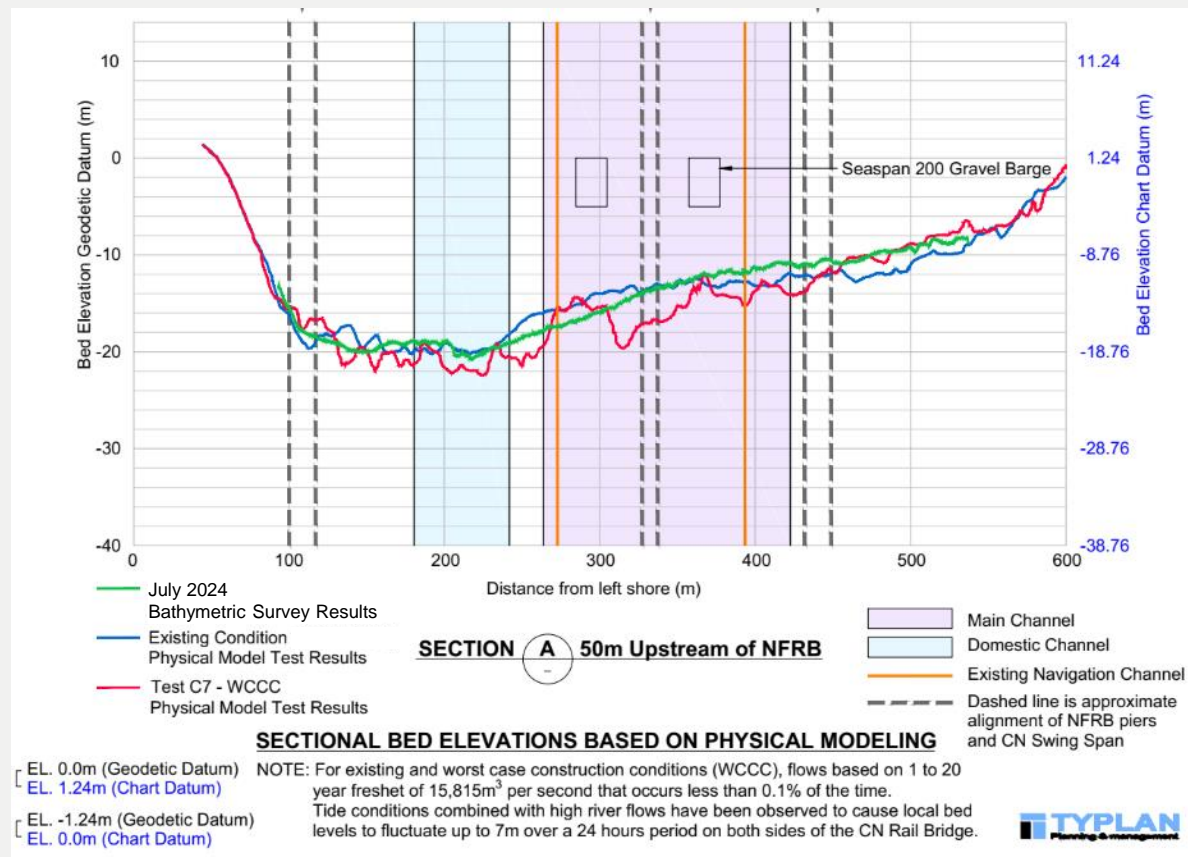
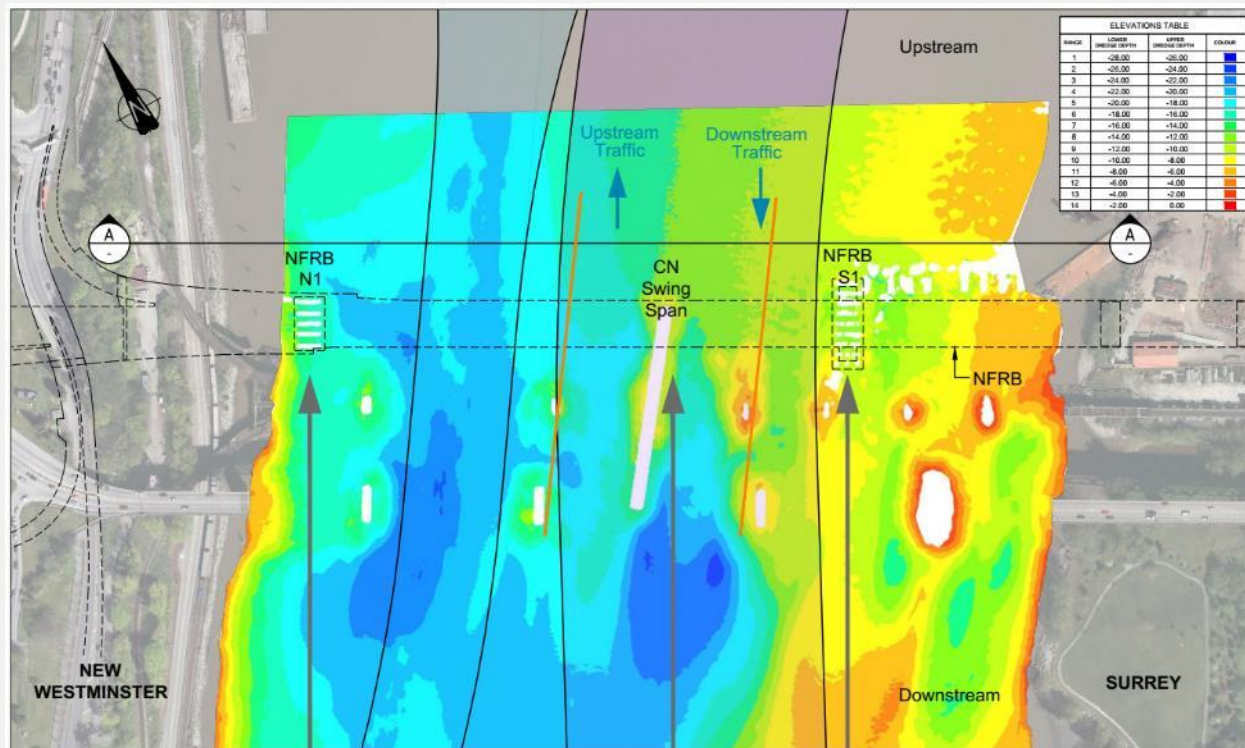


