City of Saint John

Request for Proposal

2024-091010P

"CONSULTING SERVICES – KENNEDY STREET OUTFALL UPGRADE PROJECT
SAINT JOHN, NB

Sealed proposals, hand delivered or couriered, addressed to:

Monic MacVicar, CCLP, CPPB, Procurement Specialist
Supply Chain Management,
Municipal Operations Complex, 1st Floor.
175 Rothesay Avenue
Saint John, NB E2J 2B4

and marked on the envelope:

"PROPOSAL 2024-091010P
CONSULTING SERVICES – KENNEDY STREET OUTFALL UPGRADE PROJECT"

will be received until **4:00:00 p.m**. **Local Time**, **Wednesday, July 31st, 2024**, for Engineering Design and Construction Management Services for the above noted project, as per the Request for Proposal.

The lowest cost or any proposal not necessarily accepted.

Monic MacVicar, CCLP, CPPB
Procurement Specialist
Supply Chain Management

TABLE OF CONTENTS

1. GENERAL

The City of Saint John (City) has prepared this document for Consultants wishing to provide their services to the City. This request for proposals is to be used as a guide, in combination with good engineering judgment and standard engineering practices and is not intended to be a complete procedural document. It reflects basic standards the consultant shall adhere to when preparing a proposal or carrying out work for the City.

All engineers working on this project for the City must be a current member or licensee with the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB). All Engineering companies working on this project for the City (i.e. the consultant or as part of the proposal submission must have a current certificate of authorization issued by APEGNB.

The consultant shall in all matters act as a faithful advisor to the City. The consultant shall keep the City informed on all matters related to design, procurement and construction and all other important aspects forming part of the scope of work.

The consultant must aggressively and proactively manage the project in the best interest of the City of Saint John. The overall project will require one tender. The consultant will oversee and manage the entire project on behalf of the City. The proposal shall clearly explain the anticipated structure of project management during each phase.

The consultant shall be aware of and follow any orders, policies, directives, standards and guidelines issued by any governmental authority, governing all or any part of the work under this RFP.

2. PROJECT DESCRIPTION

The consultant shall carry out preliminary design, detailed design, and provide detailed cost estimates for construction, construction management and inspection services for the Kennedy Street Outfall Upgrade Project (refer to figure one for the extents of the scope).

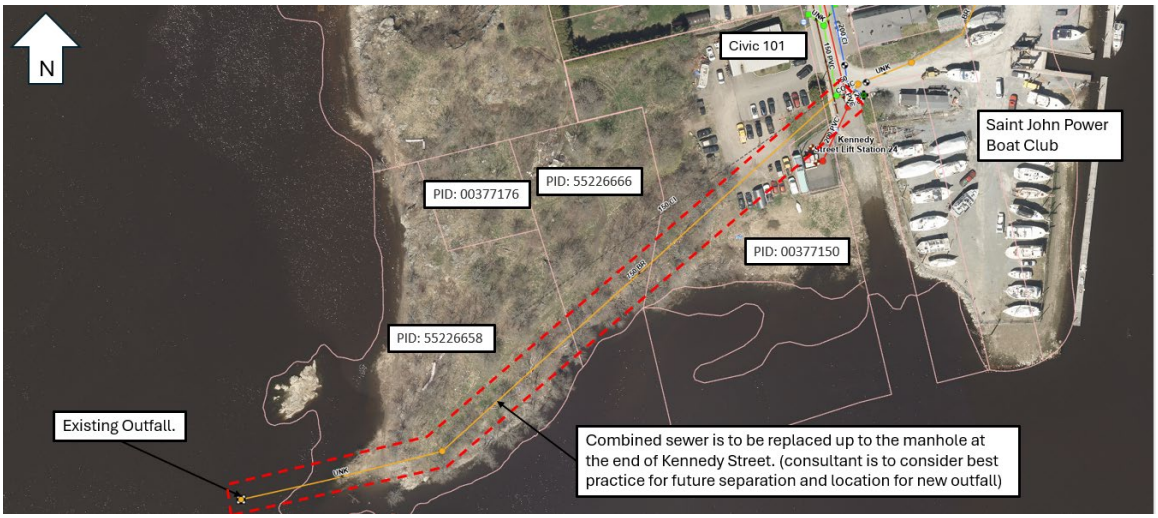

Figure 1: Kenedy Street outfall Upgrade Project Area

The expectation is to tender the project at the start of February in an effort for the City to take advantage of competitive bidding by contractors. The City anticipates all work completed in the 2025 construction season. Although it is the City's intention to complete the work in 2025, Consultant prices and hourly rates are to be held if construction of the project is delayed to 2026.

The project is generally as follows:

<u>Combined Sewer Outfall</u>

The project entails replacing an existing multi-sized and multi-material 750mm brick/ 1200mm Corrugated Steel combined sewer outfall, which spans roughly 250 meters from the Saint John River to the bottom of Kennedy Street. This replacement project will involve installing a new pipe and manholes as required based on the consultant's design. The consultant's duties encompass verifying/calculating all pipe sizes and ensuring an engineered connection of the new combined sewer outfall to the existing system on Kennedy Street. The design must also factor in future separation efforts within the drainage basin aimed at allowing future phases of sewer separation to occur without new work needing to be completed.

During the planning phase, the consultant must carefully consider future separation projects outlined in the Main Street North Sewer Relocation document attached to this Request for Proposal (RFP). The Consultant is to consider that the City's preference is Option 1(including option 1a) or Option 2 from Exp.'s Main Street North Sewer Relocation report.

The Consultant shall also look at any requirements for short-term or temporary Combined Sewer Overflows (CSOs) that may be necessary as

future sewer separation proceeds. Consultation with NBDOE shall be included regarding the potential use of temporary or short-term CSOs.

To meet the City's timeline, the consultant is required to complete a tender-ready package by end of January 2025. This timeframe is set so that the City can initiate the tender process early in February 2025.

Additionally, the consultant is tasked with exploring various options for renewing the outfall (i.e. value engineering). Given that the combined sewer that runs from the bottom of Kennedy street to the Saint John River passes through three private properties (identified by Property Identification Numbers PID 55226658, PID 55226666, and PID 00377150), property considerations must be carefully integrated into the design alignment process. The consultant should explore alignment options that not only serve the City's interests but also minimize the amount of easement required on private land, as well as save the City capital construction costs.

The Consultant is responsible for providing a detailed plan for connecting the new pipe to the existing pipe. The design must prevent sewer backups upstream and ensure proper management of existing sewer flows, conforming to environmental regulations and standard practices.

The consultant is to contact New Brunswick Department of Environment (NBDOE) to discuss the project and get relevant information regarding permits and timeframes.

The consultant is responsible for determining the permitting required for the construction of this project as part of this work.

There is an ongoing design project undertaken by CBCL Ltd. to raise the existing lift station at the end of Kennedy Street. This project is set for construction in the 2025 construction season. The Consultant is responsible for coordinating with CBCL Ltd. regarding this concurrent project.

3. PROFESSIONAL SERVICES REQUIRED

The professional services required for the Kennedy street Outfall Project is divided into six (6) parts (A-F) as follows:

PART A) SITE SURVEYS, PRELIMINARY INVESTIGATION AND DATA COLLECTION

Topographic Survey - topographic surveys and the drawings shall use the following horizontal and vertical datum: NAD 83 (CSRS) New Brunswick Double Stereographic Projection and the Canadian Geodetic Vertical Datum of 1928 (CGVD28).

The location survey shall include but not be limited to all bridges, structures, buildings, property pins, curblines, sidewalks, poles, ditches, services, utilities (incl. Saint John Energy, NB Power, Bell, Rogers, natural gas, etc.), valves, hydrants, manholes, catch basins, etc.

Legal Surveys - are required by the consultant team during design if the works are within 2.0 m of the property lines as shown on the SNB Property Fabric, which are sometimes not accurate to the degree needed. The consultant shall determine the amount of legal survey required for the project and detail the amount allowed for in the proposal. The topographic survey shall include street rights-of-way, any easements, etc. along the alignment.

Easements and/or Property Acquisitions - It is the responsibility of the consultant to indicate the extent of the required easements and/or property acquisitions for the construction of the works by submitting to the City a scale drawing (showing only property lines) indicating the exact limits of the property required. The City will have legal surveys prepared for any such acquisitions and City staff will negotiate and obtain any required municipal services easements and/or right to access property within the limits of the contract.

Geotechnical - The geotechnical investigation and testing deemed necessary by the consultant shall include all the necessary test pits and boreholes. These test pits and boreholes are to be shown on the project drawings.

All boreholes and drilled sample holes must be filled by the same crew who drilled them before they leave the site with appropriate materials. Holes in asphalt must be finished with asphalt.

The consultant shall advise the City if any of the borehole material that comes to the surface smells of or indicates the presence of petroleum products.

Traffic Control While Working on Streets - The consultant and all sub-consultants must use proper traffic control and warning signage (with approved sign bases) when working or surveying on the streets as per the General Specification for construction.

Existing Conditions Review:

The existing conditions review shall be completed for this project. The review shall consist of an Existing Conditions Report with the following deliverables:

- **Pipe inspection** - The City has sewer video and report information on Kennedy Street to be made available to the winning proponent. These videos and reports will be made available to the consultant and any

information in these videos must be incorporated into the Pipe Report by the consultant

- **Structure Inspection** – The consultant shall include opening all structures including chamber, manhole and catch basin covers, taking all necessary invert elevations, survey shots, measurements and photos as required to collect all pertinent information such as pipe material and diameter and condition of structure.

- **Existing Infrastructure Review** – The consultant shall include a letter report summarizing the findings of the CCTV (undertaken by others), conditions of the existing chambers, structures and piping, highlighting any items that may impact on this project. The report may also recommend that pipes or structures should be renewed, under the project. The consultant shall submit an existing conditions report (two (2) hard copies and one (1) digital copy) to the City for review and acceptance before the design work is started.

- **Conflicting Information** – The consultant shall alert the Engineer to any conflicting information and also contact the appropriate utility to clarify the ambiguities.

Existing Conditions Drawings:

- The consultant shall compile all existing record information of the proposed construction work areas. At a minimum, this shall include record drawings, Red Book Notes, Service Pipe Reports, etc.

- The consultant's topographic survey shall pick up all surface features and buried utilities with a high degree of accuracy obtained from state-of-the-art survey equipment.

- The consultant's plans must note the survey datum and all the monuments used to establish elevations.

- The consultant shall be responsible for confirming all key structure inverts.

- If required, city crews can be made available to excavate and expose pipes at locations requested by the consultant to gather information during the consultant's topographic survey, for any critical hookup locations.

- Plans must note the survey datum and all the monuments used to establish elevations.

- No other documents or recorded information, other than information attached to this Request for Proposal, will be made available during the proposal stage. Once the proposal is approved, the City's record drawings and data will be made available to assist in the creation of the new designs and drawings, but no guarantee as to their completeness or accuracy will be made.

- The consultant shall send their requests in writing for large amounts of data and allow a reasonable amount of time to retrieve such. The consultant must contact Infrastructure Development staff directly to gather all pertinent data. The consultant is expected to meet and be familiar with City staff and their respective roles.

- The consultant shall collect record data from all other utilities that have services along the corridor of interest, having them mark out their infrastructure in the field and have the consultant's survey crew pick up this data.

- Full Size Plans – The consultant shall submit full size plans (two (2) hard copies and one (1) digital copy), the same scale as the proposed design drawings, showing only the existing infrastructure including the known water & sewer service laterals and the location and nature of each deficiency noted in the Existing Conditions Report. All pipes have to be clearly labeled with their size and material for review and approval by the City before the design drawings start. Include a cover letter summarizing the findings and highlighting any items that may impact this project.

PART B) PRELIMINARY DESIGN, COST ESTIMATES AND DESIGN REPORT

The consultant must carry out all design in accordance with the latest editions of the following documents:

- City of Saint John – General Specifications, May 2022.
- City of Saint John – Storm Drainage Design Criteria Manual *[Shall also include an allowance for sea level rise and climate change]*.
- Climate Change Adaptation Plan for Saint John.
- Atlantic Canada Wastewater Systems Guidelines; and,
- Canada-wide Strategy for the Management of Municipal Wastewater Effluent endorsed by the Canadian Council of Ministers of the Environment (CCME).

Preliminary design (40%) shall be defined as the following:

- Survey – Complete survey and site plan showing all existing utilities, lot lines and surface features.

- Location of works is selected within 600 mm.
- Preliminary design calculations completed.
- Select required capacities, sizes, and design flows.
- Identify and locate all major components in the design.
- Included in profile, all proposed and existing piping and structures.
- Include all existing third-party utilities on plan and profile.
- A drawing set cover sheet and key plan that shows the proposed construction sites.
- Design Report – Prepare the design report complete with construction cost estimates; and
- Project Schedule – Gantt chart showing all major components of the project including the design, tendering, construction phases, etc. This schedule must be updated at all project milestones.

Site Consultation - The consultant shall consult with the property owners, along the preferred path for the outfall, inform them of the work, and accommodate their requests as best as possible. The Consultant is to coordinate with the Power Boat Club to ensure that construction activities minimally affect their operations. It is expected that the consultant's inspector will keep the lines of communication open with the relevant residents and businesses during the work.

Design Report – The consultant shall present "The Design Report" encompassing all aspects of this project to the City's Technical Review Team to discuss findings, solutions and options.

The design report must have the following items:

1. Compare the **flow capacities, velocities and head loss** of various pipe sizes near the desired range, discuss the pros and cons of various pipe materials and how these options will impact on cost.

2. **Compare the different alignment considerations discussing the pros and cons of each considered option and how the cost and construction timelines will be impacted.**

3. Outline the permitting requirements from this work and detail the discussions had with NBDOE pertaining to this project.

4. Discuss the property considerations for this work. List all PID's in question and detail what acquisitions and easements are required to undertake this work.

The consultant shall provide digital files and at least eight (8) hard copies of the design report and the preliminary design (printed in double-sided format)

for the City to review. The consultant shall submit two (2) hard copies and one (1) digital copy of the finalized design report.

Hardcopies of all standard modeling reports (energy grade line profile, hydraulic grade line profile, data entry, pipe capacities drainage areas, etc.) must be accompanied with the Design Report.

The consultant shall also provide the digital file of the model(s) used and/or prepared for this project.

All reports and construction specifications must be **signed and stamped** by the consultant's engineer within their team. All reports and construction specifications submitted to the City shall become the property of the City, which may be used and redistributed as the City sees fit.

After review and acceptance of the report by the Technical Review Team, the consultant may proceed with Part D. Work on Part C, Part E and Part F shall only proceed when written authorization from the City is provided to the consultant.

PART C) CONDUCT PUBLIC CONSULTATION PROCESS

The City wants to have well-informed citizens, businesses and other stakeholders. As such, the following method shall be used for public information sessions:

Public Consultation – In-Person:
The consultant shall arrange and host two (2) public information sessions on one day (2:00 to 4:00 pm and 6:00 to 8:00 pm) at a location close to the project site. The proposed location must be fully accessible. The consultant shall be responsible for booking the venue and the costs associated with the public meeting venue and the consultant shall be responsible for translating all material for the public meetings.

The consultant shall have large-scale drawings, project information sheets and handouts detailing limits of work and time frames/work schedules involved, press releases, digital renderings, photos and other visual aids to show the proposed designs to the public and media.

All materials for public information shall be presented in both the English and French languages (professional translation required) as per City of Saint John policy. The consultant shall also have a bilingual member of staff attend the public information session.

The consultant shall be available for questions and collect comments from residents and business owners. The public information sessions shall be

advertised on the City's website and project information letters shall be sent by the consultant to all residents and businesses within the work zones advising them of the information sessions and the upcoming construction work.

PART D) DETAILED DESIGN

Detailed design typically involves several iterations and revisions of alignments, profiles and major design elements. The consultant team shall prepare all necessary detailed design drawings (70%, 90%, 100%, and Issued for Tender), specifications, and tender documents for the site works and all the other items mentioned in the description of the works. The construction cost estimates will require updating in conjunction with the design revisions.

The consultant must look beyond the confines of the immediate project site and determine what impacts the new works will have on the system as a whole and propose solutions to avoid possible problems.

The consultant must review all applicable plans, report(s) and data made available by the City. The consultant shall review the material in detail, as the consultant will be responsible for performing any further investigation, data gathering, etc., which may be necessary. The cost of such shall be detailed and included by the consultant in the proposal. The City will gather new pressure data from fire hydrants at the request of the consultant, if necessary.

The Consultant is to coordinate their work with the ongoing Kennedy Street Lift Station project being undertaken by CBCL. City project managers will facilitate these discussions. The goal will be to ensure that the construction timelines for both projects minimally impact each other.

Intermediate Design (70%) shall be defined as the following:

- All items completed from the preliminary design requirements.
- Location of works is selected within 100 mm.
- Detailed design calculations completed.
- Proposed finished ground profile along centerline.
- Proposed infrastructure in plan and profile.
- Typical cross sections at 15 m intervals.
- Traffic markings and signage identified on plan.
- Identify any proposed easements or land acquisitions.
- Address all items from Design Report.
- A revised and detailed construction cost estimate; and
- Permit applications.

Detailed Design (90%) shall be defined as the following:

- Address all items from the Intermediate Design (70%) requirements.

- Any required miscellaneous details.
- Draft tender documents, including particular specifications and cost estimate; and
- Update on permit Approvals and permits from all utilities and approval agencies as applicable.

Final Detailed Design (100%) shall be defined as the following:

- Address any items from the Detailed Design (90%).
- Complete the design drawings and tender documents reviewed and approved by the City's Technical Review Team.
- Finalize the cost estimate.

Issued for Tender shall be defined as the following:

Once advised by the City,

- Issue **signed and stamped** drawings and specifications for tender; and
- Update Construction Schedule

Planning and Sequencing

Designs must also incorporate planning and sequencing of temporary water services, service disruptions (such as water main shutdowns), testing, disinfection and commissioning. The consultant will be required to lead the team of sub-consultants, contractors and City staff through these phases.

Traffic Planning

Work on any street must have traffic planning and organizing being led by the consultant. Traffic planning must be carried out by the consultant before tendering to give the City and contractor guidance as to the general scope of the Traffic Management plan when the work is occurring on the street as people still will need access to the boat launch. The consultant may specify in the tender documents that the contractor is to submit work zone safety plans and drawings. The consultant must review submissions from the contractor and seek approval from the City. Work zone safety plans and drawings must be approved by the City before construction commences. The consultant may also have to coordinate the timing of work with other agencies to avoid conflicting traffic.

Utility Coordination

The consultant shall co-ordinate the design drawings with all the underground utilities before the preparation of the tender documents in order to avoid conflicts with other utilities such as gas, electric, telephone, etc. Underground utility lines must be marked out and picked up during the topographic survey in Part A.

Peer Review

Before detailed designs and related documents are sent to the City for review, the consultant must have other engineers from their firm review them for errors to ensure only high-quality work is released.

The consultant must identify in the proposal the peer reviewers. The consultant's peer review engineer(s) must send a memo to the City with the final detailed design (100%) drawings and specifications, stating the outcome of the review.

The construction tender documents shall not indicate that the contractor must supply any design or engineering services, (excluding shoring and dewatering design) except if there is a design/build component or written approval is granted prior to tenders being called.

Approvals/Permits

The consultant shall be responsible for applying for all required permits and all other design approvals necessary from all approval agencies, such as the NBDELG, NBNRED and NBDTI, etc. The project shall not proceed to tender until all approvals and permits have been received unless otherwise approved by the City's Engineer.

The City's Engineer must approve any variance from these standards in writing before any construction tenders are called.

Construction Timeline

The Consultant must detail the requirements for the proposed construction timelines in the specifications. Given the proximity to the Saint John River, it is crucial that the timelines are precise and adhered to. The Consultant is expected to provide a comprehensive construction timeline for the contractor to follow as part of their design.

PART E) TENDER PERIOD SERVICES, MATERIALS TESTING & INSPECTION, RED BOOKS AND RECORD DRAWINGS

Tender Period Services

Upon approval of the consultant's work, the City will have tender documents printed and will tender the project; however, the consultant shall be available during the tender period to respond to questions (prepare any addenda if required) and to perform the tender analysis.

The consultant shall prepare a Tender Summary for each tender. It shall be a digital spreadsheet that compares the Engineer's estimate to all tendered items from all tenders submitted.

Materials Testing & Inspection

Quality Control – The contractor shall provide quality control testing for concrete, compaction of soils and for asphalt placement & testing.

Quality Assurance – The consultant shall still provide random quality assurance tests to confirm that the contractor's tests are in compliance with the City's General Specifications. The consultant shall also make sure that the contractor is completing all his required testing.

The consultant shall provide Quality Assurance for the Portland cement concrete, granular material and the asphalt concrete. All costs for asphalt, concrete and soil quality assurance testing must be included in Part E of the consultant's proposal.

Minimum Requirements Expected from Consultant:
The consultant's minimum requirements for material testing and inspection are as follows:

(1) Asphalt Inspection and Testing

- Full-time inspection for asphalt placement by qualified personnel. The inspector assigned to this task shall have a minimum of two (2) years direct related experience with asphalt inspection. The consultant shall identify in the proposal the qualified personnel they intend to utilize for this task including related experience. If the consultant does not have qualified personnel directly on staff, then the consultant must propose to utilize a sub-consultant that has the required expertise in asphalt inspection.
- Measurement of asphalt thickness, temperature, etc.
- Signing and collection of asphalt weight tickets as they arrive.
- Quality Assurance of asphalt in accordance with Division 27 of the City's General Specifications.

➢ **NOTE:** The City of Saint John requires Certification by the Canadian Council of Independent Laboratories (CCIL) for asphalt testing laboratories. Asphalt laboratories are to have Type "A" Certification – Asphalt Mix Design for Superpave Methods. A copy of the CCIL certification is to be included in the proposal submission.

(2) Concrete Inspection and Testing

- Slump, temperature, air test and compressive strength cylinders shall be considered a "set" of tests.
- Compressive strength testing at CSA standard A283 certified laboratory.
- Check formwork and compaction of base gravels before each pour.

- Check elevations, slopes and grades before every placement.
- Quality Assurance by the consultant shall consist of random testing.
- Sampling and testing frequency of concrete:
  - The minimum frequency shall be **one set of tests for every 10** done by the contractor.
  - On smaller projects involving only a few loads of concrete, one (1) complete set of tests shall be made.

(a) Test Samples:

i) The test samples shall consist of three (3) concrete cylinders. Compressive strength testing was obtained at 7 and 28 days.

(b) Reporting of field and laboratory testing:

i) Field test results obtained shall be recorded on the City's Concrete Testing Summary form, or approved equivalent, and shall be submitted to the City.

ii) Compressive strength results shall be submitted to the City on the consultant's standard reporting form.

➢ **NOTE:** The City of Saint John requires Certification by the Canadian Council of Independent Laboratories (CCIL) for concrete testing laboratories in accordance with CSA Standard A283 Qualification Code for Concrete Testing Laboratories. A copy of the CCIL certification is to be included in the proposal submission.

(3) Granular Material (Soils and Gravels) Supply and Placement Testing

- Confirming the contractor's test results onsite (QC by contractor).
- Ensuring proper frequency of compaction tests by contractor.
- QA by consultant shall consist of random compaction testing using nuclear density equipment. The minimum frequency shall be one test for every 15 done by the contractor.
- Enforcement of established rolling pattern.
- Approval of material before it arrives onsite (gradation and other properties).
- Checking grades, slopes, thicknesses during fine grading.
- Witness and comment on proof rolling tests.

Red Books

The City of Saint John will provide "**Red Book**" field books for the consultant to complete and return to City staff at the end of the project. It is the responsibility of the consultant to obtain a copy of the "*Standard Format for City of Saint John Red Book Notes*" and to maintain a copy on file for all future

City projects. This format shall be followed by the consultant when preparing the field notes for the project.

Record Drawings

The consultant shall submit a set of stamped Record Drawings on paper and in digital format. The drawings and data shall be in accordance with the Drawing Standards (**Appendix "A"**).

The finished works shall be **re-surveyed** by the consultant to establish exact locations and elevations, and the date the site was re-surveyed shall be noted on the signed and sealed Record Drawings.

The final survey shall also include the pickup of structures (valves, manholes, etc.) that were not newly installed during the project but are along the same section of street or easement.

The consultant shall be responsible for obtaining the data and measurements used in the Record Drawings and shall not rely on the contractor to provide this information.

The Record Drawings shall also include the ground water table elevation and geotechnical information, and the names and models of all products used.

The Record Drawings will show the actual in-place vertical and horizontal alignments.

All new works specified and incorporated shall have record information recorded including electrical, mechanical, structural, etc. All sheets in the set of Record Drawings shall be signed and sealed, including those of sub-consultants.

The consultant shall note on the Record Drawings the Red Book Number where the project information was recorded.

The digital as-built data submitted to the City shall become the property of the City, which may be used and redistributed as the City sees fit. The consultant shall not place any disclaimer notes on the Record Drawings.

PART F) CONSTRUCTION MANAGEMENT

The consultant must prepare all required documentation for construction management in a formal and standardized format acceptable to the City. The list of documents must include but is not limited to the following: change orders, addenda, progress payments, summary of extras, minutes of meetings, status reports, construction and consultant budget updates and forecasts, reports to

the engineer, meeting agendas, reports on contractor performance, quality control test reports, deficiency lists, letters, memos and so on.

Primary Field Layout

The consultant is responsible for the **primary** field layout, including marking out property lines for the contractors. This may require the services of a legal surveyor where property pins are not present. The consultant shall do the primary field layout at least once during each phase of the project. If the contractor does not preserve the layout stakes, the consultant may request a fee from the contractor to replace them. The consultant shall be responsible for the primary field layout, which consists of the layout of centerline, control points and structures. All other layouts will be the responsibility of the contractor. The consultant shall give the contractor all the information and survey data points required to build the works utilizing the standard City of Saint John field codes from Digital Drawing Standards.

Coordinate, Plan and Notify

The consultant must review and comment on all submissions and correspondence from the contractor and provide recommendations to the City as to the best course of action.
The consultant must invite the WorksafeNB safety inspector to the pre-construction meeting, giving the appropriate officer a minimum of one week's notice.

The consultant shall immediately notify the Environment and Climate Change Canada's National Environmental Emergencies Centre (NEEC) until personal contact is made (1-800-565-1633) on any sewage overflows that discharge to the environment. The consultant shall provide the location of the discharge, time of discharge, amount of discharge and a detailed description of the event. Consultants are responsible for preparing the detailed emergency report required within five (5) business days should sewage overflow occur, with discharge to the environment, as a result of project activities.

Due to this project's proximity to the river, it is the consultants responsibility to determine if any other agencies are to be made aware of any sewage overflows that may occur on this project.

Field Inspector

The consultant's field inspector (or resident engineer) assigned to this project shall have significant (minimum 4 years) related experience with such construction activity. The field inspector shall have a local cellular phone for the duration of the project and the number is to be provided to the City prior to the start of construction.

The field inspector shall have a copy of the latest revision of the General Specifications, the contract drawings and specifications and the standard format for Red Book Notes, the pipe report, video report, service cards, any applicable permits or approvals onsite, and be familiar with them.

The principals of the consulting firm must educate and prepare the field inspectors before the start of construction. They must understand the tasks and responsibilities of the position.

The *City of Saint John Construction Inspection Guidelines* shall be used as a basis for the general requirements for inspecting the construction and installation of municipal infrastructure.

Pre-Construction Photos - The field inspector shall take pre-construction photographs and shall also take construction photographs for the duration of the project utilizing a digital camera. Each photograph must have the date taken on it and the location labeled. A labeled USB flash drive containing the digital photographs in chronological order shall be provided to the City at the end of the project.

Daily Field Reports - The field inspector shall provide daily inspection 'Field Notes' to detail all work done on the construction site that day. Daily Field Reports in the consultant's standard format shall be completed every day and sent to the City's project engineer at least once a week (by Monday at 4:00pm) for the preceding week's work.

Weekly Time Sheets - During construction, the consultant must provide the City with weekly e-mails (by Monday at 4:00 pm) indicating those staff members who worked on the project the previous week, a brief description on their work as well as how many hours each person worked.

Full-time Inspection - The field inspector shall be available to work overtime and on weekends (if the contractor is working), without extra charges to the City. The consultant will provide full-time inspection and be on-site at all times, when the contractor is working. The inspector shall advise the City immediately when work on-site starts or stops unexpectedly and of all planned schedule changes and of all changes to the work that may result in extra costs to the City or standby charges.

Review - The consultant shall review and approve the contractor's work including but not limited to all pipework, excavation, grading, compaction, concrete work, and asphalt paving, etc.

Quantities - The consultant shall verify and provide details on quantities of excavation and fill material, (measured by the inspector, not the contractor) as well as provide certification of work for progress payments.

CCTV Post Construction - The field inspector must ensure that the contractor flushes and videos (video camera inspection in colour) all required sewers and drains. The consultant must review all sewer videos provided by the contractor, report any issues to the City and record them on the deficiency list as required.

4. METHOD OF PAYMENT

Upon award of the contract the City will execute an agreement with the successful engineering consultant firm for the work to be performed.

The consultant shall invoice the City monthly for the work performed in accordance with the engineering services agreement. The consultant shall provide a status report with each invoice outlining in detail the scope of the work completed during that month. Payments will not be processed unless the invoice is signed by an authorized representative of the company, accompanied by a status report in the proper timed-based format (hourly rate x hours worked).

Payment of fees shall be in accordance with the terms of the *Request for Proposal* at the rates submitted and accepted in the consultant's The hourly rates submitted in the proposals shall adhere to industry standards based on the relevant experience of each team member.

Parts A, B, C, D and E - Maximum or upset fees (including HST) - will be included in the proposal for Part A, Part B, Part C, Part D and Part E beyond which no additional payments will be considered unless first submitted by the consultant in writing and authorized in writing by the City.

Part F – payment of fees shall be based on actual time in hours plus reimbursable expenses subject to approval by the City's Engineer. Hourly rates used in Part F should include any administrative costs incurred, such as cell phone costs and administrative support. Mileage should only be charged from the office to the project site.

The price submitted for Part F shall be in the format of a budget estimate based on a **16-week construction timeline**.

In Part F, the consultant's budget should assume a 55-hour work week for the inspection services as well as 12 hours of project management per week for the consultant's Engineer overseeing the project plus reimbursable expenses. The standard hours for most contractors are Monday to Friday from 7:00 am to

7:00 pm with a half-hour lunch break. Some contractors may want to work longer but, on average, it should be approximately 11.5 hours per day. The City does not pay for lunch breaks unless the site inspector works through this period.

The final amount paid to the consultant for Part F shall be based on actual time in hours to complete Part F plus reimbursable expenses subject to approval by the City's Engineer.

Engineering fees - are not based on a percentage of the construction costs; therefore, the approved upset prices will not be changed due to the final construction costs being different from the current budget estimate. A change in the fees may be considered only if the scope of the engineering work is changed at the request of the City's Engineer.

Contingency - The total price stated, for must also include an engineering contingency for unforeseen work, is to be **$25,000.00 + HST.**

No part of this contingency shall be expended without the written direction of the City's Engineer, and any part not so expended shall be deducted from the contingency allowance.

Payments for engineering work performed in the preparation of record drawings will only be made upon receipt of completed drawings.

Although it is the City' intention to complete the work in 2025, project prices and hourly rates to be held if any of the projects are delayed into 2026.

5. TERMINATION OF CONTRACT

The City will reserve the right to terminate the contract with the Engineering Firm after completion of Part A or at any other time during the course of the work. In such an event, payment will be made only for the work completed up to the time of termination.

The City of Saint John does not, by virtue of any proposal request, commit to an award of this bid, nor does it commit to accepting the proposal submitted, but reserves the right to award this proposal in a manner deemed to be in the best interest of the City.

6. CONTENT OF PROPOSAL

The consultant shall confirm a clear understanding of the work to be undertaken as described in the Scope of Work. The proposal must demonstrate that the consultant and its team have recent and significant experience with this type of

work. When noting examples of experience gained on similar projects, the proposal must also note which current staff members worked on that project and their role The proposal must specifically address all requirements of the work and any matters related to its successful implementation. The proposal must indicate what role each of the consultant's team will be carrying out for the project. The consultant may not substitute the project team members noted in the proposal without permission of the City. When proposing a schedule, the consultant must also indicate that their workload is such that they will have time to complete the project as promised. If the consultant is very busy, they should either decline the work or propose a longer schedule at the time of the RFP submission.

The proposal shall include the following sections:

A. TECHNICAL PROPOSAL:

- Table of Contents
- Work Plan and Schedule
- Project Team
- Experience with similar projects.

B. FINANCIAL PROPOSAL:

- Maximum or Upset Fee(s) for each of parts A, B, C, D and E.
- Budget Estimate for Part F.
- All costs are to be subtotaled (including contingency allowance) with the 15% HST component identified separately and added to arrive at a total cost.
- Billing Rate Summary (hourly billing rates for all key personnel).
- The consultant must submit the cost breakdown in the following matrix format.

Sample format for financial proposal breakdown.

Street	Part A	Part B	Part C	Part D	Part E	Part F	Engineering Contingency	Sub-total ($)	HST (15%)	Grand Total (including HST) ($)
Kennedy Street Outfall							$25,000.00			

The financial proposal shall include separate prices (including reimbursable expenses) for each Part A, Part B, Part C, Part D, Part E and Part F.

A further breakdown of Part F is required with the financial proposal to identify all staff participating in Part F, including hourly rates, hours and reimbursable expenses.

All sub-consultants such as geotechnical, legal survey, electrical, structural and others shall have their fees identified and included in the appropriate part of the proposal.

7. EVALUATION CRITERIA

For the purposes of this proposal call, submissions will be evaluated on the following criteria:

a) *QUALITY AND COMPLETENESS* – Has the proposal addressed all of the needs raised? Is the proposal presented in an organized and professional manner? **(Criteria weight = 10 points)**

b) *CONSULTANT'S EXPERIENCE* – Has the proposal demonstrated a level of expertise within the requirements of this project? (Include references for projects of a similar nature.) **(Criteria weight = 20 points)**

c) *EXPERIENCE OF EMPLOYEES / SUB-CONSULTANTS* – Has the proposal demonstrated a level of expertise for the employees of the company and sub-consultants listed? (Include resumes for staff and sub-contractors required) **(Criteria weight = 35 points)**

d) *METHODOLOGY* – Does the approach to the project outlined in the proposal address, in a realistic sense, attainable goals and is it in keeping with the City's expectations for the project? **(Criteria weight = 75 points)**

e) *VALUE ADDED* – What additional information, technology, process or options has the consultant included in his proposal? Is there value added to the consultant's response for this additional information? **(Criteria weight = 10 points)**

f) *COST* – Cost will be a factor, however, not the only factor to be considered. **(Criteria weight = 50 points)**

Consultants are advised that proposals will be evaluated solely on the basis of information submitted in accordance with the request for proposals. The City reserves the right, if deemed necessary, to short-list the proposals and to request an additional verbal presentation from each short-listed proponent. The consultant may supplement their presentation with a summary in written format to clarify points raised during the process.

8. INSURANCE REQUIREMENTS

The consulting engineering firm shall obtain and keep in force, during the full duration of this contract, an Errors and Omissions Liability policy with a minimum limit of two (2) million dollars, and two (2) million dollars **per claim**. The policy shall include a clause stating that thirty (30) days' notice of cancellation of this policy will be given to the City of Saint John, by the insurers. Provide evidence of this policy.

The consultant must provide proof of current coverage from WorksafeNB prior to the start of the work.

The consultant shall provide evidence of the following insurance coverage:
General Liability with minimum limits of two (2) million dollars per occurrence. The policy shall include:

- Operations of the consultant in connection with this project.
- Products and completed operations coverage.
- Contractual liability with respect to this project.
- The City of Saint John added as an additional named insured.
- A cross-liability clause.
- Non-owned automobile.
- Thirty (30) days written notice of cancellation of this policy will be given to the City of Saint John, by the insurers; and
- Standard automobile insurance for owned automobiles with at least the minimum limits allowed by law.

9. FORMALITY CLAUSE

In order for the City of Saint John to consider any proposal submission as a legally binding offer, on behalf of the consultant, it is necessary for the consultant to communicate this formality to the City in the form of an offer which contains the original signature of the individual or representative of the firm who is authorized to act on behalf of the consultant.

In order to meet this requirement, all proposal submissions to the City of Saint John must be prefaced with a covering letter which contains an original signature of the individual authorized by the consultant to submit proposals on their behalf.

The covering letter must be on official company letterhead, be dated and be addressed to the attention of the City of Saint John representative specified in the request for proposal document. Additionally, it must make reference in the body of the letter to the request for proposal number and project title, as well as to the fact that the enclosed documents constitute a formal proposal offer and finally, the letter must contain the original signature as indicated.

Failure to include the required covering letter as a preface with your proposal will be grounds for immediate rejection on the basis that it is not formal.

10. STANDARD TERMS AND CONDITIONS

Addenda

Periodically, the City of Saint John is required to issue notification of changes or corrections to a bid document by way of addenda. Normally these notifications will have direct bearing on the cost of a project and will influence bidding. Therefore, it is important that the City have assurances that bidders have in-fact received the notification(s).

Bidders are responsible for obtaining all addenda issued by the City. Addenda may be obtained from the City's website (www.saintjohn.ca) under the menu option "Tender and Proposals".

Bidders are required to sign and include all addenda with their bid submission.

Failure to include a copy of all signed addenda with the bid submission may result in rejection of the bid regardless of whether or not the changes noted in the addendum are included in the bid submission.

Advisory Notice(s)

Periodically, the City of Saint John is required to issue clarification notices to a bid document in the form of Advisory Notices. Normally these notifications will not have a direct bearing on the cost of a project and will not influence bidding.

Bidders are responsible for obtaining all advisory notice(s) issued by the City. Advisory Notice(s) may be obtained from the City's website (www.saintjohn.ca) under the menu option "Tenders and Proposals".

Bidders are instructed to sign the Advisory Notice and return it either by fax to (506) 658-4742 or email to supplychainmanagment@saintjohn.ca prior to the closing date.

Failure to comply with the instructions on an advisory may result in rejection of the bid.

Review of Proposals

The evaluation committee may invite proponents to meet with the review committee to make an oral/visual presentation in support of their proposal. The City will provide the meeting venue at its cost. The proponent shall bear

its own costs related to such meeting.

Additional Information from Proponents

The City of Saint John reserves the right during evaluation of the bids to seek further information from any proponent and to utilize that information in evaluation and award without becoming obligated to seek further information from any other proponents.

Clarification of Bids

The City of Saint John reserves the right in its sole discretion to clarify any bid after close of bidding without becoming obligated to clarify any other bid.

Negotiation

The City reserves the right in its sole discretion to negotiate the final terms and conditions of the engagement contract with the most probable candidate for award prior to award of the engagement.

Inconsistency between Paper and Electronic Form

If there is any inconsistency between the paper form of a document issued by or on behalf of the City to proponents and the digital, electronic or other computer readable form, the paper form of the document prevails.

Acceptance, Revocation and Rejection of Proposals

The proposal constitutes an offer which shall remain open and irrevocable until ninety (90) days after the date of the proposal opening.

Reserved Rights

The City reserves the right to:

a) Reject an unbalanced Proposal. For the purpose of this section, an unbalanced Proposal is a Proposal containing a unit price which deviates substantially from, or does not fairly represent, reasonable and proper compensation for the unit of work bid or one that contains prices which appear to be so unbalanced as to adversely affect the interests of the City. The City reserves the right to use Proposals submitted in response to other like or similar Requests for Proposals as a guideline in determining if a bid is unbalanced.

b) Amend or modify the scope of a project, and/or cancel or suspend the Bid Solicitation at any time for any reason.

c) Require proponents to provide additional information after the Closing Date for the Bid Solicitation to support or clarify their bids.

d) Not accept any or all bids.

e) Not accept a bid from a bidder who is involved in litigation, arbitration or any other similar proceeding against the City.

f) Reject any or all bids without any obligation, compensation or reimbursement to any bidder or any of its team members.

g) Withdraw a Bid Solicitation and cancel or suspend the Bid Solicitation process.

h) Extend, from time to time, any date, any time period or deadline provided in a Bid Solicitation (including, without limitation, the Bid Solicitation Closing Date), upon written notice to all bidders.

i) Assess and reject a bid on the basis of
   i. information provided by references;
   ii. the bidder's past performance on previous contracts;
   iii. information provided by a bidder pursuant to the City exercising its clarification rights under the Bid Solicitation process;
   iv. the bidder's experience with performing the type and scope of work specified including the bidder's experience;
   v. other relevant information that arises during a Bid Solicitation process.

j) Waive formalities and accept bids which substantially comply with the requirements of the Bid Solicitation.

k) Verify with any bidder or with a third party any information set out in a bid.

l) Disqualify any bidder whose bid contains misrepresentations or any other inaccurate or misleading information.

m) Disqualify any bidder who has engaged in conduct prohibited by the Bid Solicitation documents.

n) Make changes including substantial changes to the bid documents provided that those changes are issued by way of an addendum in the manner set out in the Bid Solicitation documents.

o) Select any bidder other than the bidder whose bid reflects the lowest cost to the City.

p) Cancel a Bid Solicitation process at any stage.

q) Cancel a Bid Solicitation process at any stage and issue a new Bid Solicitation for the same or similar deliverable.

r) Accept any bid in whole or in part.