Local Area Survey Jul 2/24

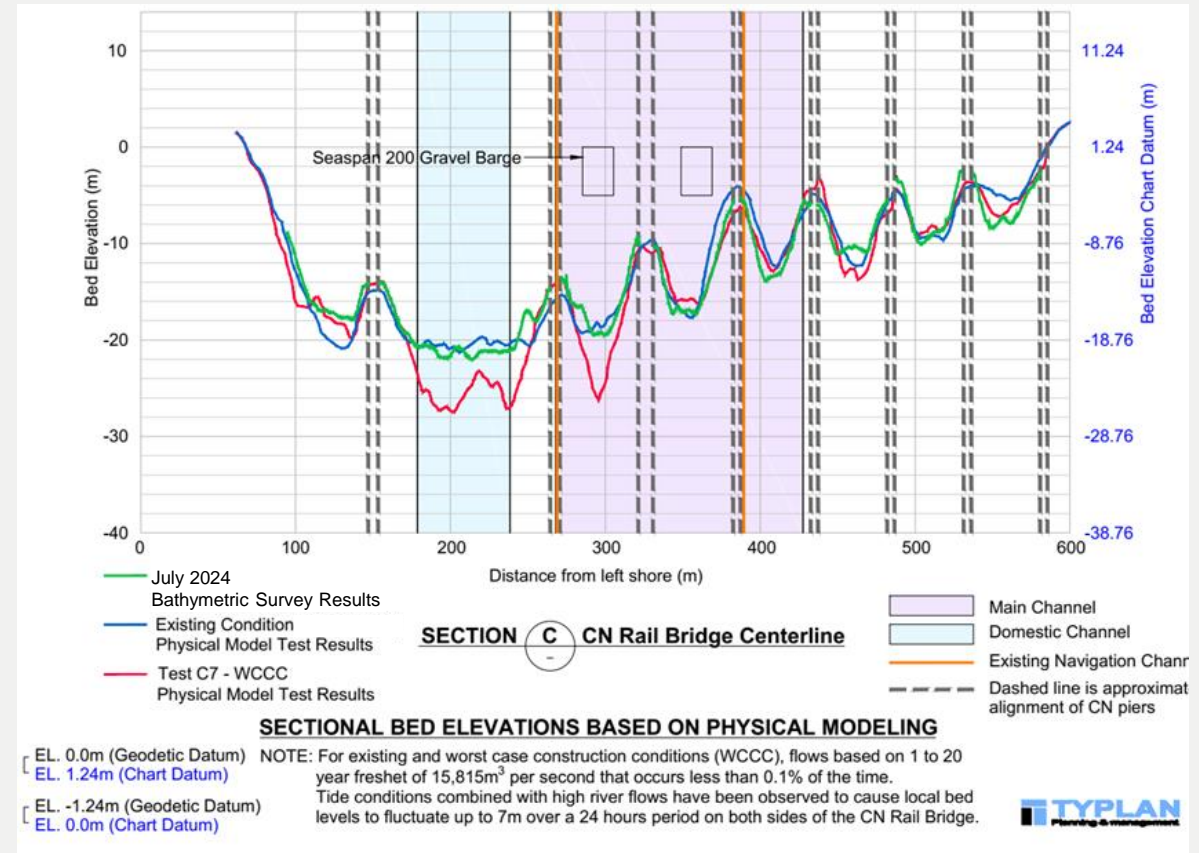
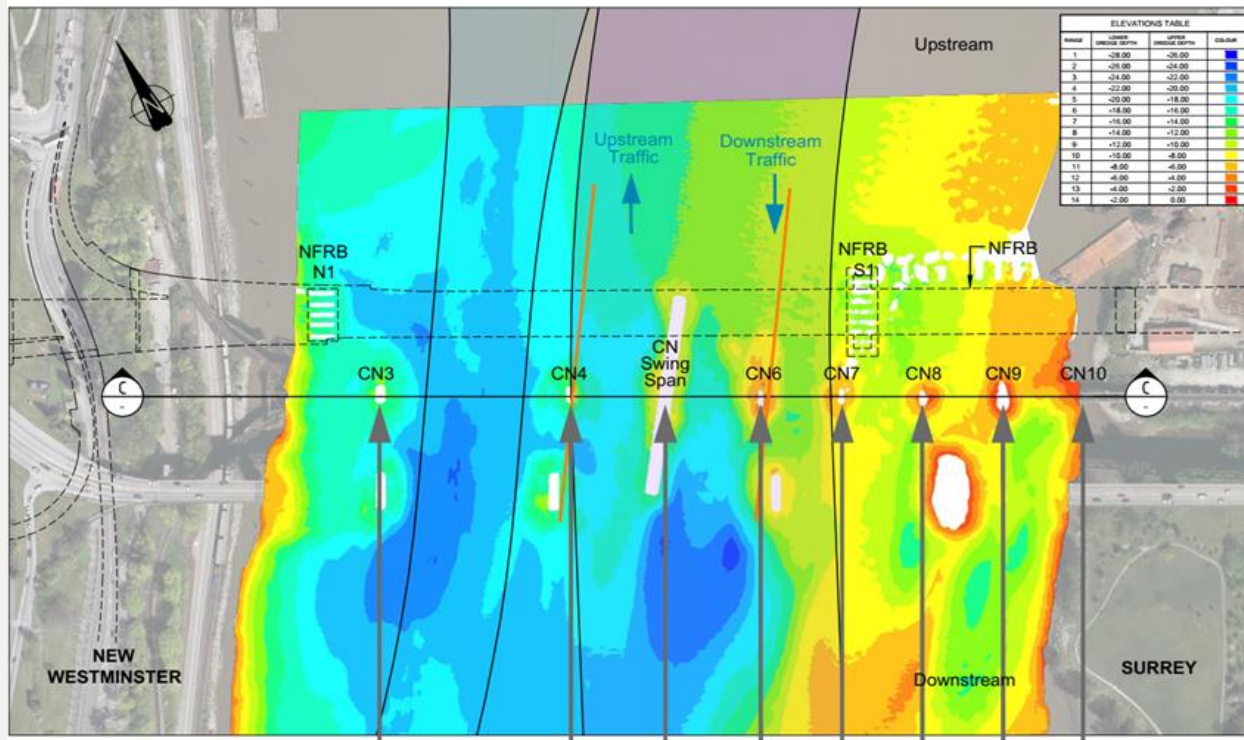


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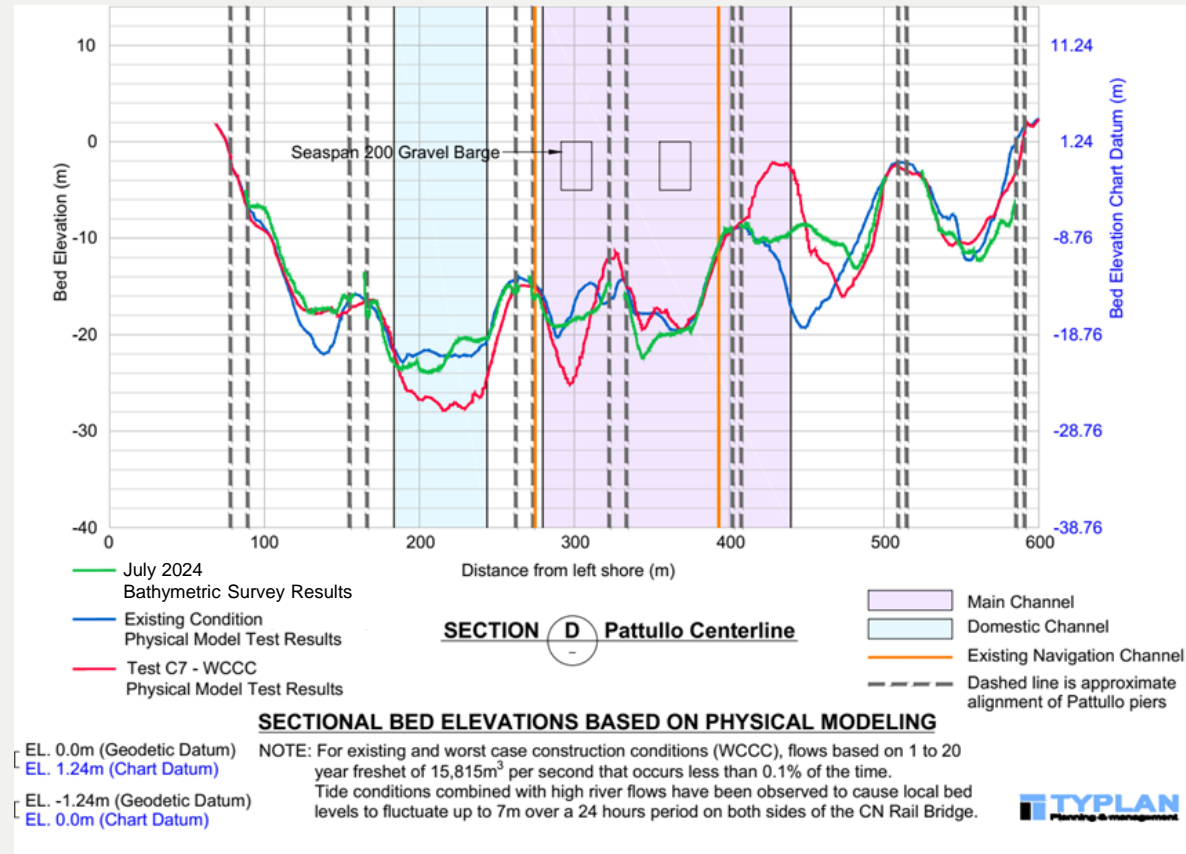
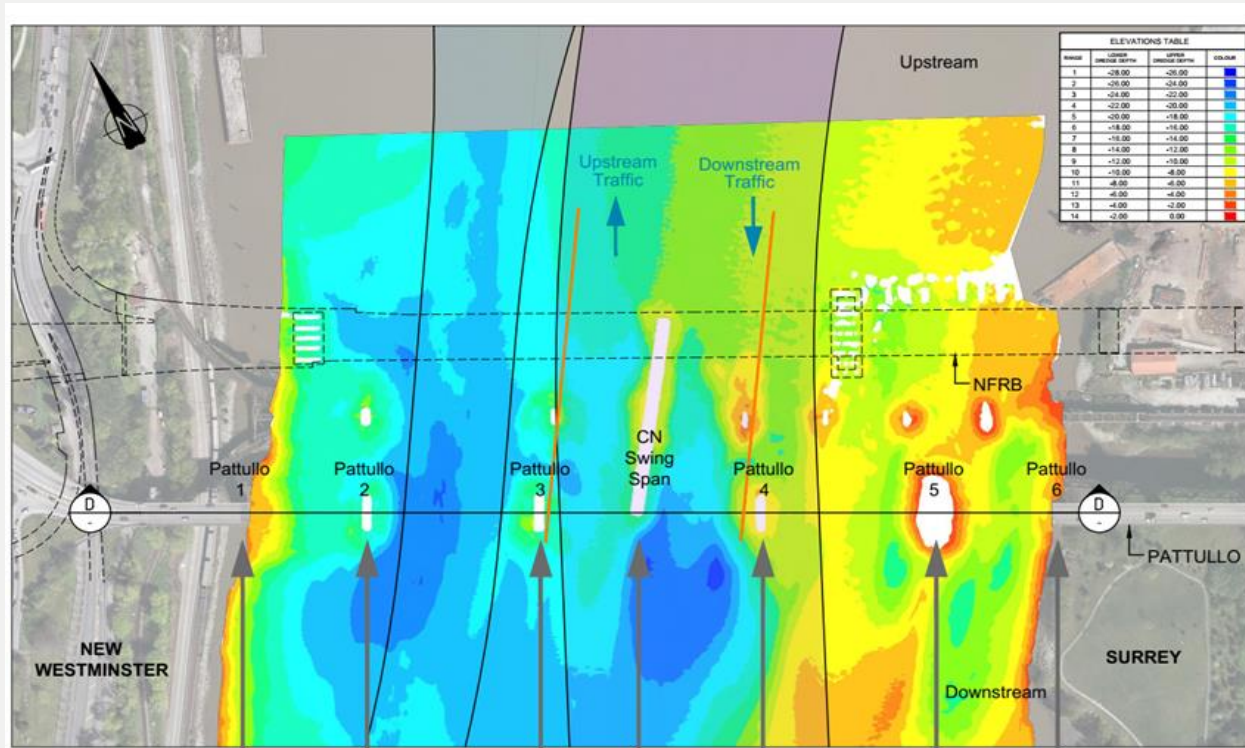
Section A: 50m Upstream of the NFRB