And these reserved rights are in addition to any other express rights or any other rights which may be implied in the circumstances and the City shall not be liable for any expenses, costs, losses or any direct or indirect damages incurred or suffered by any bidder or any third party resulting from the City exercising any of its express or implied rights under a Bid Solicitation.

Limitation of Liability and Waiver

In every Bid Solicitation, the City shall draft the documents such that each bidder, by submitting a bid, agrees that:

a) Neither the City nor any of its employees, agents, advisers or representatives will be liable, under any circumstances, for any claims arising out of a Bid Solicitation process including but not limited to costs of preparation of the bid, loss of profits, loss of opportunity or any other claim.

b) The bidder waives any claim for any compensation of any kind whatsoever including claims for costs of preparation of the bid, loss of profit or loss of opportunity by reason of the City's decision to not accept the bid submitted by the bidder, to award a contract to any other bidder or to cancel the Bid Solicitation process, and the bidder shall be deemed to have agreed to waive such right or claim.

Proposal Debrief

Immediately following the City's acceptance of a Proposal submitted, the Office of the Purchasing Agent shall send a written notification of award to all unsuccessful proponents disclosing the name of the successful proponent and providing a brief explanation rationalizing the City's selection:

a) For all Requests for Proposals valued at Fifty Thousand Dollars **($50,000.00) or less**, the written notification of award will be the only form of debriefing offered by the City;

b) In the case of Requests for Proposals valued **in excess** of Fifty Thousand Dollars **($50,000.00)**, the Purchasing Agent may, in

addition to the notification of award and upon written request from any proponent, provide a more detailed oral debriefing either by phone or in person, as required by the proponent. During this debriefing, the Purchasing Agent may disclose information such as the total price of the successful proponent and may discuss an overview of the process as well as the strengths and weaknesses of the requesting proponent's proposal.

c) The written request referred to paragraph (ii) shall be submitted to the Office of the Purchasing Agent no later than fifteen (15) business days after the notification of award is issued.

d) The acceptance of the successful Proposal shall not be discussed during a debriefing.

11. SUBMITTALS

When preparing the Agreement for Engineering Services, the consultant is required to submit a "Business Corporation Act Certificate" to the Engineer.

12. ENQUIRIES

All enquiries regarding this request for proposals shall be submitted in writing via email, by **4:00:00 pm Local Time on Monday, July 22nd, 2024**, only to the attention of:

Monic MacVicar, CCLP, CPPB
Procurement Specialist
Supply Chain Management
Email: supplychainmanagement@saintjohn.ca

Responses to enquiries will be in writing and distributed by email to all consultants registered as having received the Terms of Reference as of the date the response is prepared. The source of the question will not be identified in the response. Verbal information shall not be binding upon the City. Enquiries after the above deadline will not receive a response.

13. ATTACHMENTS

- Draft Consulting Engineering Agreement
- Main Street North Sewer Relocation (Exp.)

14. OTHER RELEVANT DOCUMENTS

- City of Saint John – Construction Inspection Guidelines, latest revision

- City of Saint John - General Specifications, latest revision
- Standard Format for City of Saint John Red Book Notes, latest revision

15. SUBMISSION OF PROPOSALS

Consultants shall deliver six (6) copies of the Technical Proposal and supporting information and six (6) copies of the Financial Proposal no later than **4:00:00 pm, Local Time, Wednesday, July 31st, 2024**, clearly indicating the consultant's name and address and marked **"Proposal: 2024-091010P, Engineering Services – Kennedy Street Outfall Upgrade Project"**, to the attention of:

Monic MacVicar, CCLP, CPPB
Procurement Specialist, Supply Chain Management
City of Saint John
175 Rothesay Avenue, 1st Floor.
Saint John, NB E2J 2B4

Please note that:

(1) Late proposals or proposals submitted by facsimile will be rejected.

(2) The City assumes no responsibility for improperly addressed or delivered proposals.

(3) The City of Saint John does not, by virtue of this proposal call, commit to an award of this proposal, nor does it commit to accepting the lowest or any proposal submitted, but reserves the right to award this proposal in any manner deemed to be in the best interest of the City.

(4) The Financial Proposal is to be submitted in the consultant's package in a separate sealed envelope, clearly marked as **"Financial Proposal: 2024-091010P, Engineering Services – Kennedy Street Outfall Upgrade Project"**, with the consultant's name and address.

(5) Consultants must propose on the entire project – incomplete proposals will be rejected.

APPENDIX "A"

DIGITAL DRAWING STANDARDS

PURPOSE

The development of Geographic Information Systems (GIS) and computer aided drawing (CAD) has facilitated the method to reduce the time and costs of development processing and land use map updates. Hence, a digital drawing submissions standard has been adopted by the City of Saint John to set the standard and facilitate the transfer process. The intent of this program is to take advantage of new technology, reduce the cost of digital conversion, maintain the mapping and facilitate the efficient transfer of data from private organizations to the City.

The standards and specifications contained within this document shall be used for digital drawing submissions to the Engineer for the purpose of development processing and GIS digital land use map updates.

DIGITAL FORMAT

1. The Consultant shall provide the Engineer with an As-Built record of the project which will include all required documentation, CAD files and any associated digital files as described below in both ***printed*** and ***digital*** versions.

2. All CAD drawings shall be submitted in AutoCAD (.DWG or .DXF) format with all line work complete. Each CAD project shall include all relevant resource files such as line & font resource and AutoCAD (.shx) resource files. The Consultant also shall provide the **drawings in PDF format**. This shall be a direct conversion, not a scan.

3. The City of Saint John will provide drawing file names for the legend portion of the drawing.

4. Each CAD project shall be accompanied by an ASCII text file of all as-built structure locations as well as any existing underground structure within the limits of the project. This text file is to be used for importing record information and existing structure locations into the City's GIS. The text file shall meet the following conditions:

    - ASCII text file will include as-built structure locations such as catch basins, gate valves, manholes, air valves, outfalls, service boxes or any existing underground structure within the limits of the project.

- ASCII text file shall **only** include all as-built structure locations as well as any existing structures within the limits of the project and shall not contain other coordinated points such as curb shots, utility poles, corners of buildings, etc. This ASCII text file is to be used for importing structure locations into the City's GIS.

All coordinated points for the structures shall be delivered in a single comma-delimited ASCII text file. Each line of the file shall contain coordinate values (NAD83 CSRS Horizontal and HT2 Vertical) for a single point as follows:

Pt Number,Northing,Easting,Elevation,Field Code (Numeric)

1,7362284.223,2533177.653,15.207,3
2,7362028.622,2533004.711,25.695,16
3,7362009.446,2532991.590,25.935,4

The field code in the ASCII text file shall be City of Saint John field codes (i.e. Numeric Field Codes).

City of Saint John Field Codes			
3	CB EXIST CENTER	50	CATCHBASIN MANHOLE
4	CB EXIST EDGE	51	CATCH BASIN PYRD TOP
6	CULVERT	54	DRAIN TILE
14	FIRE HYDRANT	58	MH CP TELEGRAPH
16	GATE VALVE EXISTING	69	UTILITY HYDRO BOX
24	MANHOLE EXIST	70	UTILITY TEL BOX
25	HYDRO MANHOLE	71	UTILITY CABL BOX
26	TELEPHONE MANHOLE	79	NEW SANITARY MANHOLE
27	OTHER	80	NEW STORM MANHOLE
46	WATER TRACE	81	NEW CB EDGE
43	UTILITY BOX	82	NEW CB CENTER
44	SERVICE BOX	83	NEW FIRE HYDRANT
45	VAULT	1205	GATE VALVE NEW

DRAWING DOCUMENTATION

1. The horizontal and vertical datum utilized shall be identified as NOTE 1 on all engineering drawings prepared for the City of Saint John. The horizontal and vertical datum shall be NAD 83 (CSRS) New Brunswick Double Stereographic Projection and the Canadian Geodetic Vertical Datum of 1928 (CGVD28).

2. All record drawings are to be marked on the title block in an obvious fashion with the text “Record Drawing” on the CAD files and printed copies of the drawings.
3. Each CAD project shall be accompanied with documentation to indicate CAD layers.

4. All required drawing documentation shall be summarized on a transmittal sheet submitted in both printed and digital versions. The transmittal sheet shall include:

    - Job Title
    - Company/ Firm
    - Contact Person
    - Address
    - Email Address
    - Phone
    - List of attachments and digital files
    - Record Drawings (one (1) set) on High Quality Bond Paper

MEDIA

1. All electronic files shall be in a format acceptable to the City.

2. All submitted digital files shall include a transmittal with the project title, contract number, contractor, consultant name, date of submittal, and list of contents.

3. Plans are to be produced on ISO **A1** paper size no larger than 600 x 900mm.

THIS ***CONSULTING ENGINEERING AGREEMENT*** made in triplicate this _____ day of XXXX, 2024 (the “Effective Date”).

BETWEEN:

THE CITY OF SAINT JOHN, having its offices at the City Hall Building at 15 Market Square, Saint John, New Brunswick, a body corporate by Royal Charter, confirmed and amended by Acts of the Legislative Assembly of the Province of New Brunswick, hereinafter called the “City",

OF THE FIRST PART

- and -

CONSULTANT, an extra-provincial corporation registered under the Business Corporations Act, having its head office in the City of CITY, Province of PROVINCE, hereinafter called the “Consultant”,

OF THE SECOND PART

WHEREAS, the City issued a Request for Proposal 2024-091006P for Engineering Services: East Saint John Combined Sewer Separation Strategy Project [hereinafter referred to as the “Request for Proposal”] attached hereto as Schedule “A”;

WHEREAS, the Consultant submitted a Proposal with respect to the Request for Proposal on XXX XX, 2024 [hereinafter referred to as the “Proposal”] which proposal the City has accepted and attached hereto as Schedule “B”;

WHEREAS, the purpose of this Agreement is for Engineering Services: East Saint John Combined Sewer Separation Strategy

WHEREAS, Common Council enacted a By-law Respecting the Delegation of Authority to Award or Approve Contracts on the 26th day of June 2023, which authorizes the Mayor and City Clerk to execute any Contract awarded or approved by the CAO, Commissioners or Directors of the City within their respective spending limits authorized under the Strategic Procurement Policy;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the mutual covenants and agreements herein and subject to the terms and conditions set out in this Agreement, the parties agree as follows:

1. Definitions

The terms defined in this clause shall for all purposes of this Agreement have the meanings specified unless the context otherwise specifies or requires:

1(1) **City Manager** means the city manager of the City or his designate appointed by resolution of Council;

1(2) **Claims** means any actual or threatened loss, liability, cost, charge, interest, claim, demand, allegation, action, cause of action, proceeding, suit, assessment, reassessment, proposed assessment or reassessment, damage, demand, expense, levy, tax, duty, judgment, award, fine, charge, deficiency, penalty, court proceeding or hearing cost, amount paid in settlement, encumbrance, and/or tangible and intangible property right (including all costs and expenses relating to the foregoing, including legal and other professional adviser and expert fees and expenses), and whether arising by contract, at common or statute law, in tort (including negligence and strict liability), in equity, in property or otherwise of any kind or character howsoever, and howsoever arising; and **Claim** means any one of them;

1(3) **Council** means the elected municipal council of the City;

1(4) **Confidential Information** means information disclosed to or obtained by the Consultant in connection with the fulfillment of the terms of this Agreement and which has been identified by Municipal Operations as information which should be treated as confidential and shall be as defined in section 9;

1(5) **Consultant** means the consulting engineering firm who is currently licensed to practice within the Province of New Brunswick to carry out engineering services required to complete the Project and referred to as CONSULTANT in this Agreement;

1(6) **Consultant Representative** means the person designated by the Consultant with duly vested authority to act on behalf of the Consultant;

1(7) **Dispute** means any dispute, controversy, Claim, disagreement or failure to agree arising out of, in connection with, or relating to the interpretation,

performance or application of the Agreement; and **Disputes** has a corresponding meaning;

1(8) **Information** means all data, site surveys, preliminary investigations, preliminary designs, design reports with cost estimates, detailed designs, record drawings in digital and hard copy format, plans in digital and hard copy format, public consultation process data or reports, construction management and inspection services data or reports, and other materials developed in pursuance of the Project;

1(9) **Municipal Operations** means the Utilities and Infrastructure Services Department of the City of Saint John;

1(10) **Parties** means the City and the Consultant, respectively; and **Party** means individually the City and the Consultant;

1(11) **Project** means the engineering services for the Kennedy Street Outfall Upgrade Project;

1(12) **Proposal** means the proposal submitted by the Consultant entitled Engineering Services – Kennedy Street Outfall Upgrade Project (Proposal # 2024-091010P);

1(13) **Services** means those design and construction management services as set out in the Request for Proposal and the Proposal and as set forth in this Agreement; and

1(14) **Work** means the scope of the Consultant's services.

2. General

2(1) The City hereby agrees to retain the Consultant to provide the City with the Services and the Consultant hereby agrees to provide the Services to the City, all in accordance with the provisions of this Agreement.

2(2) The Consultant shall carry out the work in accordance with the Request for Proposal and the Proposal and any other written clarification(s) or addendum(s) thereof that has or have been requested and, provided and agreed to by the parties to this Agreement.

3. Term

3(1) The term of this Agreement commences on the Effective Date and construction of the Project is to proceed as outlined in the Request for Proposal.

4. Scope of Services and Responsibilities

4(1) The Consultant shall perform the Services as set out in the Request for Proposal and the Proposal and any other written clarification(s) or addendum(s) thereof that has or have been requested, provided and agreed to by the Parties to this Agreement, and these Services shall include:

(a) Site Surveys, Preliminary Investigation, Data Collection;

(b) Preliminary Design, Cost Estimates and Design Report;

(c) Conduct Public Consultation Process;

(d) Detailed design;

(e) Tender period services, Material Testing & Inspection, Redbook Notes and Record Drawings; and

(f) Construction Management.

4(2) The Consultant shall perform these Services under the general direction and control of Municipal Operations and with all due and reasonable diligence, professional skills and competence.

5. Fees

5(1) The City shall pay to the Consultant the fees in accordance with the Proposal and the provisions of the Request for Proposal including any other written clarification(s) or addendum(s) thereof that has or have been requested and provided and agreed to by the Parties to this Agreement.

5(2) Municipal Operations will review each invoice submitted by the Consultant within five (5) days after receipt and the City shall pay any undisputed amount thereunder within forty-five (45) days of the date of submission of such invoice by the Consultant.

5(3) The fees to be paid by the City for the Services performed hereunder shall be inclusive of any applicable sales taxes.

5(4) With respect to any invoice submitted by the Consultant, the City may, without triggering a default under this Agreement, withhold from any payment otherwise due:

(a) any amount incorrectly invoiced, provided that the City timely informs the Consultant of the amounts alleged to be incorrectly invoiced and the basis for any such assertion for review, resolution and rebilling purposes; or

(b) any amount in dispute.

6. Records and Audit

6(1) In order to provide data to support the invoice for fees, the Consultant shall keep a detailed record of hours worked and the billing rate for all staff performing work on the Project. The Consultant agrees that the City may inspect these time records at any reasonable time.

6(2) The Consultant, when requested by the City, shall provide copies of receipts in respect to any disbursements for which the Consultant claims payment.

7. Failure to Perform

7(1) Should the Consultant fail for any cause whatever to perform the Work provided for by this Agreement, or fail to perform the Work in a manner satisfactory to the City, then, in either case, all payments by the City to the Consultant shall cease as of the date of such failure, and the City may appoint its officials, or any other person or persons in the place instead of the Consultant to perform the Work and the Consultant shall have no Claim against the City except for the Work which has been performed by the Consultant under this Agreement up to the time of such failure, without further liability, penalty or obligation to the City under this Agreement, and subject to any amounts that have already been paid to the Consultant.

8. Dismissal and Termination

8(1) In the event that the City, acting reasonably, is dissatisfied with the Work performance by the Consultant or that the Consultant fail to comply with the specifications and the terms and conditions of this Agreement, the Parties agree that the City may dismiss the Consultant at any time on thirty (30) days' prior written notice. The Consultant will accept payment for Work performed to the date of dismissal on a pro-rated basis in accordance with the provisions of this Agreement, in full satisfaction of any and all Claims under this Agreement, without further liability, penalty or obligation to the City under this Agreement, and subject to any amounts that have already been paid to the Consultant.

8(2) This Agreement may be terminated, without cause, by the City upon thirty (30) days' written notice to the Consultant of the City's intention to terminate same.

8(3) In the event of termination of this Agreement by the City, it shall within forty-five (45) calendar days of termination pay the Consultant, for all services rendered and all reimbursable costs incurred by the Consultant up to the date of termination, in accordance with the payment provisions set out in this Agreement, without further liability, penalty or obligation to the City under this Agreement, and subject to any amounts that have already been paid to the Consultant.

8(4) Upon early termination of this Agreement and settlement of accounts, or upon completion of the Consultant's obligations under this Agreement, all information, data, material, sketches, plans, notes, documents, memoranda, specifications or other paper writing belonging to the City and gathered or assembled by the Consultant or their agents, whether in paper or electronic format or otherwise for the purpose of this Agreement, shall forthwith be delivered to the City by the Consultant.

9. Confidential Information

9(1) The Consultant will, both during and following the term of this Agreement, treat as confidential and safeguard any information or document concerning the affairs of the City of which the Consultant acquires knowledge or that comes into its possession by reason of the Work for the City under this Agreement and will not disclose either directly or indirectly any such information or documents to any person, firm or corporation without first obtaining the written permission by the City, except any information or documents as the Consultant determines in its professional judgment should be disclosed to a third party.

9(2) Without limiting the generality of paragraph 9(1):

(a) The Consultant will not use any information acquired through the performance of this Agreement (herein referred to as “findings”) to gain advantage in any other project or undertaking irrespective of the topic, scale, or scope of such project or undertaking;

(b) The Consultant will not disclose any findings during or after the performance of this Agreement;

(c) The Consultant will not respond to any inquiries pertaining to any findings and agrees to refer all such inquiries to the City;

(d) The Consultant will not disclose or use any information that Municipal Operations cannot or may not wish to disclose;

(e) The Consultant shall hold all Confidential Information obtained in trust and confidence for Municipal Operations or the City and shall not disclose, except as required by law, any such Confidential Information, by publication or other means, to any person, company or other government agency nor use same for any other project other than for the benefit of the City as may be authorized by the City in writing; and

Any request for such approval by the City shall specifically state the benefit to the City of the disclosure of the Confidential Information.

10. Liability Insurance

10(1) The Consultant, at no expense to the City, shall obtain and maintain in full force and effect during the term of this Agreement, a policy or policies of insurance with the following minimum limits of liability:

(a) Professional Errors and Omissions Liability Insurance

The Insurance Coverage shall be in the amount of Two Million Dollars ($2,000,000.00) per claim and in the aggregate. When requested, the Consultant shall provide the City proof of Professional Errors and Omissions Liability Insurance carried by the Consultant

and in accordance with the *Engineering and Geoscience Professions Act*, S.N.B. 1999, Chapter 50, and amendments thereto.

(b) Comprehensive General Liability and Automobile Insurance

The Insurance Coverage shall be of not less than Two Million Dollars ($2,000,000.00) per occurrence and in the aggregate for general liability and Two Million Dollars ($2,000,000.00) for automobile insurance. When requested, the Consultant shall provide the City with proof of Comprehensive General Liability and Automobile Insurance (Inclusive Limits) for both owned and non-owned vehicles.

10(2) The policies of insurance required in paragraphs 10(1)(a) & 10(1)(b) must provide that the coverage shall stay in force and not be amended, cancelled or allowed to lapse without thirty (30) days prior written notice being given to the City. The Consultant agrees to furnish to the City a renewal certificate at least ten (10) calendar days prior to the expiration of the policy.

10(3) The policy of insurance required in paragraph 10(1)(b) shall name the City as an additional insured and shall contain a cross-liability clause.

10(4) The Consultant shall obtain and maintain in full force and effect during the term of this Agreement coverage from WorkSafeNB.

10(5) The Consultant shall submit to the City satisfactory evidence of having obtained the insurance coverage required and shall submit certificates of such coverage as well as current coverage from the WorkSafeNB forthwith to the City upon execution of this Agreement.

10(6) Nothing in this section 10 shall be construed as limiting in any way, the indemnification provision contained in this Agreement, or the extent to which the Consultant may be held responsible for payments of damages to persons or property.

11. Project Managers

11(1) The City shall designate a project manager to work directly with the Consultant in the performance of this Agreement.

11(2) The Consultant shall designate a Consultant Representative who shall represent it and be its agent in all consultations with the City during the term of this

Agreement. The Consultant or its Consultant Representative shall attend and assist in all coordination meetings called by the City.

12. Responsibility for Errors

12(1) The Consultant shall be responsible for its work and results under this Agreement. The Consultant, when requested, shall furnish clarification and/or explanation as may be required by the City's representative, regarding any services rendered under this Agreement at no additional cost to the City.

12(2) In the event that an error or omission attributable to the Consultant's negligence, then the Consultant shall, at no cost to the City, provide all necessary design drawings, estimates and other Consultant professional services necessary to rectify and correct the error or omission to the sole satisfaction of the City, acting reasonably, and to participate in any meeting required with regard to the correction.

13. Remedies

13(1) Subject to sections 18 and 19 hereof, upon default by either Party under any terms and conditions of this Agreement, and at any time after the default, either Party shall have all rights and remedies provided by law and by this Agreement.

13(2) No delay or omission by the Parties in exercising any right or remedy shall operate as a waiver of them or of any other right or remedy, and no single or partial exercise of a right or remedy shall preclude any other or further exercise of them or the exercise of any other right or remedy. Furthermore, any Parties may remedy any default by the other Party in any reasonable manner without waiving the default remedied and without waiving any other prior or subsequent default by the defaulting party. All rights and remedies of each Party granted or recognized in this Agreement are cumulative and may be exercised at any time and from time to time independently or in combination.

14. Indemnification

14(1) Subject to subsection 14(2) hereof, but notwithstanding any other clauses herein, the Consultant shall indemnify and save harmless the City from all Claims, or other proceedings by whomsoever claimed, made, brought or prosecuted in any manner and whether in respect of property owned by others or in respect of damage sustained by others based upon or arising out of or in connection with the performance of this Agreement or anything done or purported to be done in any

manner hereunder, but only to the extent that such Claims, or other proceedings are attributable to and caused by the Consultant's negligence, errors or omissions.

14(2) In no event shall the Consultant be obligated to indemnify the City in any manner whatsoever in respect of any Claims, or other proceedings caused by the negligence of the City, or any person for whom the City is responsible.

15. Contract Assignment

15(1) This Agreement cannot be assigned by the Consultant to any other service provider without the express written approval of the City.

16. Performance

16(1) All Parties agree to do everything reasonably necessary to ensure that the terms of this Agreement are met.

17. Non-Performance

17(1) The failure on the part of any Parties to exercise or enforce any right conferred upon it under this Agreement shall not be deemed to be a waiver of any such right or operate to bar the exercise or enforcement thereof at any time or times thereafter.

18. Dispute Resolution

A. Referral to Senior Management

18(1) All Disputes arising out of, or in connection with, this Agreement, or in respect of any legal relationship associated with or derived from this Agreement shall within two (2) Business Days be referred for resolution to the City Manager and the Consultant Representative.

18(2) If the City Manager and Consultant Representative are not able to resolve the Dispute referred to them under this section 18 within seven (7) Business Days following such referral, the matter shall be referred for resolution by way of mediation upon the willingness of the Parties.

B. Mediation

18(3) Despite an agreement to mediate, a Party may apply to a court of competent jurisdiction or other competent authority for interim measures of protection at any time.

18(4) If the Parties resolve to mediate the Dispute referred to them under subsection 18(2), the Parties shall invoke the following mediation process:

(a) Either Party shall immediately declare an impasse and provide written notice to the other within seven (7) Business Days thereof (or such other period as the Parties mutually prescribe) declaring that such party wishes to proceed to mediation and setting out in reasonable detail the issue(s) to be resolved, the proposed time and a list of at least three (3) and not more than five (5) proposed mediators. Each of the proposed mediators shall be an individual:

(i) with at least three (3) years' experience working in an executive capacity or representing clients in the area of public disputes, and

(ii) unless otherwise agreed by the Parties, with no prior connection, affiliation or other formal relationship with either Party.

(b) Upon receipt of such notice, the notified party shall have two (2) Business Days to select one (1) of the proposed mediators as the mediator, failing which the Party providing notice shall select one (1) of its proposed mediators as the mediator. Within seven (7) Business Days following selection of the mediator the matter shall be heard by the mediator.

(c) The mediator shall be entitled to establish his or her own practices and procedures. Each Party shall co-operate fully with the mediator and shall present its case to the mediator orally and/or in writing within (10) Business Days following the mediator's appointment. The mediation shall not be in the nature of arbitration as contemplated by the *Arbitration Act,* SNB 2014, c 100, and the mediator's decision shall not be binding upon the Parties, but shall be considered as a bona fide attempt by the mediator to judiciously resolve the Dispute.

The decision of the mediator shall be rendered in a written report, not to exceed two (2) pages in length, delivered to the Parties within ten (10) Business Days following the last of such presentations. The fees of the mediator shall be shared equally by the Parties.

18(5) The mediation shall be terminated:

(a) By the execution of a settlement agreement by the Parties; or

(b) By a written declaration of one or more parties that the mediation is terminated; or

(c) By a written declaration by the mediator that further efforts at mediation would not be useful.

18(6) The place of mediation shall be the City of Saint John and Province of New Brunswick.

C. <u>Arbitration</u>

18(7) In the event that the Parties are unwilling to mediate their Dispute or that the Dispute between the Parties remain unresolved after mediation has been attempted in good faith, then either the City or the Consultant, upon written notice to the other, may refer the Dispute for determination to a Board of Arbitration consisting of three (3) persons, one (1) chosen by and on behalf of the City, one (1) chosen by and on behalf of the Consultant and the third chosen by these two.

18(8) In case of failure of the two arbitrators appointed by the Parties hereto to agree upon a third arbitrator, such third arbitrator shall be appointed by a Judge of The Court of King's Bench of New Brunswick.

18(9) No one shall be appointed or act as arbitrator who is in any way interested, financially or otherwise, in the conduct of the work or in the business or other affairs of either Party.

18(10) Notwithstanding the provisions of the *Arbitration Act,* SNB 2014, c 100, the Board of Arbitration, upon such terms and conditions as are deemed by it to be appropriate, may allow a Party to amend or supplement its claim, defence or reply at any time prior to the date at which the Parties have been notified of the arbitration hearing date, unless the Board of Arbitration considers the delay in amending or

supplementing such statements to be prejudicial to a Party. The Board of Arbitration will not permit a Party to amend or supplement its claim, defence or reply once the arbitration hearing has been scheduled.

18(11) The Board of Arbitration may encourage settlement of the Dispute and, with the written agreement of the Parties, may order that mediation, conciliation or other procedures be used by the Parties at any time during the arbitration proceedings to encourage settlement.

18(12) If, during the arbitration proceedings, the Parties settle the Dispute, the Board of Arbitration shall, upon receiving confirmation of the settlement or determining that there is settlement, terminate the proceedings and, if requested by the Parties, record the settlement in the form of an arbitration award on agreed terms.

18(13) Subject to subsection 18(14), any determination made by the Board of Arbitration shall be final and binding upon the Parties and the cost of such determination shall be apportioned as the Board of Arbitration may decide.

18(14) Either Party may appeal an arbitration decision to The Court of King's Bench of New Brunswick: (i) on a question of law; or (ii) on a question of fact; or (iii) on a question of mixed fact and law.

18(15) The place of arbitration shall be the City of Saint John and Province of New Brunswick and the provisions of the *Arbitration Act,* SNB 2014, c 100, New Brunswick, shall apply to the arbitration.

D. <u>Retention of Rights</u>

18(16) It is agreed that no act by either Party shall be construed as a renunciation or waiver of any rights or recourses provided the Party has given the notices required under section 18 and has carried out the instructions as provided in section A of this Part.

18(17) Nothing in section 18 shall be construed in any way to limit a Party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of New Brunswick and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that Party may have under section B of this Part to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

19. Force Majeure

19(1) It is agreed between all Parties that neither Parties shall be held responsible for damages caused by delay or failure to perform his undertakings under the terms and conditions of this Agreement when the delay or failure is due to strikes, labour disputes, riots, fires, explosions, war, floods, acts of God, lawful acts of public authorities, or delays or defaults caused by common carriers, which cannot be reasonably foreseen or provided against. After ninety (90) consecutive or cumulative days of the suspension of Party's obligations due to force majeure, the other Party may terminate the Agreement.

20. Time

20(1) This Agreement shall not be enforced or bind any of the Parties, until executed by all the Parties named in it.

21. Notices

21(1) Any notice under this Agreement shall be sufficiently given by personal delivery or by registered letter, postage prepaid, mailed in a Canadian post office and prepaid courier, addressed, in the case of notice to:

The City:	**CONSULTANT:**
Municipal Operations City of Saint John 175 Rothesay Avenue Saint John, New Brunswick E2J 2B4	CONSULTANT. STREET ADDRESS CITY, PROVINCE XXX XXX
Telephone: 506-658-4455	Telephone: XXX-XXX-XXXX

or to any other address as may be designated in writing by the Parties and the date of receipt of any notice by mailing shall be deemed conclusively to be five (5) calendar days after the mailing.

22. Reference to Prior Agreement

22(1) This Agreement supersedes and takes the place of all prior agreements entered into by the Parties with respect to the consulting engineering services for Kennedy Street Outfall Upgrade Project.

23. Amendments

23(1) No change or modification of this Agreement shall be valid unless it is in writing and signed by the Parties.

24. Acknowledgment of Terms and of Entirety

24(1) It is agreed that this written instrument embodies the entire agreement of the Parties with regard to the matters dealt with in it, and that no understandings or agreements, verbal or otherwise, exist between the Parties except as expressly set out in this instrument or as set out in the Request for Proposal or the Proposal or any written clarification(s) or addendum(s) that are included as part of this Agreement.

25. Further Documents

25(1) The Parties agree that each of them shall, upon reasonable request of the other, do or cause to be done all further lawful acts, deeds and assurances whatever for the better performance of the terms and conditions of this Agreement.

26. Validity and Interpretation

26(1) Paragraph headings are inserted solely for convenience of reference, do not form part of this Agreement, and are not to be used as an aid in the interpretation of this Agreement.

26(2) The failure of the Parties to insist upon strict adherence to any term or condition of this Agreement on any occasion shall not be considered a waiver of any right thereafter to insist upon strict adherence to that term or condition or any other term or condition of this Agreement.

26(3) The Schedules to the Agreement form part of and are incorporated into the Agreement as fully and effectively as if they were set forth in the Agreement.

27. Governing Law

27(1) This Agreement shall be governed by and construed in accordance with the laws of the Province of New Brunswick and the federal laws of Canada applicable therein.

28. Successors, Assigns

28(1) This Agreement shall enure to the benefit of and be binding on the successors and assigns of the City and on the successors and permitted assigns of the Consultant.

29. Severability

29(1) It is intended that all provisions of this Agreement shall be fully binding and effective between the Parties, but in the event that any particular provision or provisions or part of one is found to be void, voidable or unenforceable for any reason whatsoever, then the particular provision or provisions or part of the provision shall be deemed severed from the remainder of this Agreement and all other provisions shall remain in full force.

30. Independent Legal Advice

30(1) The Parties acknowledge having obtained their own independent legal advice with respect to the terms of this Agreement prior to its execution.

31. Acknowledgment of Receipt of Copy

31(1) Each Parties acknowledge receipt of a true copy of this Agreement.

(The remainder of this page is intentionally left blank)

IN WITNESS WHEREOF CONSULTANT, has caused this Agreement to be executed in its corporate name, and on its behalf, by its POSITION, and The City of Saint John has caused this Agreement to be executed in its corporate name in the manner prescribed by the *Local Governance Act*, SNB 2017, c 18, and amendments thereto.

SIGNED, SEALED & DELIVERED)
In the presence of:)

CONSULTANT

Per:

_____

Print Name and Title:

_____

I have authority to bind the Consultant

THE CITY OF SAINT JOHN

_____
Donna Noade Reardon, Mayor

_____
Jonathan Taylor, City Clerk

Council Resolution:
June 27, 2022

PROVINCE OF NEW BRUNSWICK

I, EMPLOYEE, of the City of CITY and Province of PROVINCE, MAKE OATH AND SAY:

1. That I am the POSITION of CONSULTANT, a Consultant named in the foregoing instrument and have custody of the corporate seal of the said company and am duly authorized to make this affidavit.

2. That the corporate seal affixed to the foregoing agreement and purporting to be the corporate seal of CONSULTANT, is the corporate seal of CONSULTANT, a Consultant named in the foregoing instrument and it was affixed by the officers authorized to so affix the seal.

3. That the signature of "EMPLOYEE", is my signature, and as the POSITION of CONSULTANT, I am duly authorized to execute the said instrument.

4. THAT the said document was executed as aforesaid at the City of CITY and Province of PROVINCE on the ____ day of June, 2022.

SWORN TO before me at)
the City of CITY, in the)
Province of PROVINCE)
the ____ day of June, 2022)
)
) _____
) **EMPLOYEE**
)
_____)
Commissioner of Oaths,)
)

Main Street North Sewer Relocation

City of Saint John

Type of Document:
Final Report

Project Number:
MON-22023722-A0

Prepared By:
Patrick Allard, P.Eng.

Reviewed By:
Gordon Wasson, P.Eng.

EXP
555 Mapleton Road, Suite 100
Moncton, NB E1G 2K5
Canada
T: +506.857.8889
F: +506.857.8315
www.exp.com

Date Submitted:
2023-05-25

Legal Notification

This report was prepared by EXP Services Inc. for the account of **City of Saint John**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Table of Contents

List of Tables

List of Figures

1 Introduction

At present, one of the catchment areas in the City of Saint John's North End sewer system collects and conveys both sanitary and storm water via a network of sanitary, storm and combined sewers to a low point on Main Street (between Harvey and Cedar Streets). From this point, the combined sewer flow is piped via a brick sewer (circa 1913) across properties owned by Impact Developments SJ Inc., Saint John Power Boat Club, Floyd Storr and JD Irving to a CSO adjacent to Kennedy Street Lift Station #24 with an outfall into the Saint John River**. Figure 1** the overall study area including the existing sewer systems. The dry weather flow component is directed to the Kennedy Street Lift Station #24 located at the end of Kennedy Street via a combined sewer overflow (CSO); flow more than the dry weather flow continues via the existing combined sewer to outfall into the Saint John River. The Kennedy Street Lift Station #24 collects the dry weather flow from the combined sewer and pumps it to the Spar Cove Road Lift Station via a forcemain and gravity sewer.

Figure 1: Overall Study Area

The City desires to relocate the existing combined sewer on the property identified as PID #00374181 (Impact Developments SJ Inc.) such that the property is unencumbered. The main objective of this study is to investigate options for re-routing the combined sewer such that it is relocated off the afore mentioned property and directing the flow to either the Kennedy Street Lift Station or the Bridge Street Lift Station.

The area is characterized by older buildings, many of which may have stone foundations and are in close proximity to the street. Also, there are significant differences in topographic elevation throughout the area and there is

evidence of rock crops in numerous locations. These are some of the constraints and challenges that must be taken into consideration as part of the development of conceptual sewer re-routing options.

This report provides options, an opinion of probable cost for each option and, the preliminary design information that was used in the preparation of the conceptual designs.

Generally, the scope of the study that has been undertaken includes the following tasks.

- Gathering and review of existing information provided by the City of Saint John.
- Topographic survey and data collection.
- Review of CCTV videos and reports of the sanitary, storm, and combined sewer systems for the project site that were either completed as part of this project or, provided by the City.
- Hydraulic Model Assessment of the proposed sewer relocation options.
- Assessment of the existing lift stations as they relate to the sewer relocation options.
- An Opinion of Probable Construction Cost for each option.
- Communication with the various utility companies regarding their existing infrastructure and plans for any future extensions or upgrades in the project area.

A detailed discussion of each task noted above is provided in the following sections.

This report presents the design criteria for the work proposed in this project and is based on the following standards:

- City of Saint John General Specifications 2022; and
- City of Saint John Storm Drainage Design Criteria Manual 2016.

2 Data Acquisition

2.1 Topographic/Intrusive Survey

The task generally included limited topographic surveys to field locate existing manholes as well as pick up ground elevations in sags, crests, and other critical areas. The general area of survey was along the existing pipe alignments as well as along Main Street (from Harvey Street to the Bridge Street Lift Station), Cedar Street (from Main Street to the end) and Kennedy Street (from Main Street to the Kennedy Street Lift Station). Intrusive surveys of existing manholes were also carried out to verify pipe connectivity and gather information related to pipe types, sizes and elevations and manhole details. The elevation of the existing watermain was also picked up at valve chamber locations that were accessible. This data was assembled to identify necessary information on existing features within the work area and supplement other available information to complete the analysis and conceptual designs to redirect the combined sewer flows.

2.2 Legal Survey

Property information was obtained from Service New Brunswick.

2.3 CCTV Video Inspection

Video inspections of the storm, sanitary, and combined sewer piping within the project area, to supplement CCTV video reports provided by the City were completed by Mac Vac Environmental Inc. The video inspection reports were reviewed to confirm pipe connectivity, general condition, pipe material and, to determine the locations where service laterals may require reconnection to the new sewer system. Results of the review of the CCTV videos and video inspection reports are provided in **Appendix A**.

2.4 Hydraulic Model Assessment

The City provided EXP with a calibrated SewerGEMS model of the existing storm, sanitary, and combined sewers in the study area and the model was used as the basis for the hydraulic analysis. However, prior to use, we generally reviewed the model to understand how it was constructed and the data it contained. Also, information gathered from our field investigations, CCTV video inspection and records drawings were used to update the hydraulic model as required to reflect current conditions.

During this phase, a hydraulic analysis of different options was carried out for relocation of the combined sewer on the private property west of Harvey Street. Constraints that were considered include:

- Grade variation on Main Street, Cedar Street and Kennedy Street;
- Impact on adjacent sewer systems;
- Impact on existing combined sewer outfalls and overflows, etc.;
- Impact on existing lift stations; and
- The available right of way, existing infrastructure, and depth of excavation; all of which will affect constructability, the method of construction, impact of residents and cost.

Options that were considered viable were incorporated in the hydraulic model and an analysis was completed to determine the preliminary pipe configuration and sizing for each option.

2.5 Existing Lift Station Assessment

This task generally included a review of the Kennedy Street and Bridge Street Lift Station design briefs, available shop drawings, a site visit to meet with the system operator to gather additional information and, an assessment of each lift station to review its capacity as it relates to each of the proposed options. During this phase, the impact of

redirecting additional flows to either the Bridge Street Lift Station or the Kennedy Street Lift Station was assessed and what upgrades to the stations may be required. A summary of the observations and proposed upgrades is provided in **Section 4**.

2.6 Geotechnical Investigation

The completion of a geotechnical investigation was not included in our scope of work for the current project. During our site visit however, it was observed that rock outcrops were visible as shown in **Figure 2** below. Once a preferred option is selected, it is recommended a geotechnical investigation be undertaken as part of the Preliminary Design phase.

Figure 2: Rock Outcrops on Main Street

2.7 Utilities

Utility locates for the project area were requested through Info Excavation. Saint John Energy, Saint John Traffic Infrastructure, Bell Aliant, and EMERA Brunswick Pipeline responded to the request. The purpose of this request was to confirm if there were any existing underground infrastructure within the project area that could potentially affect future design.

The following is a summary of the existing utilities identified within the project limits based on the field locates performed:

- Saint John Energy: Saint John Energy provided some GIS screenshots of their GIS system that show their existing infrastructure (overhead and underground). Most of the infrastructure are identified as being overhead.
  - Saint John Energy has no underground infrastructure on Main Street.
  - Saint John Energy has no underground infrastructure on Cedar Street.
  - Saint John Energy has an underground service feeding to 121 Kennedy Street (Kennedy Street Lift Station).
  - Saint John Energy has an underground service feeding to 101 Bridge Street (Bridge Street Lift Station).