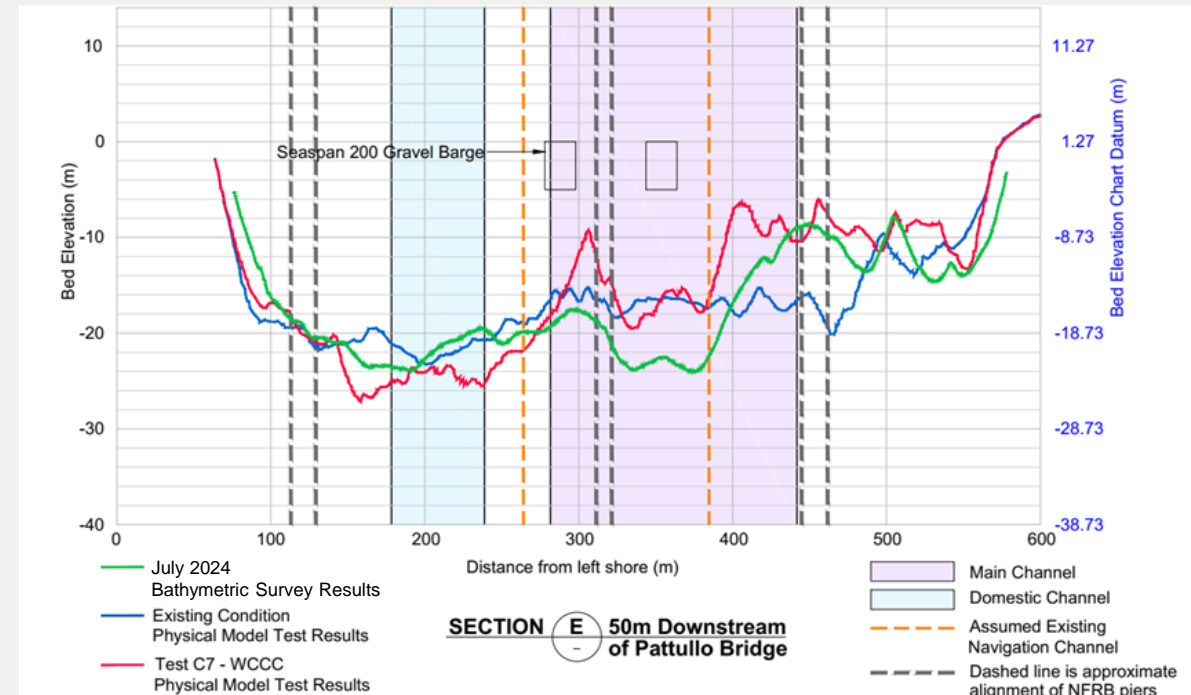
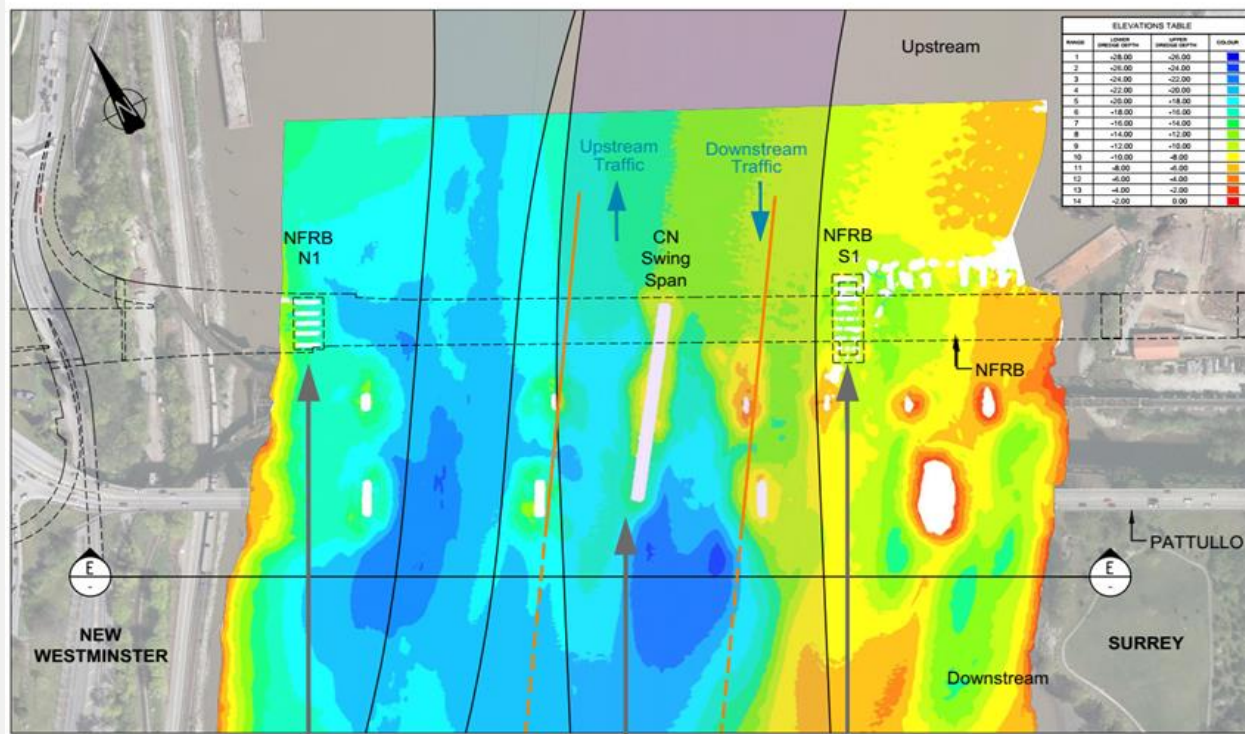
Section C: CN Rail Bridge Centreline