- Saint John Traffic Infrastructure: Saint John Traffic Infrastructure confirmed that they did not have any traffic infrastructure within the project area.
- Bell Aliant: Bell has an underground duct bank running along the South side of Main Street from a utility manhole at Cedar Street to the eastern project limits. An underground duct bank also crosses Main Street at Albert Street.
- EMERA Brunswick Pipeline: Emera Brunswick Pipeline confirmed that they did not have any underground infrastructure within the project area.

There are existing overhead utility lines located on Main Street, Cedar Street, Kennedy Street and Bridge Street. The poles on Kennedy Street and Cedar Street are all extremely close to the back of the existing curb; it is recommended this be reviewed during design stage to confirm if pole relocations are required.

3 Sanitary, Storm and Combined Sewer Systems

3.1 CCTV Sewer Video Review

As part of this project, the CCTV videos provided by the City and additional CCTV videos completed by Mac Vac Environmental Inc. were reviewed to evaluate the condition of the existing sewer system and determine if any repairs were required. A detailed summary of the sections of existing sewer that were identified as requiring repair, replacement, cleaning, flushing, or re-video is provided in **Appendix A**.

Problem areas that have been identified as repairs are included in the cost estimates for the various conceptual design options.

3.2 Relocation of the Existing Combined Sewer

The Main Street North Sewer Relocation project generally involves relocating/redirecting an existing 600/750mm diameter combined sewer that currently crosses a private property (PID 00374181) west of Harvey Street as shown in **Figure 3** below. The main objective of this project was to investigate options for re-routing the combined sewer and directing the combined sewer flow to either the Kennedy Street Lift Station or the Bridge Street Lift Station. Where this a combined sewer, it is also recommended that the proposed sewer system be designed for a major storm event (100yr+20%). As per a previous study commissioned by the City of Saint John, increasing the peak rainfall in the 1 in 100-year design storm by 20% is an acceptable method to account for the increase in rainfall intensity predicted by climate change. This will allow the system to function as a storm relief system that will drain sag areas in the street (such as Main Street north of PID 00374181) and prevent stormwater from overflowing onto the subject property.

Figure 3: Existing Combined Sewer Requiring Relocation

Since this new system will act as a storm relief system; storm and sanitary service laterals that are connected to existing storm and sanitary systems on Main Street will remain connected to existing storm and sanitary systems where possible to prevent flooding of basements. The following options include installation of a separate sanitary

sewer so that when upstream sewer separation is completed, the necessary downstream infrastructure will be in place. In the interim, sanitary laterals would remain connected to the existing combined sewer. From experience, it is not anticipated that NBDELG would have any issues as this work forms part of a long-term plan for sewer separation.

The following options were reviewed as part of the sewer relocation and are discussed in the following sections:

- Option 1: Abandon the existing combined sewer on PID 00374181 and install a new combined sewer just to the west side of PID 00374181 along existing properties toward the Kennedy Street lift station. A sub-option the City may wish to pursue would be to keep the sewer on the subject property, however, relocate it along the west property line.
- Option 2: Abandon the existing combined sewer on PID 00374181 and install a new combined sewer along Main Street and Cedar Street to convey the flow to the Kennedy Street Lift Station and CSO.
- Option 3: Abandon the existing combined sewer on PID 00374181 and install a new combined sewer along Main Street and Kennedy Street to convey the flow to the Kennedy Street Lift Station and CSO.
- Option 4: Abandon the existing combined sewer on PID 00374181 and install a new combined sewer along Main Street to convey flow to the Bridge Street Lift Station and CSO.

It was assumed that sewer relocations in areas where they are likely to be deep (6m or greater) would be completed using directional drilling to minimize disruption to motorists and adjacent properties and the impact on existing services. Contractors specializing in directional drilling were contacted and there were no concerns expressed regarding drilling large diameter pipes in rock. However, information gathered from geotechnical investigations during the preliminary design phase will be necessary to properly characterize the rock and confirm if there are any issues. For open trench installations the scope of work would be limited to trench restoration only and there would not be any full width street reconstruction. As a result, horizontal and vertical alignments for the sections of road affected by construction were not modified for the project streets.

The SewerGEMS (Milledgeville Storm and Sanitary) hydraulic model provided by City of Saint John was used to analyze the conceptual designs for the combined sewer system realignment for each option. The existing model input data remained generally unchanged except for some pipe size adjustments to the combined sewer system based on our field survey.

3.2.1 Option 1 – Sewer Realignment along the West Side of Parcel Identification Number (PID) 00374181

The existing combined sewer on PID 00374181 would be redirected such that it would be located on and follow along the rear of several properties abutting the subject property to the west. The sewer would flow by gravity in a southerly direction where it would then follow along the existing alignment toward the Kennedy Street Lift Station as shown in **Figure 4**. This alignment would require that the City negotiate and secure an easement from several property owners along the proposed route. The alignment along the property boundary would generally be as shown in **Figure 5** below then, follow along the existing sewer alignment to the Kennedy Street Lift Station. For this option, the existing combined sewer on PID 00374181 would be removed and disposed of by the contractor or abandoned by filling with non-shrink flowable fill. The remaining section of the combined sewer between PID 00374181 and the Kennedy Street outfall, would be renewed. The direction of the flows would remain generally unchanged from existing configuration and as a result no modifications to the Kennedy Street Lift Station would be required. A Conceptual Design is provided on Drawing 9-1 in **Appendix B**.

Figure 4: Option 1 – Proposed Sewer Realignment along the West Side of Parcel Identification Number (PID) 00374181

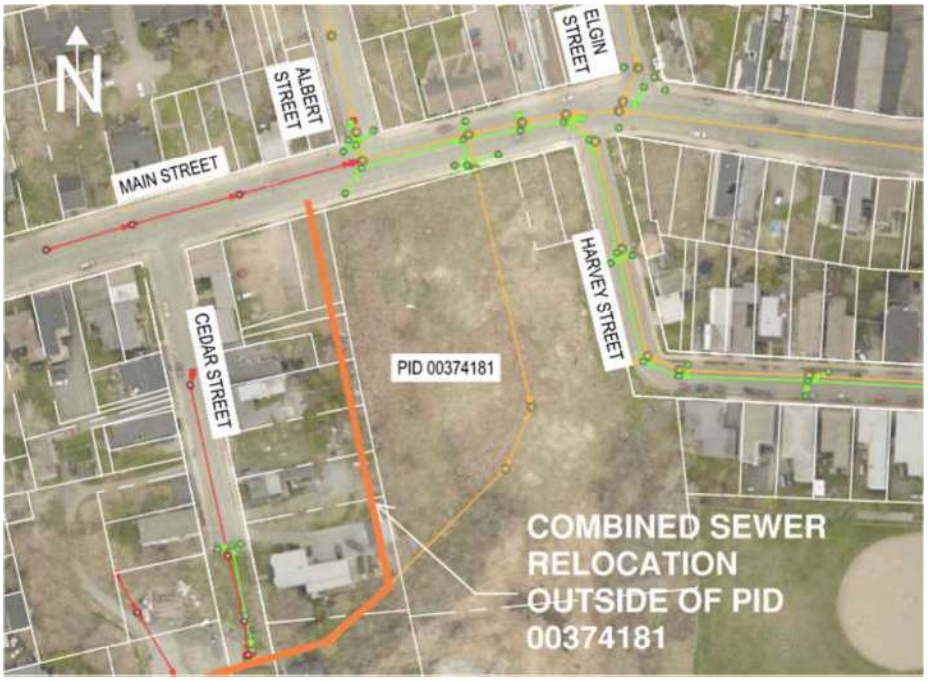

Figure 5: Option 1 – Proposed Sewer Realignment on Properties West of PID 00374181

As a sub-option (Option 1a) the City may wish to consider negotiating with the subject property owner to have the sewer remain on their property but be relocated along the west property line as shown in **Figure 6**. The routing and general scope of work would be the same as described above with the advantage that the City would only have to negotiate with one property owner for an easement. The new combined sewer would need to be designed for the 100yr+20% plus sanitary flows to provide the required capacity for existing flow conditions.

It is our understanding, the City of Saint John does not have service easements for the existing combined sewer located on PID 00374181 and through the Saint John Power Boat Club property to the Kennedy Street outfall, therefore, easements would be required for the proposed combined sewer line from Main Street to Kennedy Street and for the outfall sewer renewal. It would also be beneficial to obtain easements wider than what is currently required for a single pipe to allow for the installation of a future dedicated sanitary main as sewer separation is completed. Due to the width of easement required, the future dedicated sanitary main would likely need to be located on PID 00374181, which would require easements on multiple properties as well as on PID 00374181; this is a detail that will need to be confirmed during Preliminary Design as more detailed plans are developed. Installation of a dedicated sanitary main was included in the opinion of probable cost, however it should be noted that easement acquisitions are not included in our cost estimates.

Figure 6: Option 1a – Proposed Sewer Realignment with Sewer Remaining on PID 00374181

Associated with the sewer renewal, the grade in sections of the Saint John Power Boat Club parking lot would need to be raised or the routing adjusted based on detailed topographic survey information, to allow for the installation of larger diameter pipes and maintain sufficient pipe cover. It is also important to note that CCTV inspections were not fully completed through the Saint John Power Boat Club parking lot, therefore it is unknown if any existing sewer laterals will require reconnections to the new combined sewer; further investigations will be required during preliminary design phase.

Table 1 and **Figure 7**, below, show the characteristics of the proposed combined sewer system (from Harvey Street to the Kennedy Street Lift Station), and the hydraulic grade line (HGL) with the 1 in 100 year + 20% rainfall applied. The locations of the referred manholes (Option 1) are as follows and as shown on Drawing 9-1 in **Appendix B**:

Main Line:

- MH#1-1 – on Main Street, north of Harvey Street;
- MH#1-2 – on Main Street, 15m west of MH#1-1;
- MH#1-3 – on Main Street, 18m west of MH#1-2;
- MH#1-4 – on Main Street, 36m west of MH#1-3;
- MH#1-5 – on Main Street, 15m west of MH#1-4;

- MH#1-6 – west of PID 00374181, 63m south of MH#1-5;
- MH#1-7 – west of PID 00374181, 67m south of MH#1-6;
- MH#1-8 – on Saint John Power Boat Club property, 39m southwest of MH#1-7;
- MH#1-9 – south end of Cedar Street, 29m west of MH#1-8;
- MH#1-10 – on Saint John Power Boat Club property, 24m west of MH#1-9;
- MH#1-11 – on Saint John Power Boat Club property, 4m southwest of MH#1-10;
- MH#1-12 – on Saint John Power Boat Club property, 48m south of MH#1-11;
- MH#1-13 – on Saint John Power Boat Club property, 71m southwest of MH#1-12;
- MH#1-14 – south end of Kennedy Street, 37m west of MH#1-13;
- MH#1-15 (CSO) – south end of Kennedy Street, 6m south of MH#1-14;
- MH#1-16 – south end of Kennedy Street, 5m west of MH#1-15;
- MH#1-17– on private property, 172m southwest of MH#1-16;
- Outfall – on private property, 67m west of MH#1-17;

Table 1: Option 1 - Main Line Characteristics of the proposed relocated combined sewer system from Harvey Street to the Kennedy Street Outfall

Label	Start Node	Stop Node	Diameter (mm)	Length (Scaled) (m)	Slope (%)	Section Type	Material	Velocity (max) (m/s)	Flow / Capacity (Proposed) (%)
ST-1	MH#1-1	MH#1-2	600	14.8	2.0	Circle	Concrete	2.79	128.2
ST-2	MH#1-2	MH#1-3	750	18.2	2.6	Circle	Concrete	2.87	43.1
ST-3	MH#1-3	MH#1-4	900	36	0.8	Circle	Concrete	3.03	105.8
ST-4	MH#1-4	MH#1-5	900	15.2	2.0	Circle	Concrete	4.23	84.1
ST-5	MH#1-5	MH#1-6	900	63.1	3.6	Circle	Concrete	5.17	62.5
ST-6	MH#1-6	MH#1-7	900	67.0	8.2	Circle	Concrete	6.51	41.7
ST-7	MH#1-7	MH#1-8	900	38.7	1.7	Circle	Concrete	4.19	90.7
ST-8	MH#1-8	MH#1-9	900	29.3	1.7	Circle	Concrete	3.88	90.7
ST-9	MH#1-9	MH#1-10	1,050	24.3	1.2	Circle	Concrete	3.45	80.7
ST-10	MH#1-10	MH#1-11	1,050	3.5	1.7	Circle	Concrete	3.80	67.7
ST-11	MH#1-11	MH#1-12	1,050	48.1	1.2	Circle	Concrete	3.69	80.4
ST-12	MH#1-12	MH#1-13	1,050	71.4	1.4	Circle	Concrete	3.17	74.2
ST-13	MH#1-13	MH#1-14	1,050	37.0	0.3	Circle	Concrete	2.81	169.8
ST-14	MH#1-14	MH#1-15 (CSO)	1,050	5.6	0.9	Circle	Concrete	2.91	183.5
ST-15	MH#1-15 (CSO)	MH#1-16	1,200	4.7	1.1	Circle	Concrete	2.78	54.5
ST-16	MH#1-16	MH#1-17	1,200	172.4	0.5	Circle	Concrete	3.01	90.7
ST-17	MH#1-17	OUTFALL	1,200	67.3	1.1	Circle	Concrete	3.82	59.7

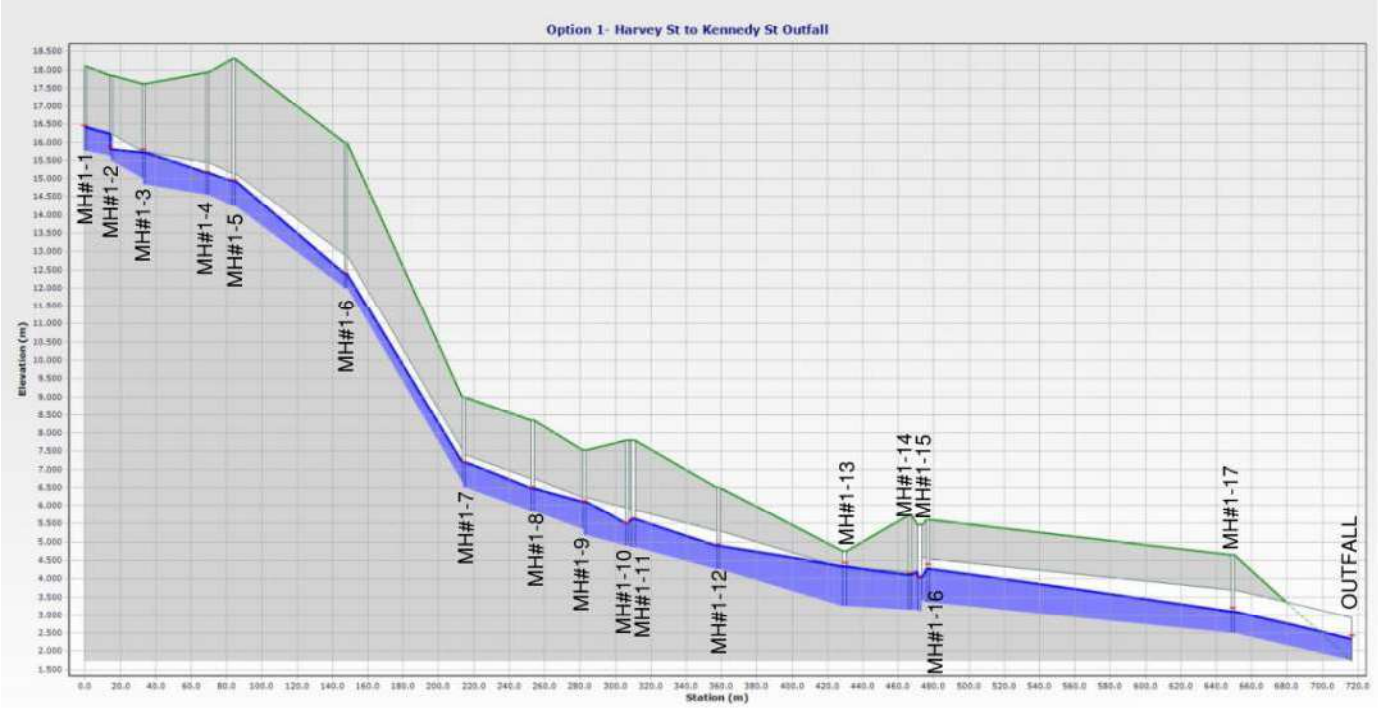

Figure 7: Option 1 – Hydraulic Grade Line of the relocated combined sewer system from Harvey Street to the Kennedy Street Outfall

It is noted that the proposed system shows minimal surcharging. In this instance, the occurrence of surcharging within the piped system where the hydraulic grade line is considerably below basement elevation is considered acceptable due to the depth of proposed sewer in comparison with the ground elevation of the various residences along this section of road. Basement elevations along with other details will need to be confirmed during design phases.

As discussed in a subsequent section, the probable project cost of Option1 is the least of the options presented since it is expected that it could be completed using open trench methods of construction and, it has the least amount of impact on the street network and existing infrastructure.

3.2.2 Option 2 – Sewer Realignment along Main Street and Cedar Street

The existing combined sewer on PID 00374181 would be abandoned or removed from this property, and it would be rerouted along Main Street and Cedar Street. From the south end of Cedar Street, the combined sewer would generally follow the existing alignment to the Kennedy Street Lift Station as shown in **Figure 8** below. For this option, the existing combined sewer on PID 00374181 would be removed and disposed by the contractor or abandoned by filling with non-shrink flowable fill. Due to the depth of the sewer (approx. 4 to 8 m) and the topography along Main Street and to a point just beyond the crest of Cedar Street, this section would likely be installed using trenchless (directional drill) technology. Contractors specializing in directional drilling were contacted and there were no concerns expressed regarding drilling large diameter pipes in rock. However, information gathered from geotechnical investigations during the preliminary design phase will be necessary to properly characterize the rock and confirm if there are any issues. The feasibility of using open cut methods using trench boxes or shoring would be further evaluated during preliminary design. The remainder of the sewer on Cedar Street to the Kennedy Street Lift Station and, to the CSO outfall would be renewed by open trench excavation. The direction of the flow would remain generally unchanged from existing configuration and as a result no modifications to the Kennedy Street Lift Station would be required. A Conceptual Design is provided on Drawing 9-2 in **Appendix B**.

Figure 8: Option 2 – Proposed Sewer Realignment along Main Street and Cedar Street

It is our understanding, the City of Saint John does not have service easements for the combined sewer system located through the Saint John Power Boat Club property or to the CSO outfall, therefore easements would be required for the proposed sewer line from the south end of Cedar Street to Kennedy Street and to the CSO outfall. It would also be beneficial to obtain easements wider than what is currently required for a single pipe to allow for the installation of a future dedicated sanitary main as sewer separation is completed. Installation of a dedicated sanitary main was included in the opinion of probable cost, however it should be noted that easement acquisitions are not included in our cost estimates.

Associated with the sewer renewal, the grade in sections of the Saint John Power Boat Club parking lot would need to be raised to allow for the installation of larger diameter pipes and maintain sufficient pipe cover. It is also important to note that CCTV inspections were not fully completed through the Saint John Power Boat Club parking lot, therefore it is unknow if any existing sewer laterals will require reconnections to the new combined sewer; further investigations will be required during preliminary design phase.