Section D: Existing Pattullo Bridge Centreline



Section E: 50 m Downstream of Pattullo Bridge



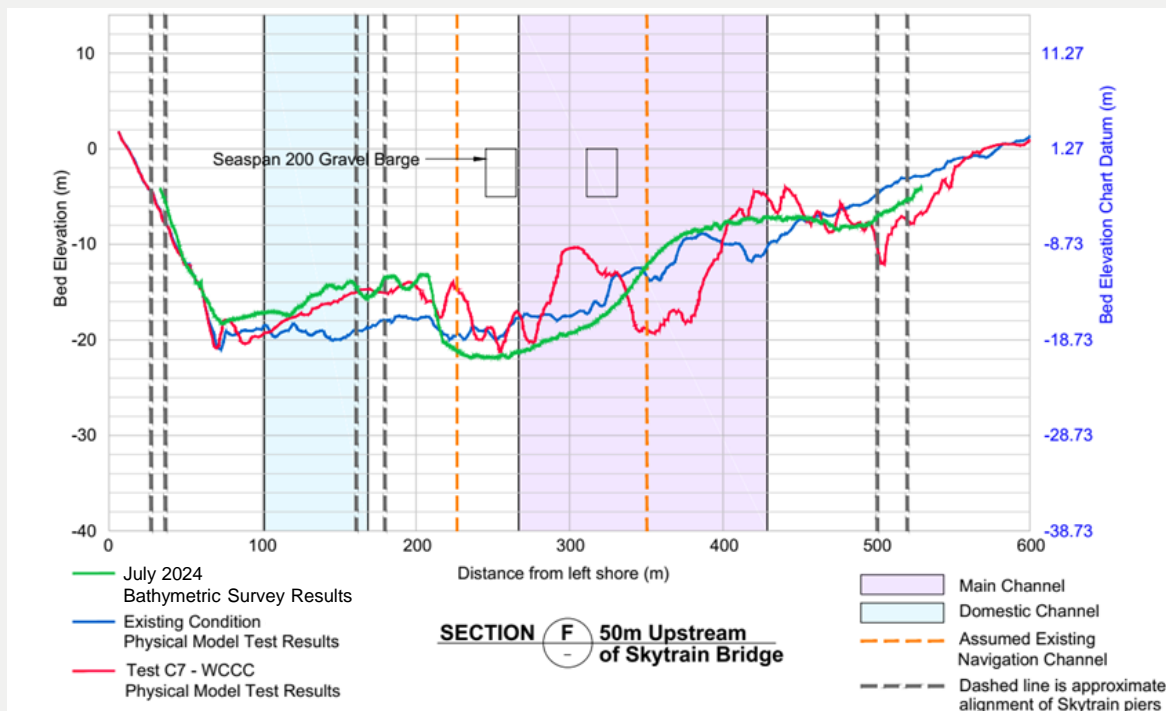
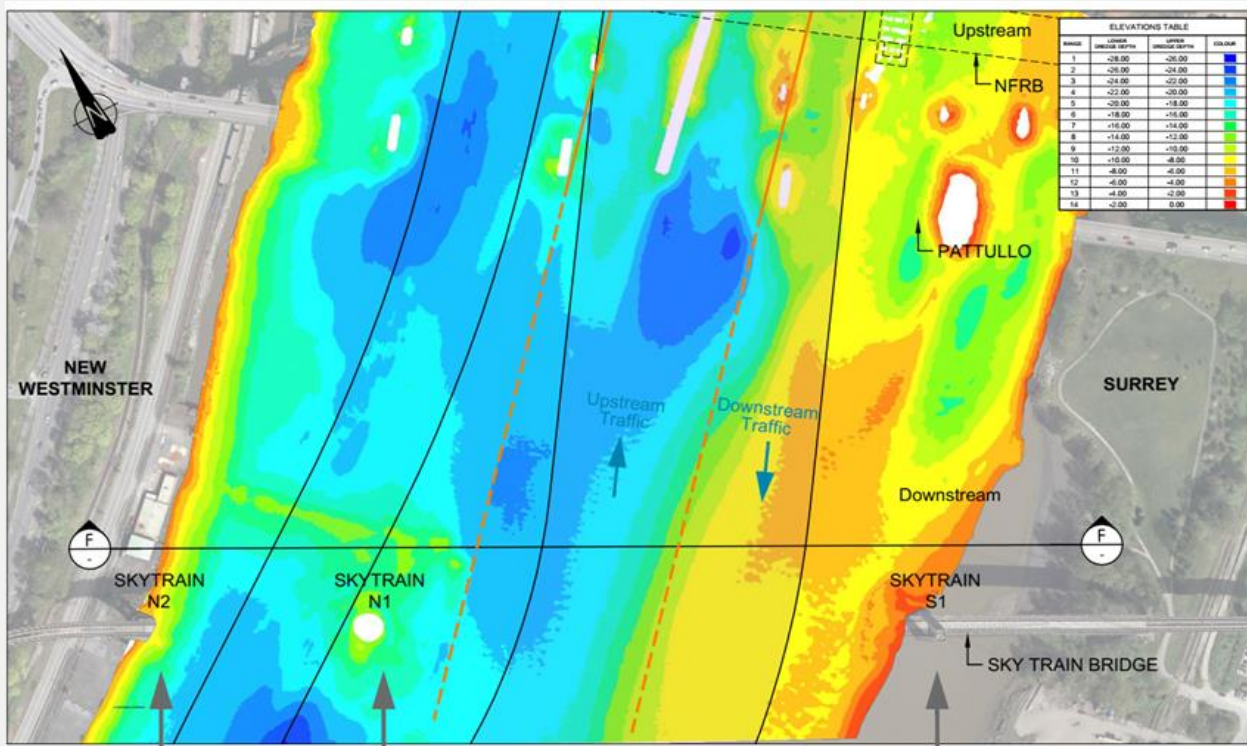
SECTIONAL BED ELEVATIONS BASED ON PHYSICAL MODELING

EL. 0.0m (Geodetic Datum)
 EL. 1.27m (Chart Datum)
 EL. -1.27m (Geodetic Datum)
 EL. 0.0m (Chart Datum)

NOTE: For existing and worst case construction conditions (WCCC), flows based on 1 to 20 year freshet of $15,815\text{m}^3$ per second that occurs less than 0.1% of the time. Tide conditions combined with high river flows have been observed to cause local bed levels to fluctuate up to 7m over a 24 hours period on both sides of the CN Rail Bridge.



Section F: 50 m Upstream of Sky Bridge

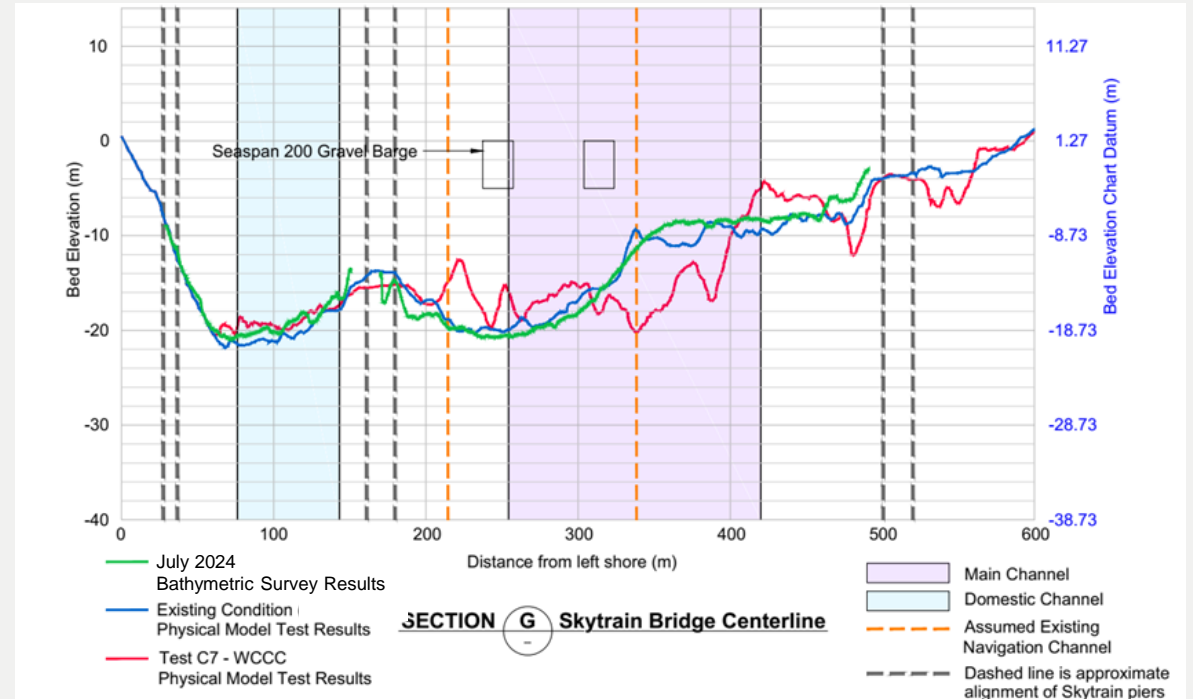
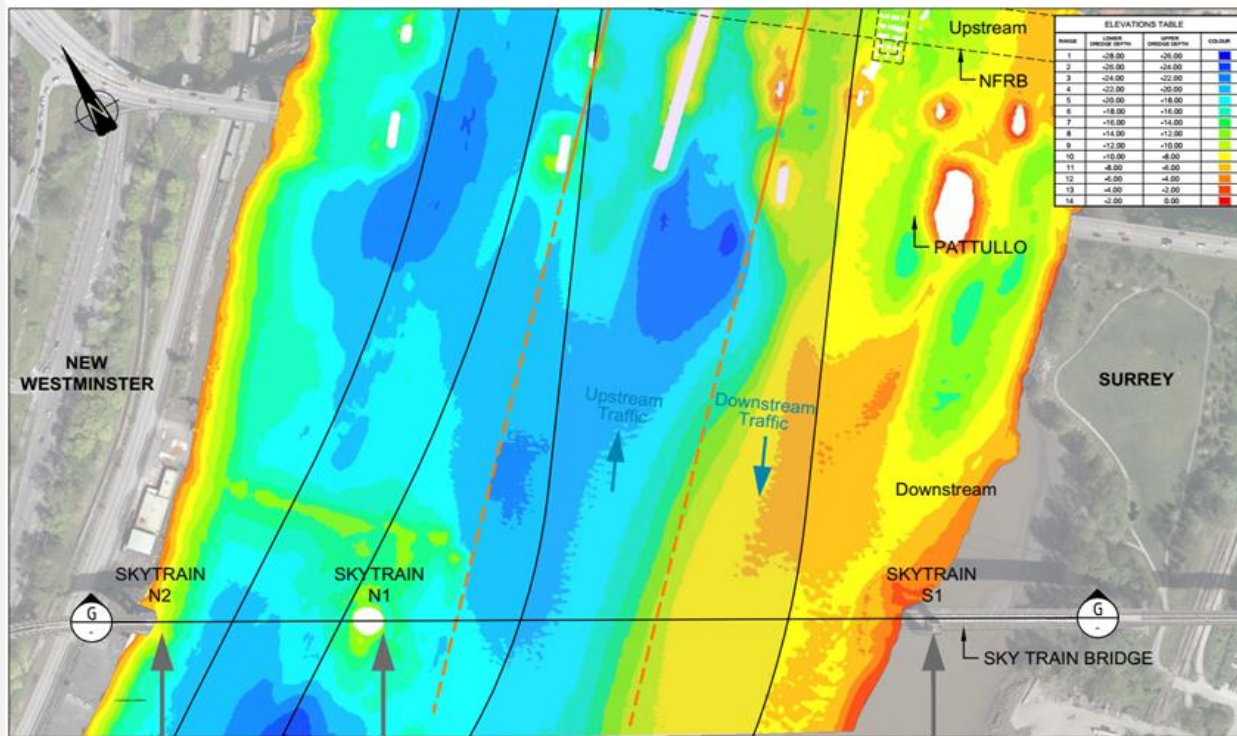


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[EL. 0.0m (Geodetic Datum)
 EL. 1.27m (Chart Datum)
 [EL. -1.27m (Geodetic Datum)
 EL. 0.0m (Chart Datum)