Table 2 and **Figure 9**, below, show the characteristics of the proposed combined sewer system (from Harvey Street to the Kennedy Street Lift Station), and the hydraulic grade line (HGL) with the 1 in 100 year + 20% rainfall applied. The locations of the referred manholes (Option 2) are as follows and shown on Drawing 9-2 in **Appendix B**:

Main Line:

- MH#2-1 – on Main Street, north of Harvey Street;
- MH#2-2 – on Main Street, 15m west of MH#2-1;
- MH#2-3 – on Main Street, 18m west of MH#2-2;
- MH#2-4 – on Main Street, 36m west of MH#2-3;
- MH#2-5 – on Main Street, 15m west of MH#2-4;
- MH#2-6 – on Main Street, 25m southwest of MH#2-5;

- MH#2-7 – on Main Street, 67m south of MH#2-6;
- MH#2-8 – on Cedar Street, 39m southwest of MH#2-7;
- MH#2-9 – south end of Cedar Street, 29m west of MH#2-8;
- MH#2-10 – on Saint John Power Boat Club property, 24m west of MH#1-9;
- MH#2-11 – on Saint John Power Boat Club property, 4m southwest of MH#2-10;
- MH#2-12 – on Saint John Power Boat Club property, 48m south of MH#2-11;
- MH#2-13 – on Saint John Power Boat Club property, 71m southwest of MH#2-12;
- MH#2-14 – south end of Kennedy Street, 37m west of MH#2-13;
- MH#2-15 (CSO) – south end of Kennedy Street, 6m south of MH#2-14;
- MH#2-16 – south end of Kennedy Street, 5m west of MH#2-15;
- MH#2-17– on private property, 172m southwest of MH#2-16;
- Outfall – on private property, 67m west of MH#2-17;

Table 2: Option 2 - Main Line Characteristics of the proposed relocated combined sewer system from Harvey Street to the Kennedy Street Outfall

Label	Start Node	Stop Node	Diameter (mm)	Length (Scaled) (m)	Slope (%)	Section Type	Material	Velocity (max) (m/s)	Flow / Capacity (Proposed) (%)
ST-1	MH#2-1	MH#2-2	600	14.8	2.0	Circle	Concrete	2.79	128.1
ST-2	MH#2-2	MH#2-3	750	18.2	2.6	Circle	Concrete	2.71	43.1
ST-3	MH#2-3	MH#2-4	900	36	0.8	Circle	Concrete	3.03	105.8
ST-4	MH#2-4	MH#2-5	900	15.2	1.8	Circle	Concrete	3.68	87.2
ST-5	MH#2-5	MH#2-6	900	24.9	1.8	Circle	Concrete	3.91	88.0
ST-6	MH#2-6	MH#2-7	900	37.8	1.8	Circle	HDPE	4.14	67.8
ST-7	MH#2-7	MH#2-8	900	90.7	1.8	Circle	HDPE	4.63	67.4
ST-8	MH#2-8	MH#2-9	750	51.4	12.1	Circle	Concrete	6.76	54.8
ST-9	MH#2-9	MH#2-10	1,050	19.6	1.8	Circle	Concrete	4.48	64.9
ST-10	MH#2-10	MH#2-11	1,050	3.5	1.7	Circle	Concrete	3.80	67.4
ST-11	MH#2-11	MH#2-12	1,050	48.1	1.2	Circle	Concrete	3.69	80.1
ST-12	MH#2-12	MH#2-13	1,050	71.4	1.4	Circle	Concrete	3.16	73.9
ST-13	MH#2-13	MH#2-14	1,050	37	0.3	Circle	Concrete	2.80	169.4
ST-14	MH#2-14	MH#2-15 (CSO)	1,050	5.6	0.2	Circle	Concrete	2.90	182.8
ST-15	MH#2-15 (CSO)	MH#2-16	1,200	4.7	1.1	Circle	Concrete	2.83	59.1
ST-16	MH#2-16	MH#2-17	1,200	172.4	0.5	Circle	Concrete	3.03	97.0
ST-17	MH#2-17	OUTFALL	1,200	67.3	1.1	Circle	Concrete	3.88	63.9

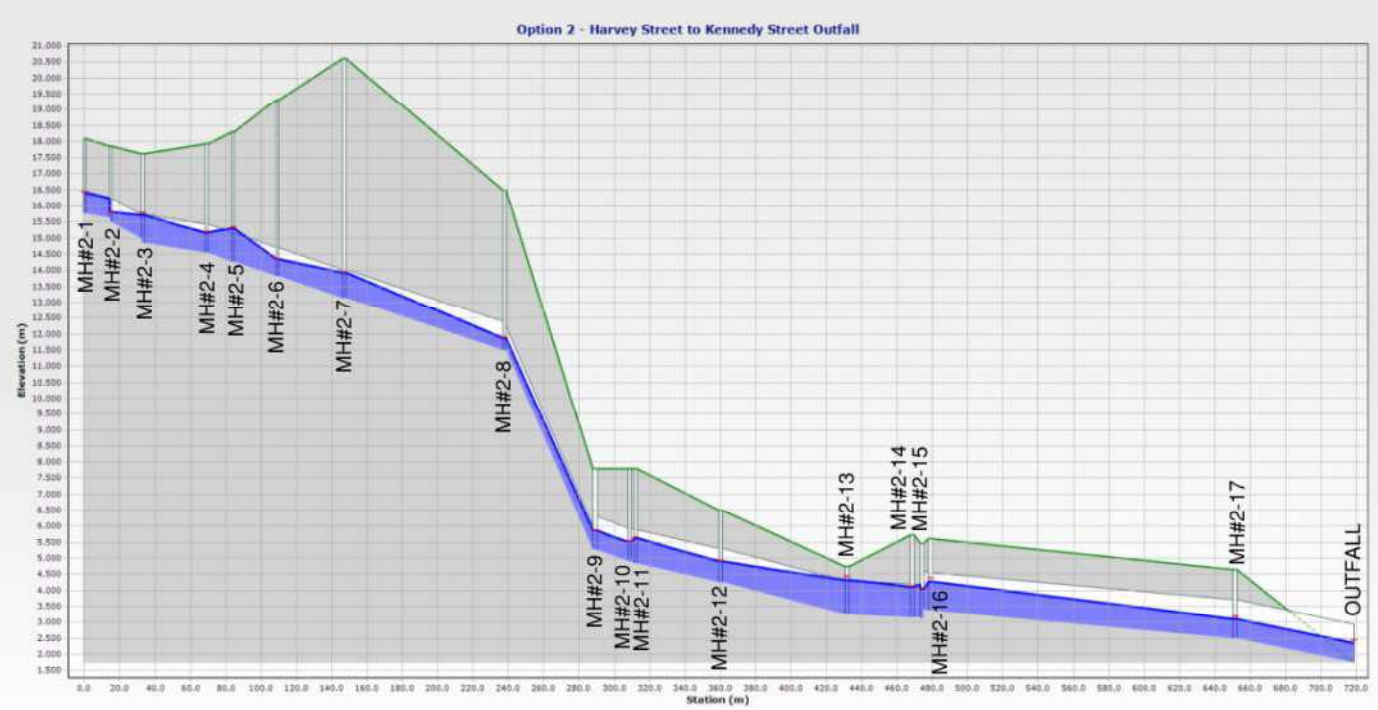

Figure 9: Option 2 – Hydraulic Grade Line of the relocated combined sewer system from Harvey Street to the Kennedy Street Outfall

It is noted that the proposed system shows minimal surcharging. In this instance, the occurrence of surcharging within the piped system where the hydraulic grade line is considerably below basement elevation is considered acceptable due to the depth of proposed sewer in comparison with the ground elevation of the various residences along this section of road. Basement elevations along with other details will need to be confirmed during design phases.

3.2.3 Option 3 – Sewer Realignment along Kennedy Street

The existing combined sewer on PID 00374181 would be abandoned or removed from this property, and it would be rerouted along Main and Kennedy Streets. The sewer would follow Kennedy Street to the south where dry weather flows would be directed to the existing Kennedy Street Lift Station; flows in excess would continue to be diverted to the CSO. The concept for this alignment is shown in **Figure 10**. Due to the depth of the sewer (approx. 4 to 8 m) and the topography along Main Street and to a point just beyond the crest of Kennedy Street (near Victoria Lane), this section would likely be installed using trenchless (directional drill) technology. Contractors specializing in directional drilling were contacted and there were no concerns expressed regarding drilling large diameter pipes in rock. However, information gathered from geotechnical investigations during the preliminary design phase will be necessary to properly characterize the rock and confirm if there are any issues. The feasibility of using open cut methods using trench boxes or shoring would be further evaluated during preliminary design. The remainder of the CSO sewer from the Kennedy Street lift station to the outfall would be renewed. For this option, the existing combined sewer on PID 00374181, as well as the remainder of the combined sewer between Cedar Street and the Kennedy Street lift station (through the Saint John Power Boat Club property) would be removed and disposed by the contractor or abandoned by filling with non-shrink flowable fill. The existing flow from Cedar Street would be redirected to Main Street; this would require a package submersible pump station at the end of Cedar Street to redirect the flow via a forcemain back to Main Street.

Figure 10: Option 3 – Proposed Sewer Realignment along Main Street and Kennedy Street

Due to the narrow width of Kennedy Street, the proximity of buildings to the street, the extent of existing underground infrastructure (watermain, storm, sanitary and sanitary forcemain) and related challenges/constraints, this option was determined to not be feasible, and no further analysis was carried out. Drawing 9-3 however, is provided in **Appendix B** to show the conceptual design.

3.2.4 Option 4 – Sewer Realignment along Main Street to Bridge Street

The existing combined sewer on PID 00374181 would be abandoned or removed from this property, and it would be rerouted along Main Street to Bridge Street. The concept for this alignment is generally shown in **Figure 11**. Due to the depth of the sewer (approx. 4 to 8 m) and the topography along Main Street, a section would likely be installed using trenchless (directional drill) technology. Contractors specializing in directional drilling were contacted and there were no concerns expressed regarding drilling large diameter pipes in rock. However, information gathered from geotechnical investigations during the preliminary design phase will be necessary to properly characterize the rock and confirm if there are any issues. The feasibility of using open cut methods using trench boxes or shoring would be further evaluated during preliminary design. For this option, the existing combined sewer on PID 00374181, as well as the remainder of the combined sewer between Cedar Street and the Kennedy Street lift station would be removed and disposed by the contractor or abandoned by filling with non-shrink flowable fill. The existing flow from Cedar Street would be redirected to Main Street; this would require a package submersible pump station at the end of Cedar Street to redirect the flow via a forcemain back to Main Street.

The existing sanitary sewer inlet to the Bridge Street Lift Station would be maintained. A new combined sewer overflow to direct dry weather flows from the proposed Main Street to the lift station and, bypass excess amounts will be required.

It would also be beneficial to obtain an easement through the Saint John Power Boat Club property to allow for the installation of a future dedicated sanitary main as sewer separation is completed. Based on existing grades on site and the complexity of the underground infrastructure at the Main Street/ Bridge Street intersection, it was

determined that it was a better option to convey a portion of the sanitary flows on Cedar Street and through the Saint John Power Boat Club property towards the Kennedy Street Lift Station. The package submersible pump station at the end of Cedar Street to redirect the flow via a forcemain back to Main Street could be decommissioned once this new gravity sewer is in service. Installation of a dedicated sanitary main was included in the opinion of probable cost, however it should be noted that easement acquisitions are not included in our cost estimates.

It is also important to note that CCTV inspections were not fully completed through the Saint John Power Boat Club parking lot, therefore it is unknow if any existing sewer laterals will require reconnections; further investigations will be required during preliminary design phase.

Although, most of the existing flow would be redirected to the Bridge Street Lift Station, flow from Kennedy Street would still be directed to the Kennedy Street Lift Station. Due to its pipe material and year installed, it is expected the existing combined sewer overflow from the Kennedy Street Lift Station to the Saint John River would also need to be renewed as part of this sewer relocation option. This will be confirmed with the findings from the CCTV sewer inspections during the preliminary design phase.

Figure 11: Option 4 – Proposed Sewer Realignment along Main Street

Table 3 and **Figure 12**, below, show the characteristics of the proposed combined sewer system (from Harvey Street to the Bridge Street Lift Station), and the hydraulic grade line (HGL) with the 1 in 100 year + 20% rainfall applied. The locations of the referred manholes (Option 4) are as follows and shown in drawing 9-4 in **Appendix B**:

Main Line:

- MH#4-1 – on Main Street, north of Harvey Street;
- MH#4-2 – on Main Street, 15m west of MH#4-1;
- MH#4-3 – on Main Street, 18m west of MH#4-2;
- MH#4-4 – on Main Street, 36m west of MH#4-3;
- MH#4-5 – on Main Street, 15m west of MH#4-4;

- MH#4-6 – on Main Street, 25m southwest of MH#4-5;
- MH#4-7 – on Main Street, 67m south of MH#4-6;
- MH#4-8 – on Main Street, 105m west of MH#4-7;
- MH#4-9 – on Main Street, 44m west of MH#4-8;
- MH#4-10 – on Bridge Street, 80m west of MH#4-9;
- MH#4-11 – on Bridge Street, 6m south of MH#4-10;
- MH#4-12 – on Bridge Street, 6m south of MH#4-11;
- MH#4-13 – on private property, 18m west of MH#4-12;
- MH#4-14 – on private property, 7m west of MH#4-13;
- Outfall – on private property, 33m west of MH#4-14;

Table 3: Option 4 - Main Line Characteristics of the proposed relocated combined sewer system from Harvey Street to the Bridge Street Outfall

Label	Start Node	Stop Node	Diameter (mm)	Length (Scaled) (m)	Slope (%)	Section Type	Material	Velocity (max) (m/s)	Flow / Capacity (Proposed) (%)
ST-1	MH#4-1	MH#4-2	600	14.8	2.0	Circle	Concrete	2.79	128.2
ST-2	MH#4-2	MH#4-3	750	18.2	2.6	Circle	Concrete	2.87	43.1
ST-3	MH#4-3	MH#4-4	900	36	0.8	Circle	Concrete	2.98	99.9
ST-4	MH#4-4	MH#4-5	1,050	15.2	0.7	Circle	Concrete	2.85	92.3
ST-5	MH#4-5	MH#4-6	1,050	24.9	0.6	Circle	Concrete	2.75	96.5
ST-6	MH#4-6	MH#4-7	1,050	37.8	0.8	Circle	HDPE	3.32	65.8
ST-7	MH#4-7	MH#4-8	1,050	105.1	1.3	Circle	HDPE	4.05	55.3
ST-8	MH#4-8	MH#4-9	1,050	44.1	3.3	Circle	Concrete	4.72	44.5
ST-9	MH#4-9	MH#4-10	1,050	80.1	7.7	Circle	Concrete	4.30	30.6
ST-10	MH#4-10	MH#4-11	1,050	6.1	4.1	Circle	Concrete	3.78	47.1
ST-11	MH#4-11	MH#4-12 (CSO)	1,050	6.0	7.6	Circle	Concrete	4.38	38.6
ST-12	MH#4-12 (CSO)	MH#4-13	1,050	17.9	8.8	Circle	Concrete	5.93	36.9
ST-13	MH#4-13	MH#4-14	1,200	7.4	4.6	Circle	Concrete	5.37	35.9
ST-14	MH#4-14	OUTFALL	1,200	33.4	1.5	Circle	Concrete	4.52	63.8

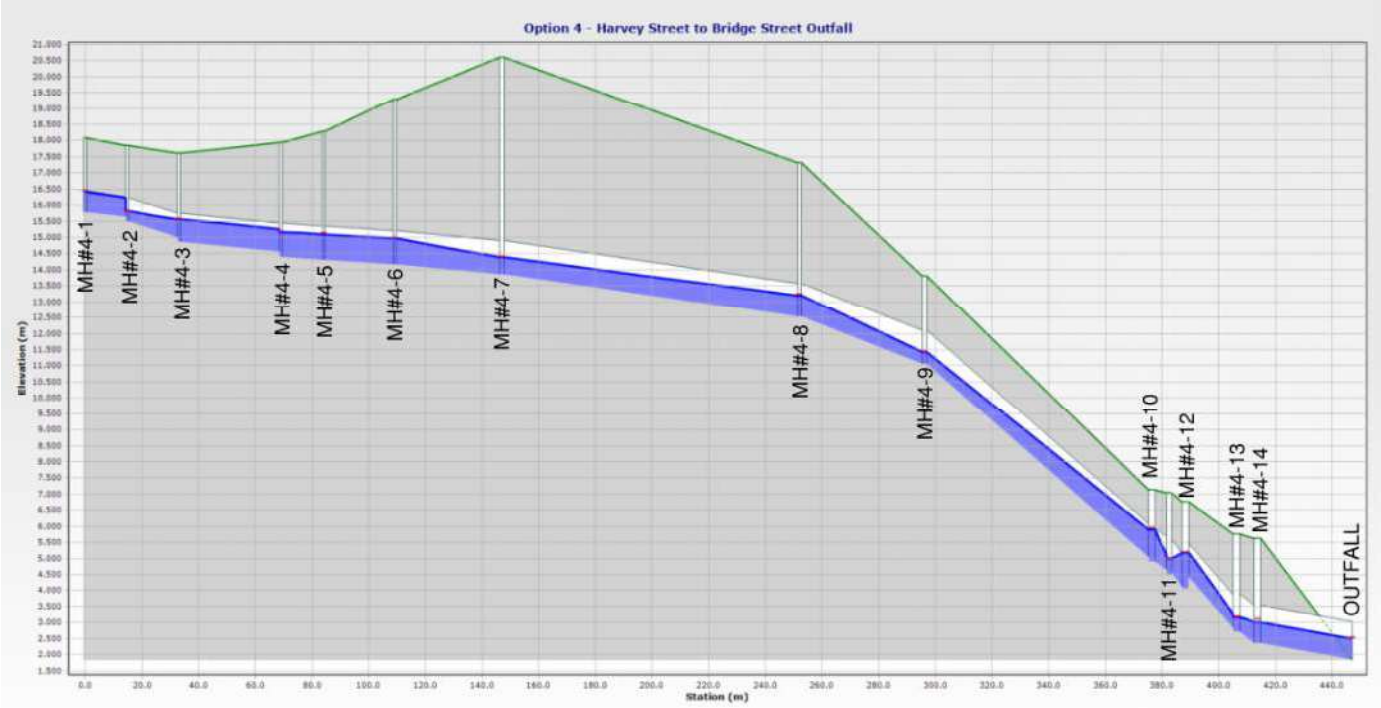

Figure 12: Option 4 – Hydraulic Grade Line of the relocated combined sewer system from Harvey Street to the Bridge Street Outfall

It is noted that the proposed system shows minimal surcharging. In this instance, the occurrence of surcharging within the piped system where the hydraulic grade line is considerably below basement elevation is considered acceptable due to the depth of proposed sewer in comparison with the ground elevation of the various residences along this section of road. Basement elevations along with other details will need to be confirmed during design phases.

By reconfiguring the sewer system in this manner, a significant portion of the flow will be redirected to the Bridge Street Lift Station and, the flow to the Kennedy Street Lift Station will be significantly reduced. As a result, modifications would be required at both lift stations. A more detailed discussion regarding the two lift stations and proposed upgrades is provided in **Section 4**.

At the Kennedy Street Lift Station, the capacity of the existing pumps is likely adequate. Even though the wastewater flow is less, a minimum pumping rate would still be required to maintain a minimum velocity in the existing 150 mm diameter forcemain; the pump cycle would also be less frequent. Recommended modifications would include upgrading/updating and reconfiguring programable logic controller (PLC) and replacing the variable frequency drives (VFDs).

The Bridge Street Lift Station is the smaller of the two and, with a significant increase in flow, will require extensive upgrading. The work at this lift station to accommodate the increase in flow will generally include replacement of the existing pumps and related components, discharge piping and valves within the lift station and, replacement of the existing 100 mm forcemain from the lift station to its connection point on Bridge Street with a 150 mm diameter forcemain. In addition, modifications would include upgrading/updating and reconfiguring the programable logic controller (PLC) and replacing the variable frequency drives (VFDs).

4 Lift Stations

4.1 Background

The study area for this project includes two existing sanitary lift stations: (1) Bridge Street Sanitary Lift Station #23 and (2) Kennedy Street Sanitary Lift Station #24. Both lift stations collect wastewater from areas of the City's North End and convey it to the Spar Cove Road Lift Station from where it is pumped and directed to the Milledgeville Wastewater Treatment Plant.

The contributary areas for both the lift stations are generally serviced by combined sewer systems; in some areas some sewer separation has been constructed, however, combined sewer flows are still directed to the lift stations. As a result, the original basis for design of the lift stations was to pump the dry weather flow (which would primarily be sanitary sewer flow); flow more than the dry weather flow bypasses the lift stations and is directed to discharge via combined sewer outfalls.

As part of the scope of work for the study, a site visit was carried out on November 18, 2022, to meet with the operator and better understand how the system works. General notes and observations from the site visit are summarized below.