Section G: SkyTrain Bridge Centreline

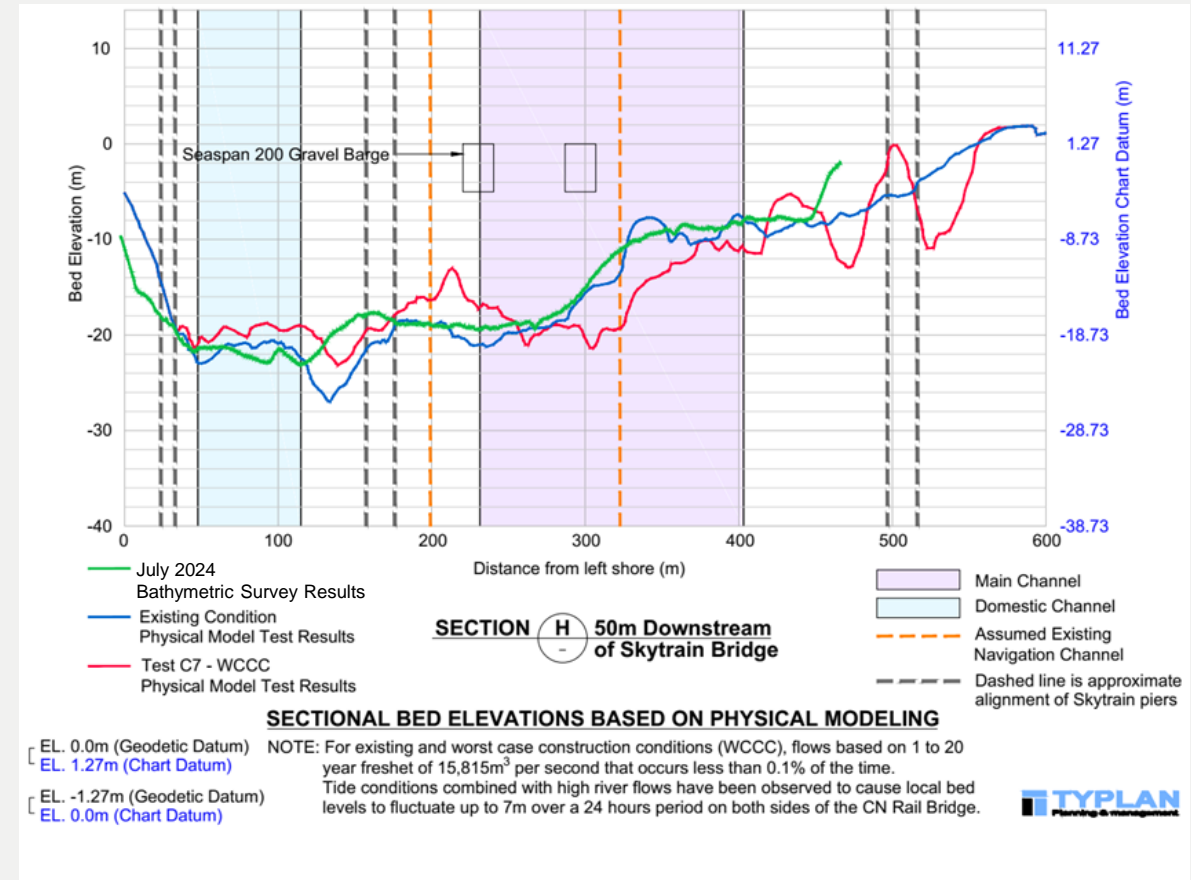
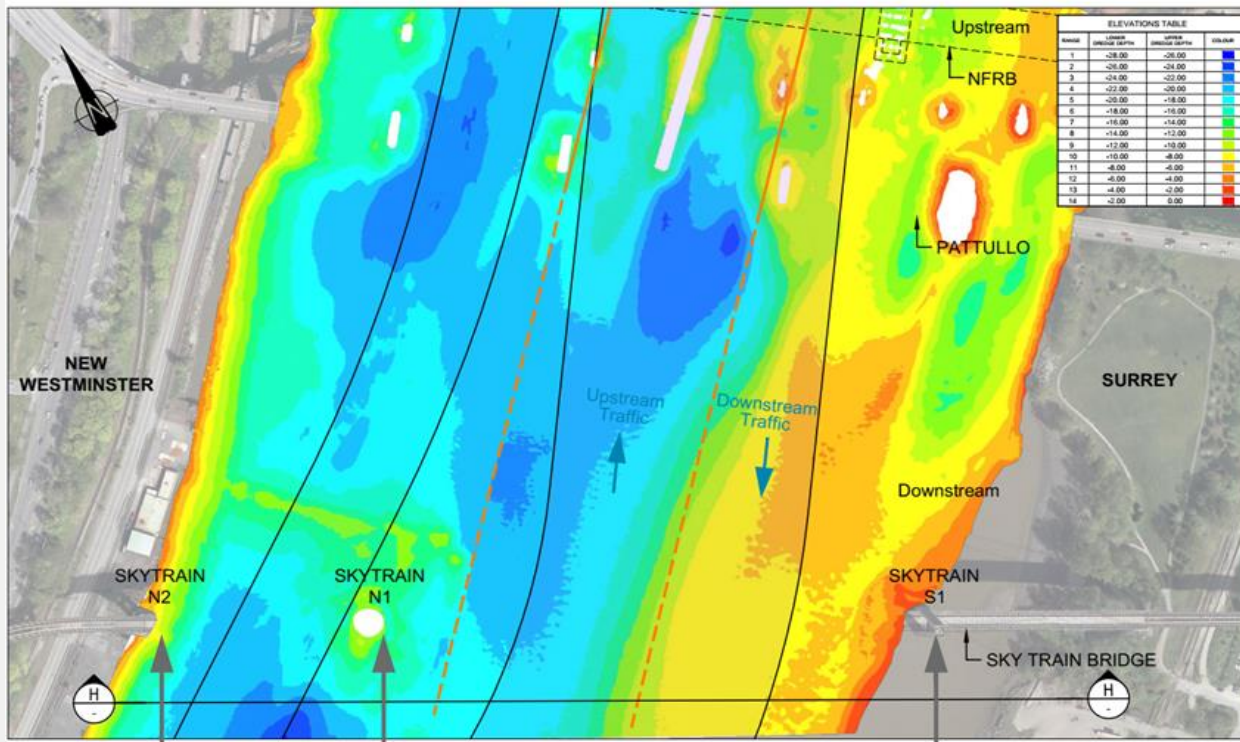


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Section H: 50m downstream of SkyTrain Bridge

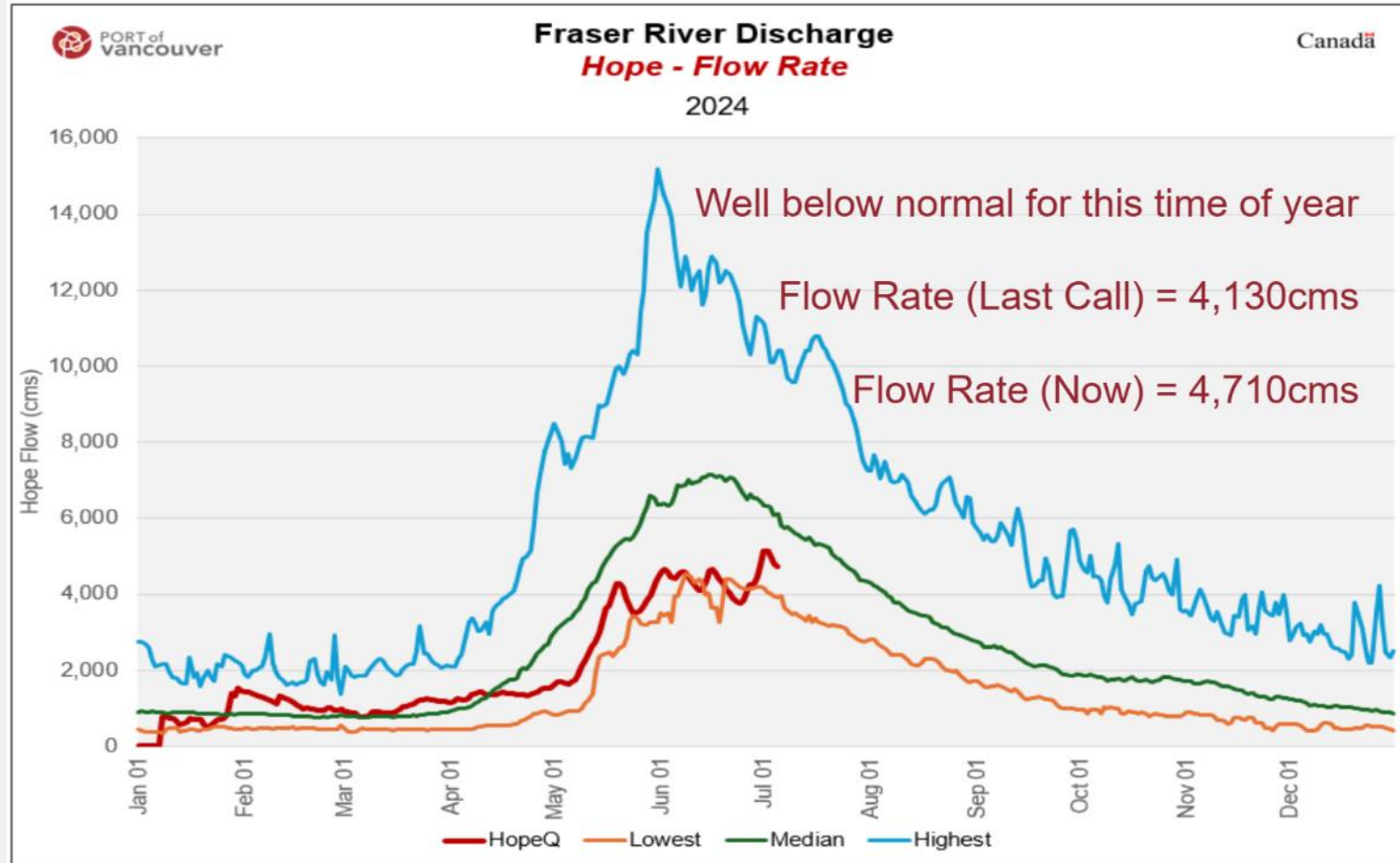


Deposition

- Dynamic nature of Fraser River flows:
 - Flow rates up to ~1,000 m³/s in winter; 5,000-15,000 m³/s during freshet
 - Tide conditions combined with high river flows have been observed to cause local bed levels to fluctuate up to 7 m over a 24-hour period, and up to 12 m over a year
- Deposition occurring on south side of river
 - 2024 freshet flows were less than historical average

Fraser River Freshet

Lowest, Median, Highest Freshet Compared to 2024



Deposition – Next steps

- Cross section (A-F) comparisons of current bathymetric results vs Final Condition Physical Model Test Results for next IMUWG and MUWG
- Further discussion with waterlot lease holders regarding current sedimentation
- Further discussion with VFPA regarding the existing and future navigation channel requirements

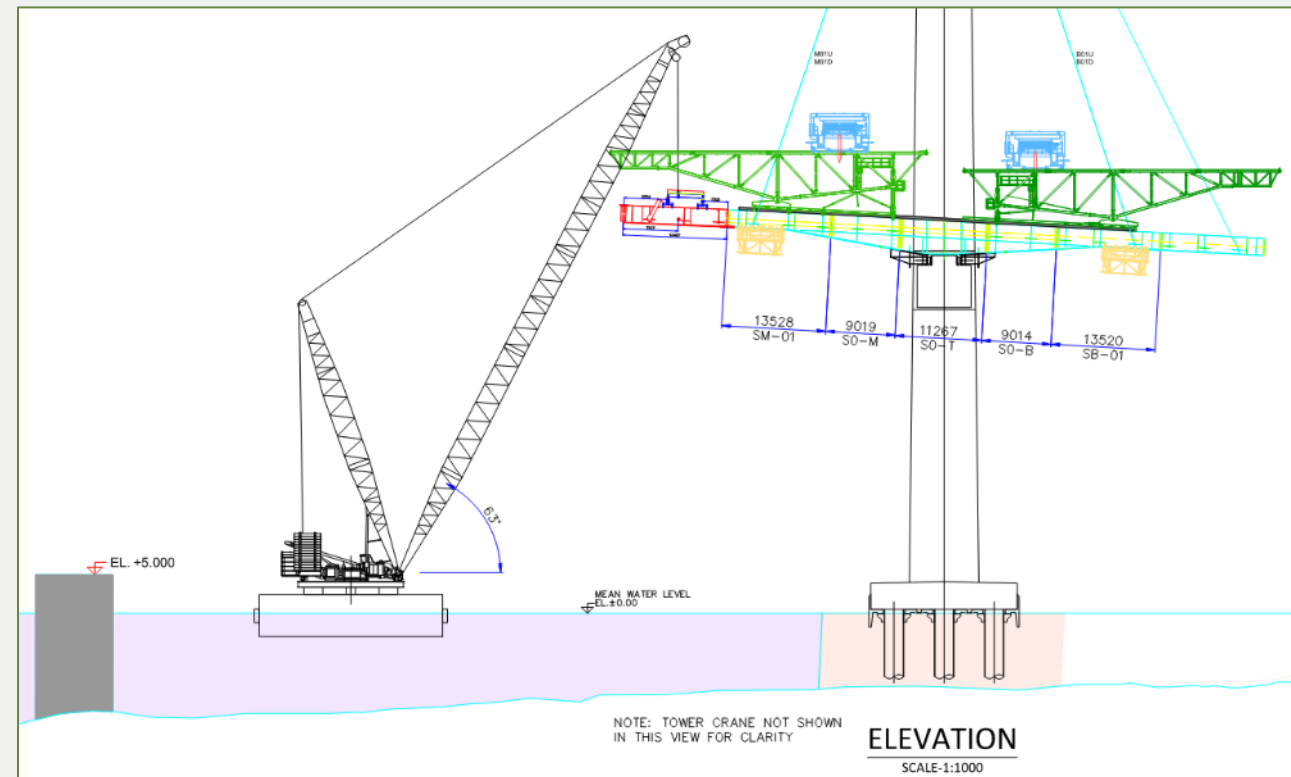
Cantilever Construction

Update

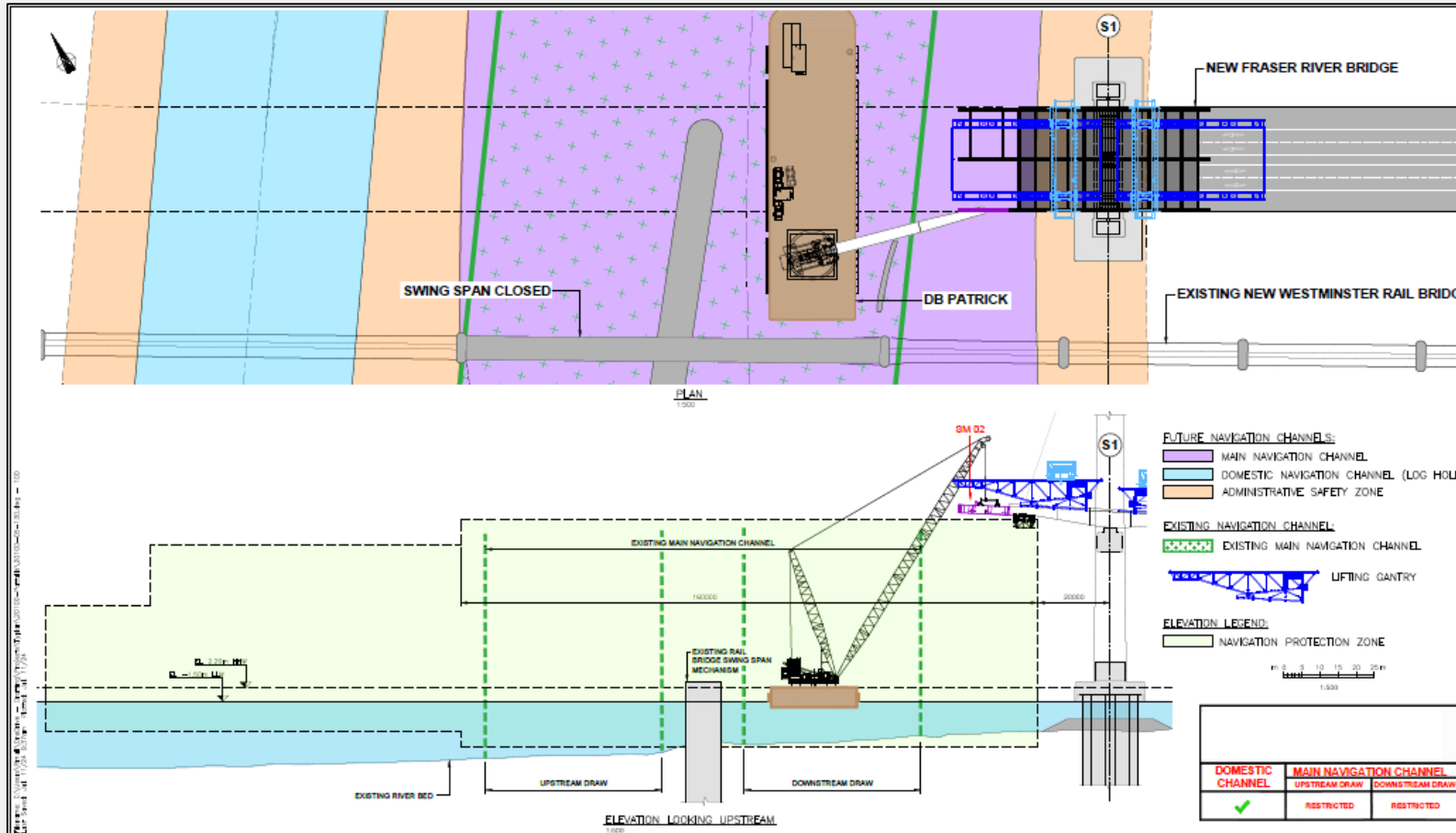
Cantilever Construction – SM-02 to SM-03 Works

Challenges & Alternatives

- Challenges with Lifters
- Alternative solutions to continue progressing with SM-02 and SM-03 involve lifting structural steel and precast panels using derrick barge(s)
- Restrictions to navigation channel (downstream draw) to accommodate derrick barge(s) and/or their anchors
- Alternative methodology should not extend past SM-03
- Anticipate lifters will be in operation again by early August