4.1.1 Bridge Street Lift Station #23

- The Bridge Street and Kennedy Street Lift Stations are similar in concept except the discharge piping at Bridge Street is smaller; 100 mm diameter in size.
- The lift station has a duplex submersible pump installation; presently only working on 1 pump as the other is out to be serviced (at the time of the site visit).
- The original pumps were ABB – they have since been changed out to 4 HP Flygt pumps.
- The discharge forcemain joins at a common point with the discharge forcemain from the Kennedy Street Lift Station on Bridge Street and they both pump from that point via a common forcemain, discharging to a manhole on Bridge Street just upstream from the Spar Cove Road Lift Station.
- The pumps are controlled by a Miltronics (ultrasonic) unit with float switches as backup.
- There is a flow meter on the pump discharge.
- The pumps are equipped with ABB variable frequency drives (VFDs) which are only used as a soft start/stop for the pumps.
- Some gravel and debris, accumulates in the wet well, however, much less than at the Kennedy Street Lift Station.
- When the lift station is pumping by itself (Kennedy Street Lift Station not pumping), the output is approximately 11 L/s. When the Kennedy Street Station starts, the pumping rate at the Bridge Street Station drops back to approximately 3 L/s. This generally indicates a hydraulic issue when both lift stations are pumping at the same time. In comparison, the design flow for the lift station is 5.2 L/s; both lift stations running simultaneously appears to prevent the Bridge Street Lift Station from pumping the design flow.
- A 200 mm diameter main, sized to handle the dry weather flow, feeds into the pumping station wet well. Any flow greater than the capacity of this main and the pump capacity is bypassed to the CSO.
- The check valve and the gate valve on each pump discharge are in the vertical position. Where the flow is from a combined sewer there is a lot of sand and gravel that enters the wet well – when only one pump is running any sand and gravel gets deposited in the vertical section from the second pump causing the pipe to plug. As a result, both pumps are programmed to operate at the same time rather

than have them alternate duty. At some other City lift stations, these valves are installed in the horizontal position which seems to overcome the plugging problem.

- During the flood a few years ago, the water level came up close to the building, but it did not flood.

4.1.2 Kennedy Street Lift Station #24

- The Lift station has a duplex submersible pump installation; presently only running on 1 pump as the other is out to be serviced (at the time of the site visit).
- The original pumps were ABB – they have since been changed out to 10 HP Flygt Pumps.
- The discharge piping is 150 mm in size.
- The discharge forcemain joins at a common point with the discharge forcemain from the Bridge Street Lift Station on Bridge Street and they both pump from that point via a common forcemain, discharging to a manhole on Bridge Street just upstream from the Spar Cove Road Lift Station.
- There is a lot of infiltration in the sewer that crosses the Saint John Power Boat property and in the line that crosses (PID 00374181). It is suspected this is where the gravel/rocks and old pieces of terra cotta pipe found in the wet well are likely originating. The line is so full of various obstructions that a video inspection camera cannot be passed through to establish its condition. There has been concern that at some point the line may collapse.
- The pumps are controlled by a Miltronics (ultrasonic) unit with float switches as backup.
- There is a flow meter on the pump discharge.
- There was a flush pump originally installed in the wet well, but it has since been decommissioned and removed.
- The pumps are equipped with ABB variable frequency drives VFDs; they are used as a soft start/stop for the pumps.
- When the lift station is pumping, the output is approximately 18 L/s, which equates to the design flow of 18.5 L/s.
- A 200 mm diameter line, sized to handle dry weather flow, feeds into the pumping station wet well. Any flow greater than the dry weather flow is diverted to the overflow main at the CSO located in the street in front of the pumping station.
- The check valve and the gate valve on each pump discharge are in the vertical position. Where the flow is from a combined sewer there is a lot of sand and gravel that enters the wet well – when only one pump is running any sand and gravel gets deposited in the vertical section from the second pump causing the pipe to plug. As a result, both pumps are programmed to operate at the same time rather than alternating duty. At some other lift stations these valves are installed in the horizontal position which seems to overcome the plugging problem.
- During the flood a few years ago, there was about a foot of water in the building which caused a lot of damage.

4.1.3 Lift Station Modifications

The preceding sections present options for relocation of the existing combined sewer across PID 00374181 and the Saint John Power Boat Club properties. With options 1, 2, and 3 no modifications to the Bridge Street and Kennedy Street Lift Stations are required to accommodate changes in wastewater flow as the flow pattern remains the same as existing. However, given the age of the existing lift station equipment, changes in technology and, the hydraulic (pump capacity) issue related to when both lift stations operate at the same time, it is recommended that the pump control panel in each lift station be reviewed and, the PLC and VFD's be upgraded (regardless of which option is selected). These upgrades will not only provide updated equipment but, will allow the City to program the pumps to maintain a constant output flow, regardless, whether one or both lift stations are operating.

With Option 4, redirection of most flow to the Bridge Street Lift Station, significant changes would be required. Generally, the concept for Option 4 includes:

- Constructing a new sewer line from the low point on Main Street (near civic# 151) to the Bridge Street Lift Station and installation of a package lift station at the end of Cedar Street to redirect flows to Main Street. This will collect wastewater from the upstream catchment area and direct it to the Bridge Street Lift Station thus increasing the flows at this station significantly.
- As a result of the above noted change, the flow will be significantly reduced at the Kennedy Street Lift Station; flow at this station will primarily be reduced to Kennedy Street only.

A summary of the modifications required at each lift station a part of Option 4 is provided below. It should be noted that these modifications do not reflect any other upgrades that the City may want to implement to address any operational issues.

Bridge Street Lift Station #23

- Replace the existing pumps with higher capacity pumps (24L/s).
- Replace the existing pump discharge piping (including the forcemain to Bridge Street) and valves with 150 mm size.
- Replace the existing flow meter with a 150 mm flow meter.
- Replace the existing VFD's.
- Replace the existing pump control panel with a PLC.
- Modify the pump controls such that the VFD's vary the pump speed to maintain a constant discharge flow of 24 L/s. This will adjust the pumps speeds when both Kennedy Street and Bridge Street pumps are operating to maintain a constant output flow when hydraulic conditions on the discharge change.

Kennedy Street Lift Station #24

- Modify the pump controls such that the pump speed varies to maintain a constant discharge flow of 14 L/s (this flow rate is required to maintain a minimum velocity of 0.6 m/s in the existing 150 mm diameter forcemain).

5 Water System

Renewal or repairs of the existing watermain along the proposed routes was not included in the scope of work for this project, and as such was not included in the design review. However, we have allowed for some watermain relocations in the probable cost estimates in areas where potential conflicts with the new sewer may be anticipated.

New water service laterals were also included in our probable cost estimates for properties that could be affected by the installation of the new combined sewer on Main Street and Cedar Street.

6 Opinion of Probable Cost

An opinion of probable construction cost, Class D Estimate, was developed for Options 1,2 and 4; as previously discussed Option 3 was not considered feasible, and a conceptual level analysis was not completed. The estimates are based on the concepts as developed and shown on the drawings in Appendix B, experience with similar projects in 2022 where applicable and, include an allowance of 18% for Engineering. Due to the conceptual nature of the options and the number of unknowns (as many details remain to be worked out during the preliminary and detailed design phases) a 20% allowance for contingencies is included; this allowance reflects the fact some information is limited at this stage due to limited topographic survey information and geotechnical investigations were not part of the scope of the study. A summary of the estimate for each option is provided in Table 4 below with details provided in **Appendix C**.

Rock excavation can represent a significant cost for a project of this nature and, based on the observed rock outcrops in the area and not having any geotechnical investigations, a significant quantity was included in each estimate. For open trench excavation it was assumed that rock was either at or very near surface elevation.

The estimates would serve for planning and budgetary purposes however, it should be noted that they are expressed in 2022 dollars. Prior to using the estimates for budget purposes, they will need to be reviewed and updated to the current year to reflect current construction prices and other information that may come available in the interim.

Table 4: Summary of Estimates of Probable Cost

Option	Opinion of Probable Cost (including HST at 15%)
1 - Sewer Realignment along the West Side of Parcel Identification Number (PID) 00374181	$4,500,000
2 – Sewer Realignment along Main Street and Cedar Street	$6,000,000
3 – Sewer Realignment along Main Street and Kennedy Street	N/A
4 – Sewer Realignment along Main Street to Bridge Street	$9,450,000

7 Pros and Cons of Options

The three options assessed as part of this study each have pros and cons associated with them; Table 5 presents a brief commentary and discussion with respect to the main pros and cons identified with each.

Table 5: Summary of Option Pros and Cons

Option and Description	Pros	Cons
Option 1 – Sewer Realignment along the west side of PID 00374181	• The sewer would be relocated off the subject property. • The sewer alignment from Cedar Street to the CSO outfall generally follows the existing sewer except on the subject property where it would be relocated. • The depth of the sewer would be shallower, and installation could be done by open trench excavation. • By keeping off the street right rights-of-way as much as possible, there would be less conflict with existing infrastructure. • This option would have the least disruption to the resident and motoring public as almost all the work is off the street rights -of-way. • This is the least expensive option with an opinion of probable cost of $4,500,000	• Easements would have to be acquired from several property owners along the west boundary. If alternative 1a is selected there would only be one property owner from which an easement would be required on PID 00374181. • It is also our understanding easements would have to be acquired for the properties between Cedar Street and the Kennedy Street outfall. • Based on aerial imagery, there is an existing garage at civic# 30 Cedar Street that would require relocation to accommodate the installation of a new sewer on Option 1. This garage relocation would not be required with Option 1a.
Option 2 – Sewer Realignment along Main Street and Cedar Street	• The sewer alignment from Cedar Street to the CSO outfall follows the same alignment as the existing sewer. • Easements from the owners of several properties abutting PID 00374181 (Option1) or from the owner of PID 00374181 (Option 1a) would not be required.	• Due to the depth of the sewer and narrow right-of-way on Cedar Street, installation using trenchless technology would be recommended along Main Street and a portion of Cedar Street. • This option would be very disruptive to the affected section of Main Street and Cedar Street for an extended period due to access pits for drill equipment and excavations for open trench construction. It would be recommended to complete some risk assessments related to the drilling of large diameter conduits, and its effects on existing infrastructure prior to selecting this option. • It is our understanding easements would have to be acquired for the properties between Cedar Street and the Kennedy Street outfall.

		• This is the second most expensive option with an opinion of probable cost of $6,000,000
Option 3 – Sewer Realignment along Main Street and Kennedy Street (as noted previously in the report, this is not a feasible option)	N/A	N/A
Option 4 – Sewer Realignment along Main Street to Bridge Street	• The sewer from Kennedy Street to the CSO outfall follows the same alignment as the existing sewer. • Easements from the owners of several properties abutting PID 00374181 (Option1) or from the owner of PID 00374181 (Option 1a) would not be required.	• Due to the depth of the sewer, amount of infrastructure and proximity of buildings, installation using trenchless technology would be recommended along a portion of Main Street. • Significant upgrading of the Bridge Street Lift Station would be required. • A new lift station (package type) and forcemain would be required to collect wastewater at the bottom of Cedar Street and redirect it to Main Street. The alternative to a lift station would be to construct a gravity sewer across the Saint John Power Boat Club property and maintain the flow to the Kennedy Street Lift Station. • This option would be very disruptive to the affected section of Main Street for an extended period due to access pits for drill equipment and excavations for open trench construction. It would be recommended to complete some risk assessments related to the drilling of large diameter conduits, and its effects on existing infrastructure prior to selecting this option. • This is the most expensive option with an opinion of probable cost of $9,450,000

8 Recommendations

Based on our review and analysis of the foregoing options presented, the following provides a summary of recommendations for a path forward for the City on this project.

1. The first step would be to investigate the feasibility of acquiring the necessary easements for the construction of either Option 1 or 1a which is estimated to be the least expensive and, least disruptive. From cost and constructability, Option 1a was determined to be the preferred option.
2. As part of the decision process, each option should be further evaluated in terms of risk assessment. For example, because much of the excavation for Options 2 and 4 will be in rock, a geotechnical assessment should be carried out to further assess the risks and constraints associated with various methods of construction.
3. Once a preferred option is selected the design process should be advanced to the Preliminary Design phase to develop the concepts in more detail including plan and profiles, easement requirements, geotechnical information, modifications to existing infrastructure, methods of construction, cost, etc.

Appendix A – Summary of Findings Based on the CCTV Sewer Inspections

Summary of Recommended Sanitary Sewer Repairs based on CCTV Sewer Analysis

Location, St. & Pipe#	Up Stream MH#	Down Stream MH#	Size [mm]	Type	Defects	Repairs
Main Street Pipe# WWN-SAN-07483	SAN-MH-004932	SAN-MH-096871	200	PVC	1)Fracture longitudinal 3 o'clock at 2.99m from SAN-MH-004932. 2)Hole 2-3 o'clock at 32.33m.	1,2) 2m repair recommended.
Kennedy Street Pipe# WWN-SAN-07505	SAN-MH-004963	SAN-MH-004964	300	Terracotta	1) Fracture longitudinal 9 o'clock at 25.5m from SAN-MH-004963.	1) 2m repair recommended.
Kennedy Street Pipe# WWN-SAN-07506	SAN-MH-004964	COM-MH-058610	300	Terracotta	1)Hole soil visible from 9-10 o'clock, at 6.14m from SAN-MH-004964. 2)Broken 12-1 o'clock at 10.62m. 3)Fracture Longitudinal, 9 o'clock at 36.8m.	1,2,3) 2m repair recommended.
Kennedy Street Pipe# WWN-SAN-176058	SAN-MH-340485	SAN-MH-004963	150	Terracotta	1) Hole soil visible from 7-8 o'clock, at 6.49m from SAN-MH-340485.	1) 2m repair recommended.

Summary of Recommended Combined Sewer Repairs based on CCTV Sewer Analysis

Location, St. & Pipe#	Up Stream MH#	Down Stream MH#	Size [mm]	Type	Defects	Repairs
Main Street Pipe# WWN-COM-07474	COM-MH-004929	COM-MH-058618	225	Terracotta	1) Fracture longitudinal, 12 to 6 o'clock at 24.53m from COM-MH-004929.	1) 2m repair recommended.
Main Street Pipe# WWN-COM-07478	COM-MH-004931	COM-MH-004929	225	Terracotta	1)Fracture multiple, 12 to 12 o'clock at 7.18m from COM-MH-004929. 2) Fracture multiple, 12 to 12 o'clock at 27.43m from COM-MH-004931.	1,2) 2m repair recommended.

Problem areas have been identified as repairs and are in the cost estimates for the various conceptual design options.

Summary of Recommended Storm Sewer Cleaning, Flushing & Re-Videoing based on CCTV Sewer Analysis

Location, St. & Pipe#	Up Stream MH#	Down Stream MH#	Size [mm]	Type	Defects	Repairs
Albert Street Pipe# WWN-STM-07453	STM-MH-005014	STM-MH-005010	525	Concrete	1)Deposits settled fine, 20% cross sectional area, 5-7 o'clock, 1.49m to 6.45m from STM-MH-005010.	1) Flushing recommended.
Kennedy Street Pipe# WWN-COM-01042	STM-MH-058605	COM-MH-004970	750	Brick	1)Obstruction, rocks, 10% of cross sectional area, 5-7 o'clock at 18.24m from STM-MH-058605. 2)Survey abandoned due to rocks at 18.59m.	1)Flushing recommended. 2)Re-Video.
Kennedy Street Pipe# WWN-STM-07501	STM-MH-004965	STM-MH-004966	300	PVC	1) Deposit settled fines 10% of cross sectional area, 5-7 o'clock at 31.81m from STM-MH-004965.	1) Flushing recommended.
Kennedy Street Pipe# WWN-STM-65696	STM-CB2-051705	STM-MH-004966	250	PVC	1)Deposits settled gravel, 10% of cross sectional area, 5-7 o'clock at 1.62m from STM-CB2-051705.	1) Flushing recommended.
Main Street Pipe# WWN-STM-07429	STM-MH-005010	STM-MH-005013	525	Concrete	1)Deposits settled gravel, 20% cross sectional area, 5-7 o'clock at 1.49m from STM-MH-005013. 2)Deposits settled gravel, 20% cross sectional area 5-7 o'clock at 7.18m.	1,2) Flushing recommended.
Main Street Pipe# WWN-STM-07459	STM-MH-050495	STM-MH-005015	600	Concrete	1) Deposits settled fines, 10% cross sectional area, 5-7 o'clock, 1.49m to 11.71m from STM-MH-050495.	1) Flushing recommended.
Main Street Pipe# WWN-STM-07460	STM-MH-005013	STM-MH-050495	600	Concrete	1)Deposits settled fines, 10% cross sectional area, 5-7 o'clock 11.83m to 18.95m from STM-MH-050495.	1) Flushing recommended.
Main Street Pipe# WWN-STM-73005	STM-MH-058615	COM-MH-058612	300	PVC		Missing Video Inspection

Summary of Recommended Sanitary Sewer Cleaning, Flushing & Re-Videoing based on CCTV Sewer Analysis

Location, St. & Pipe#	Up Stream MH#	Down Stream MH#	Size [mm]	Type	Defects	Repairs
Kennedy Street Pipe# WWN-SAN-07506	SAN-MH-004964	SAN-MH-058610	300	Terracotta	1) Obstruction construction debris, 10% cross sec 5-7 o'clock at 38.21m from SAN-MH-004964.	1) Flushing recommended.
Kennedy Street Pipe# WWN-SAN-176058	SAN-MH-340485	SAN-MH-004963	150	Terracotta	1) Deposits attached ragging, 10% of cross section from 5-7 o'clock at 5.30m from SAN-MH-004963.	1) Flushing recommended.
Main Street Pipe# WWN-SAN-07461	SAN-MH-004953	COM-MH-005012	300	Terracotta	1) Obstruction other, 30% cross section 4-8 o'clock, shim, brick and other debris at 10.12m from COM-MH-005012.	1) Flushing recommended.
Main Street Pipe# WWN-SAN-07475	SAN-MH-004928	SAN-MH-004926	200	PVC		Missing Video Inspection
Main Street Pipe# WWN-SAN-07477	SAN-MH-004930	SAN-MH-004928	200	PVC		Missing Video Inspection
Main Street Pipe# WWN-SAN-07492	SAN-MH-004951	SAN-MH-004952	225	Terracotta	1)Deposits settled gravel, 5% cross section 5-7 o'clock at 17.4m from SAN-MH-004952. 2)Obstruction rocks, 5% cross section 5-7 o'clock at 22.26m, survey abandoned here.	1,2) Flushing recommended.
Main Street Pipe# WWN-SAN-07493	SAN-MH-004952	SAN-MH-004953	225	Terracotta		Missing Video Inspection

Summary of Recommended Combined Sewer Cleaning, Flushing & Re-Videoing based on CCTV Sewer Analysis

Location, St. & Pipe#	Up Stream MH#	Down Stream MH#	Size [mm]	Type	Defects	Repairs
Albert Street Pipe# WWN-COM-07434	COM-MH-005017	COM-MH-005012	375	Concrete	1) Deposits settled other, 25% of cross sectional area, 4-8 o'clock at 9.42m from COM-MH-005012.	1) Flushing recommended.
Bridge Street Pipe# WWN-COM-72976	COM-MH-058619	COM-MH-058616	200	PVC	1) Deposits settled other, 25% cross sectional area, 4-8 o'clock from MH-058616.	1) Flushing recommended.
Main Street Pipe# WWN-COM-07433	COM-MH-005012	COM-MH-005016	525	Concrete	1)Obstruction other, 5% cross sectional area, 5-7 o'clock at 17.80m from COM-MH-005016. 2)Deposits settled other unknown, 5% cross sectional area, 5-7 o'clock, 25.96m to 36.03m. 3)Obstruction other, 5% cross sectional area, 4-6 o'clock, at 35.08m.	1,2,3) Flushing recommended.
Main Street Pipe# WWN-COM-07464	COM-MH-005016	COM-MH-005011	600	Concrete	1) Obstruction other, 20% cross sectional area, 5-7 o'clock, at 3.36m from COM-MH-005016	1) Flushing recommended.