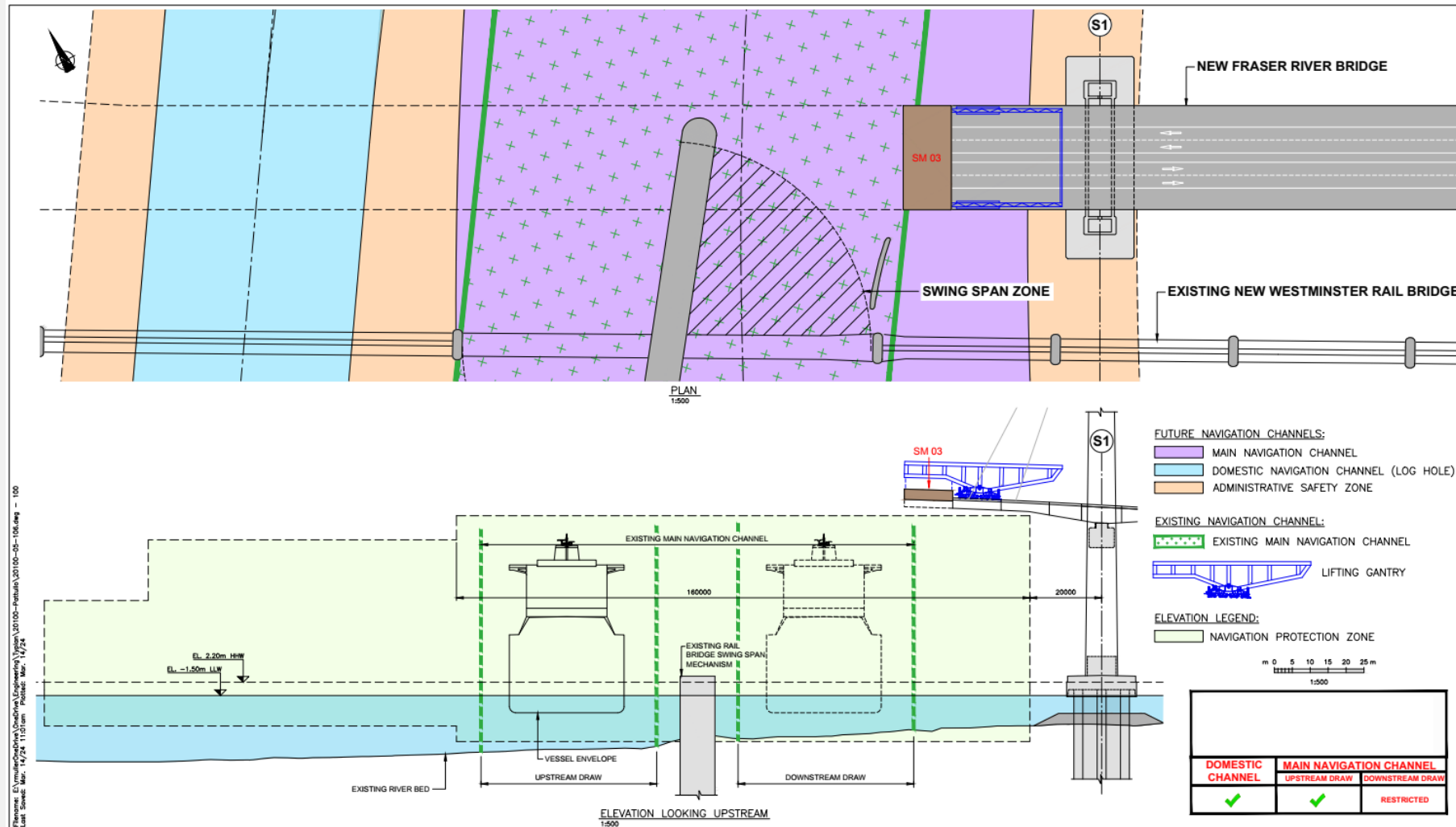
Cantilever Construction – SM-02 to SM-03 Works Alternative Considered



In advance of lifters becoming operational, Project has been looking at bringing DB Patrick barge/crane to site to facilitate SM-02 segment girder placement.

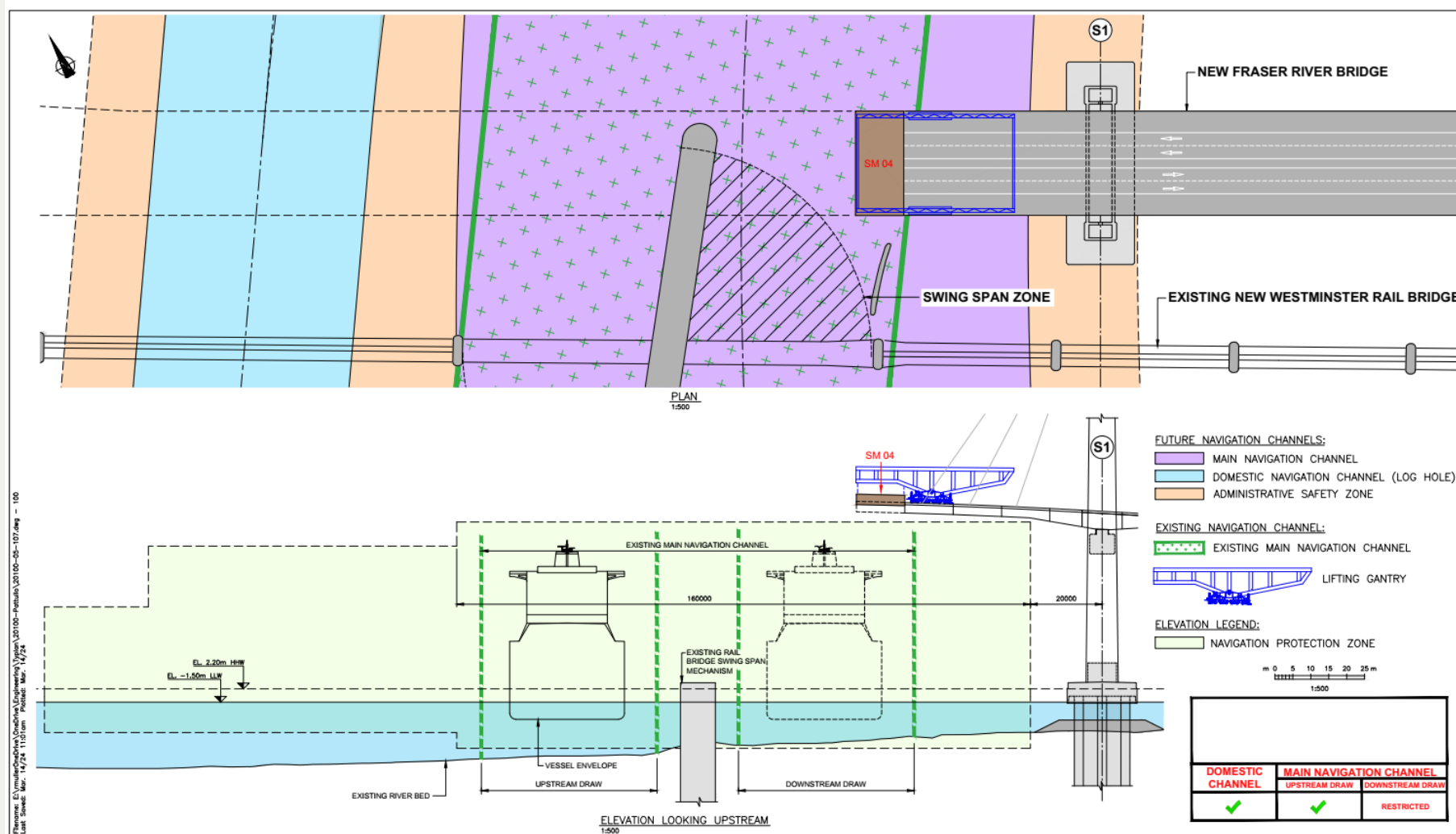
4-Week Look-Ahead / Construction Staging

Construction Staging – Cantilever Construction Segment SM-03



- Starting early August pending operation of lifters
- Three-week duration
- Restrictions in the downstream draw (approx. 11 hours)

Construction Staging – Cantilever Construction Segment SM-04



- Late August pending operation of lifters
- Three-week duration
- Restrictions in the downstream draw (approx. 11 hours)

Next Steps

Ongoing NAVWARNs to be provided

Next Marine Users Working Group:

- September 2024 (TBC)