Main Street Pipe# WWN-COM-07478	COM-MH-004931	COM-MH-004929	225	Terracotta	1) Obstruction wedged in joint, 25% cross section 5-7 o'clock, at 31.16m from COM-MH-004931.	1) Flushing recommended.
Main Street Pipe# WWN-COM-64466	COM-MH-050890	COM-MH-005020	600	Concrete	1) Obstruction underwater, 10% of cross-sectional area 5-7 o'clock, 5.90 to 14.19m from COM-MH-050890	1) Flushing recommended.
Main Street Pipe# WWN-COM-73007	COM-MH-058616	COM-MH-058613	200	PVC	1) Deposits settled other, 10% cross section 5-7 o'clock at 5.99m to 7.70m from COM-MH-058616.	1) Flushing recommended.
Main Street Pipe# WWN-COM-73008	COM-MH-058613	COM-MH-058612	200	PVC		Missing Video Inspection
Private Property Pipe# WWN-COM-72996	COM-MH-058611	COM-MH-058610	750	Concrete	1)Obstruction rocks, 45% of cross sectional area from 5-7 o'clock at 1.49m from COM-MH-058610.	1) Flushing and revideo recommended.
Private Property Pipe# WWN-COM-77018	COM-MH-059389	COM-MH-058611	750	Brick	1)Obstacles rocks, 10% of cross sectional area at 5-7 o'clock at 1.49m from STM-MH-059389. 2)Obstacles pipe material, 10% from 4-6 o'clock at 2.68m. 3)Unkown blockage, survey abandoned at 11.32m.	1,2,3) Flushing and revideo recommended.
Private Property Pipe# WWN-COM-77019	COM-MH-004956	COM-MH-057780	750	Concrete	1)Obstacles, rocks 10% cross sectional area from 5-7 o'clock at 11.41m from COM-MH-055780. 2)Obstacles, rocks survey abandoned at 15.65m.	1,2) Flushing and revideo recommended.
Private Property Pipe# WWN-COM-227539	COM-MH-057781	COM-MH-183674	750	Brick		Missing Video Inspection

Appendix B –
Conceptual Design Drawings

EXP Services Inc.
t. +1.506.857.8888 | f. +1.506.857.8315
555 Main Street, Suite 100
Moncton, NB E1G 2K5
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www.exp.com

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No.	Issue	Date

NOTES:

1. OPTION 1 WITH SEWER RELOCATED ON PROPERTIES TO THE WEST OF PID 0034181 SHOWN AS _____.
2. OPTION 1A WITH SEWER RELOCATED ALONG WEST BOUNDARY OF PID 0034181 SHOWN AS _ _ _ _ _.

No.	Revision	Date

FOR INFORMATION ONLY

Drawn By:	JRDA
Dwg Standards Ckd By:	
Designed By:	PA
Design Checked By:	
Scale:	1:2000

Project Title

MAIN STREET NORTH SEWER RELOCATION
CITY OF SAINT JOHN, NB

Dwg. Title

OPTION 1 - WESTERN BOUNDARY OF PID 00374181 ALIGNMENT

Project No.

MON-22023722-A0

Dwg. No.	Rev. No.
9-1	----

EXP Services Inc.
t: +1.506.857.8888 | f: +1.506.857.8315
555 Main Street, Suite 100
Moncton, NB E1G 2K5
CANADA
www.exp.com

No.	Issue	Date

No.	Revision	Date

FOR INFORMATION ONLY

Drawn By:	JRDA
Dwg Standards Ckd By:	
Designed By:	PA
Design Checked By:	
Scale:	1:2000

Project Title

MAIN STREET NORTH SEWER RELOCATION CITY OF SAINT JOHN, NB

Dwg. Title

OPTION 2 - MAIN STREET / CEDAR STREET ALIGNMENT

Project No.

MON-22023722-A0

Dwg. No.	Rev. No.
9-2	----

EXP Services Inc.
t. +1.506.857.8888 | f. +1.506.857.8315
555 Main Street, Suite 100
Moncton, NB E1G 2K5
CANADA
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No.	Revision	Date

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Dwg Standards Ckd By:	
Designed By:	PA
Design Checked By:	
Scale:	1:2000

Project Title

MAIN STREET NORTH SEWER RELOCATION
CITY OF SAINT JOHN, NB

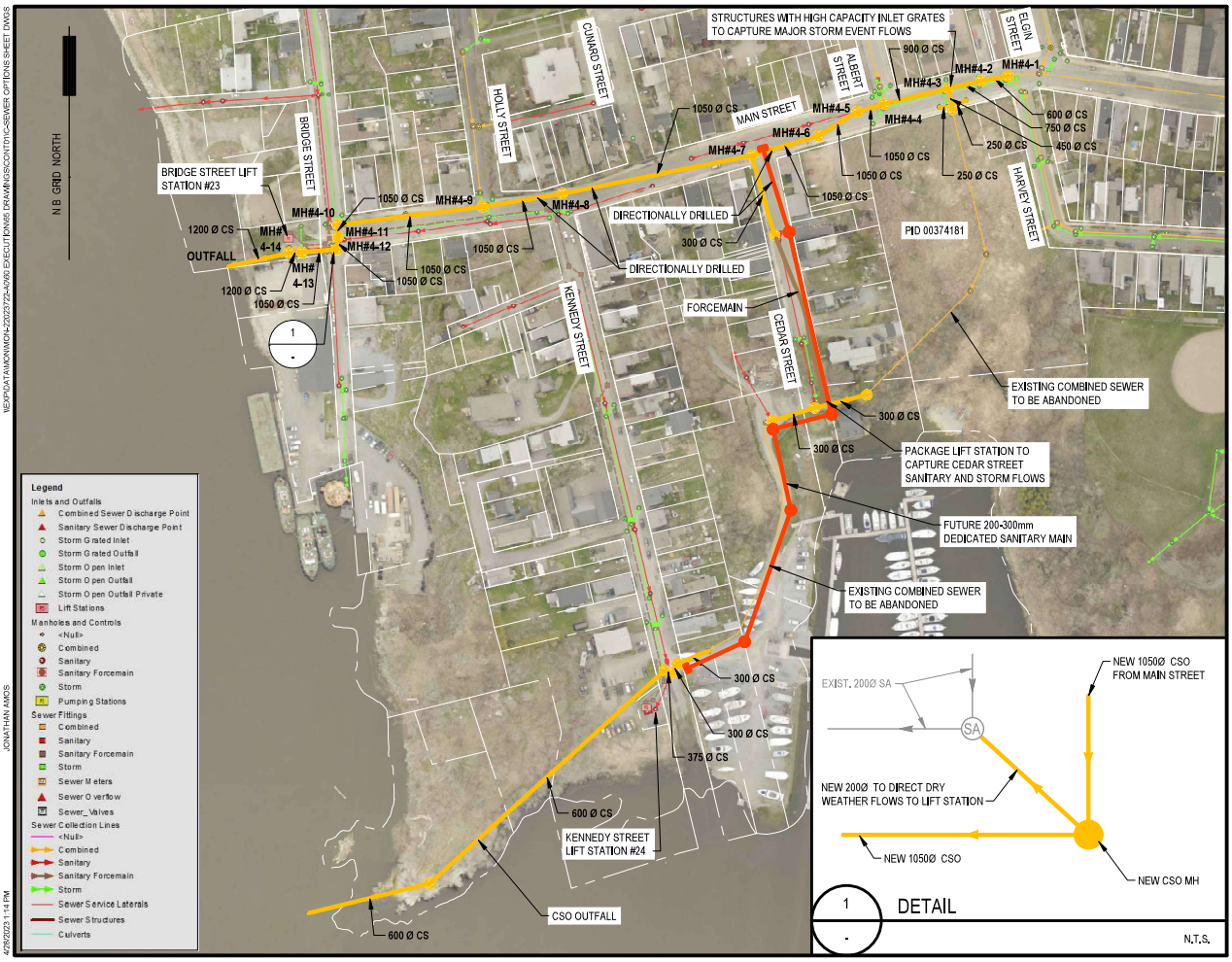
Dwg. Title

OPTION 3 - MAIN STREET / KENNEDY STREET ALIGNMENT

Project No.

MON-22023722-A0

Dwg. No.	Rev. No.
9-3	**----**



EXP Services Inc.
t. +1.506.857.8888 | f. +1.506.857.8315
555 Main Street, Suite 100
Moncton, NB E1G 2K5
CANADA
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No.	Issue	Date

No.	Revision	Date

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Designed By:	PA
Design Checked By:	
Scale:	1:2000

Project Title

MAIN STREET NORTH SEWER RELOCATION CITY OF SAINT JOHN, NB

Dwg. Title

OPTION 4 - MAIN STREET ALIGNMENT

Project No.

MON-22023722-A0

Dwg. No.

9-4

Rev. No.

Appendix C –
Opinion of Probable Construction Costs

Main Street North Sewer Relocation **MON-22023722-A0**
Saint John, NB **20-Apr-23**

Conceptual Design for Option 1

Item No.	Description	Estimated Quantity	Unit of Measurement	Unit Price	Estimated Total Price
Roadway					
	Clearing & Grubbing	4700	square metre	$6.00	$28,200.00
	Rock Excavation	7600	cubic metre	$125.00	$950,000.00
	Common Borrow A	1000	cubic metre	$35.00	$35,000.00
	Imported Pit Run Gravel Subbase (450mm)	1100	cubic metre	$40.00	$44,000.00
	Imported Crushed Gravel Base Material (150mm)	400	cubic metre	$45.00	$18,000.00
	Asphaltic Concrete Base Course for Trench Restoration - 75mm	110	tonne	$250.00	$27,500.00
	Asphaltic Concrete Surface Course for Trench Restoration - 40mm	60	tonne	$270.00	$16,200.00
	Concrete curb and gutter	40	lineal metre	$125.00	$5,000.00
	Concrete Sidewalk	50	square metre	$150.00	$7,500.00
	Topsoil & Hydroseed	6000	square metre	$15.00	$90,000.00
	R25 Rip Rap c/w geotextile	100	tonne	$50.00	$5,000.00
	Sub-Total				**$1,226,400.00**
Storm System					
	450mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	15	lineal metre	$450.00	$6,750.00
	300mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	12	lineal metre	$350.00	$4,200.00
	1050mm Catch Basin c/w Double S-401 Frame and Grate Including All incidentals; Removal and Disposal of Existing if Required	3	each	$6,000.00	$18,000.00
	Sub-Total				**$28,950.00**
Sanitary/Combined Sewer Systems and Forcemains					
	200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$300.00	$3,000.00
	250mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$350.00	$3,500.00
	300mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	410	lineal metre	$375.00	$153,750.00
	375mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	6	lineal metre	$450.00	$2,700.00
	450mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	5	lineal metre	$550.00	$2,750.00
	600mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	25	lineal metre	$690.00	$17,250.00
	750mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	25	lineal metre	$725.00	$18,125.00
	900mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	255	lineal metre	$850.00	$216,750.00

	1050mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	200	lineal metre	$950.00	$190,000.00
	1200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	250	lineal metre	$1,100.00	$275,000.00
	200mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	15	lineal metre	$350.00	$5,250.00
	100-150mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	5	lineal metre	$320.00	$1,600.00
	150mm Sanitary/Combined Sewer Main Spot Repair (3m)	1	each	$4,500.00	$4,500.00
	200mm Sanitary/Combined Sewer Main Spot Repair (3m)	2	each	$5,000.00	$10,000.00
	225mm Sanitary/Combined Sewer Main Spot Repair (3m)	3	each	$5,300.00	$15,900.00
	300mm Sanitary/Combined Sewer Main Spot Repair (3m)	4	each	$6,500.00	$26,000.00
	1050mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	6	each	$6,800.00	$40,800.00
	1200mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	1	each	$7,200.00	$7,200.00
	1500mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	4	each	$9,000.00	$36,000.00
	1800mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	8	each	$10,500.00	$84,000.00
	2400mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	4	each	$16,000.00	$64,000.00
	1200mm dia. Outfall Headwall c/w Flapgate	1	each	$100,000.00	$100,000.00
	Abandonment of Existing Sewer with Flowable Fill	150	cubic metre	$750.00	$112,500.00
	Controls and Electrical Upgrades at Kennedy Lift Station	1	lump sum	$60,000.00	$60,000.00
	Controls and Electrical Upgrades at Bridge Street Lift Station	1	lump sum	$60,000.00	$60,000.00
	Sub-Total				**$1,510,575.00**

Sub-Total	**$2,765,925.00**
Engineering	**$500,000.00**
Contingency (20%)	**$560,000.00**
Total	**$3,825,925.00**
HST (15%)	**$573,888.75**
TOTAL	**$4,399,813.75**
Allow	**$4.50 M**

Note : 1) Unit prices are based on 2022 unit pricing rates where applicable.

2) Engineering Services for Environmental assessment, permits and incidentals are not included in the above costs.

3) Land acquisitions or appraisals are not included in the above costs.

Main Street North Sewer Relocation **MON-22023722-A0**
Saint John, NB **20-Apr-23**

Conceptual Design for Option 2

Item No.	Description	Estimated Quantity	Unit of Measurement	Unit Price	Estimated Total Price
Roadway					
	Clearing & Grubbing	2200	square metre	$6.00	$13,200.00
	Rock Excavation	4000	cubic metre	$125.00	$500,000.00
	Common Borrow A	1000	cubic metre	$35.00	$35,000.00
	Imported Pit Run Gravel Subbase (450mm)	1200	cubic metre	$40.00	$48,000.00
	Imported Crushed Gravel Base Material (150mm)	450	cubic metre	$45.00	$20,250.00
	Asphaltic Concrete Base Course for Trench Restoration - 75mm	180	tonne	$250.00	$45,000.00
	Asphaltic Concrete Surface Course for Trench Restoration - 40mm	100	tonne	$270.00	$27,000.00
	Concrete curb and gutter	75	lineal metre	$125.00	$9,375.00
	Concrete Sidewalk	130	square metre	$150.00	$19,500.00
	Topsoil & Hydroseed	2500	square metre	$15.00	$37,500.00
	R25 Rip Rap c/w geotextile	100	tonne	$50.00	$5,000.00
	Sub-Total				**$759,825.00**
Storm System					
	450mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	15	lineal metre	$450.00	$6,750.00
	300mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	12	lineal metre	$350.00	$4,200.00
	1050mm Catch Basin c/w Double S-401 Frame and Grate Including All incidentals; Removal and Disposal of Existing if Required	3	each	$6,000.00	$18,000.00
	Sub-Total				**$28,950.00**
Sanitary/Combined Sewer Systems and Forcemains					
	200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	15	lineal metre	$300.00	$4,500.00
	250mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$350.00	$3,500.00
	300mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	405	lineal metre	$375.00	$151,875.00
	375mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$450.00	$4,500.00
	600mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	45	lineal metre	$690.00	$31,050.00

	750mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	60	lineal metre	$725.00	$43,500.00
	900mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	85	lineal metre	$850.00	$72,250.00
	1050mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	195	lineal metre	$950.00	$185,250.00
	1200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	255	lineal metre	$1,100.00	$280,500.00
	300mm dia. Sanitary/Combined Sewer Pipe Installed by Directional Drilling	110	lineal metre	$1,500.00	$165,000.00
	900mm dia. Sanitary/Combined Sewer Pipe Installed by Directional Drilling	140	lineal metre	$10,000.00	$1,400,000.00
	200mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	20	lineal metre	$350.00	$7,000.00
	100-150mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	15	lineal metre	$320.00	$4,800.00
	150mm Sanitary/Combined Sewer Main Spot Repair (3m)	1	each	$4,500.00	$4,500.00
	200mm Sanitary/Combined Sewer Main Spot Repair (3m)	2	each	$5,000.00	$10,000.00
	225mm Sanitary/Combined Sewer Main Spot Repair (3m)	3	each	$5,300.00	$15,900.00
	300mm Sanitary/Combined Sewer Main Spot Repair (3m)	4	each	$6,500.00	$26,000.00
	1050mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	6	each	$6,800.00	$40,800.00
	1200mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	2	each	$7,200.00	$14,400.00
	1500mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	4	each	$9,000.00	$36,000.00
	1800mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	6	each	$10,500.00	$63,000.00
	2100mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	1	each	$13,000.00	$13,000.00
	2400mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	4	each	$16,000.00	$64,000.00

	1200mm dia. Outfall Headwall c/w Flapgate	1	each	$100,000.00	$100,000.00
	Abandonment of Existing Sewer with Flowable Fill	150	cubic metre	$750.00	$112,500.00
	Controls and Electrical Upgrades at Kennedy Lift Station	1	lump sum	$60,000.00	$60,000.00
	Controls and Electrical Upgrades at Bridge Street Lift Station	1	lump sum	$60,000.00	$60,000.00
	Sub-Total				**$2,973,825.00**

Sub-Total	**$3,762,600.00**
Engineering	**$680,000.00**
Contingency (20%)	**$760,000.00**
Total	**$5,202,600.00**
HST (15%)	**$780,390.00**
TOTAL	**$5,982,990.00**
Allow	**$6.0 M**

Note : 1) Unit prices are based on 2022 unit pricing rates where applicable.

2) Engineering Services for Environmental assessment, permits and incidentals are not included in the above costs.

3) Land acquisitions or appraisals are not included in the above costs.

Main Street North Sewer Relocation **MON-22023722-A0**
Saint John, NB **20-Apr-23**

Conceptual Design for Option 4

Item No.	Description	Estimated Quantity	Unit of Measurement	Unit Price	Estimated Total Price
Roadway					
	Clearing & Grubbing	500	square metre	$6.00	$3,000.00
	Rock Excavation	9000	cubic metre	$125.00	$1,125,000.00
	Common Borrow A	1000	cubic metre	$35.00	$35,000.00
	Imported Pit Run Gravel Subbase (450mm)	1800	cubic metre	$40.00	$72,000.00
	Imported Crushed Gravel Base Material (150mm)	700	cubic metre	$45.00	$31,500.00
	Asphaltic Concrete Base Course for Trench Restoration - 75mm	425	tonne	$250.00	$106,250.00
	Asphaltic Concrete Surface Course for Trench Restoration - 40mm	275	tonne	$270.00	$74,250.00
	Concrete curb and gutter	225	lineal metre	$125.00	$28,125.00
	Concrete Sidewalk	450	square metre	$150.00	$67,500.00
	Topsoil & Hydroseed	3000	square metre	$15.00	$45,000.00
	R25 Rip Rap c/w geotextile	200	tonne	$50.00	$10,000.00
	Sub-Total				**$1,597,625.00**
Storm System					
	450mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	15	lineal metre	$450.00	$6,750.00
	300mm dia. Storm Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$350.00	$3,500.00
	1050mm Catch Basin c/w Double S-401 Frame and Grate Including All incidentals; Removal and Disposal of Existing if Required	3	each	$6,000.00	$18,000.00
	Sub-Total				**$28,250.00**
Sanitary/Combined Sewer Systems and Forcemains					
	200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	20	lineal metre	$300.00	$6,000.00
	250mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	10	lineal metre	$350.00	$3,500.00
	300mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	500	lineal metre	$375.00	$187,500.00
	375mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	15	lineal metre	$450.00	$6,750.00
	600mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	270	lineal metre	$690.00	$186,300.00

	750mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	25	lineal metre	$725.00	$18,125.00
	900mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	125	lineal metre	$850.00	$106,250.00
	1050mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	80	lineal metre	$950.00	$76,000.00
	1200mm dia. Sanitary/Combined Sewer Pipe Including Couplings; Removal and Disposal of Existing if Required	50	lineal metre	$1,100.00	$55,000.00
	Cedar Street Sanitary/Combined Sewer Forcemain	1	lump sum	$80,000.00	$80,000.00
	1050mm dia. Sanitary/Combined Sewer Pipe Installed by Directional Drilling	200	lineal metre	$12,000.00	$2,400,000.00
	200mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	20	lineal metre	$350.00	$7,000.00
	100-150mm sanitary service lateral pipe including connection, bends, couplings and all incidentals (New and Renewal)	10	lineal metre	$320.00	$3,200.00
	150mm Sanitary/Combined Sewer Main Spot Repair (3m)	1	each	$4,500.00	$4,500.00
	200mm Sanitary/Combined Sewer Main Spot Repair (3m)	2	each	$5,000.00	$10,000.00
	300mm Sanitary/Combined Sewer Main Spot Repair (3m)	4	each	$6,500.00	$26,000.00
	1050mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	11	each	$6,800.00	$74,800.00
	1200mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	3	each	$7,200.00	$21,600.00
	1500mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	1	each	$9,000.00	$9,000.00
	1800mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	8	each	$10,500.00	$84,000.00
	2400mm Sanitary/Combined Sewer Manhole Including All incidentals; Removal and Disposal of Existing if Required	4	each	$16,000.00	$64,000.00
	600mm dia. Outfall Headwall c/w Flapgate	1	each	$60,000.00	$60,000.00
	1200mm dia. Outfall Headwall c/w Flapgate	1	each	$100,000.00	$100,000.00
	Abandonment of Existing Sewer with Flowable Fill	250	cubic metre	$750.00	$187,500.00

	Controls and Electrical Upgrades at Kennedy Lift Station	1	lump sum	$60,000.00	$60,000.00
	Controls and Electrical Upgrades at Bridge Street Lift Station	1	lump sum	$60,000.00	$60,000.00
	Forcemain and Internal Valve & Piping Upgrades at Bridge Street Lift Station	1	lump sum	$150,000.00	$150,000.00
	Package Lift Station for Cedar Street	1	lump sum	$250,000.00	$250,000.00
	Sub-Total				**$4,297,025.00**

Sub-Total	**$5,922,900.00**
Engineering	**$1,070,000.00**
Contingency (20%)	**$1,190,000.00**
Total	**$8,182,900.00**
HST (15%)	**$1,227,435.00**
TOTAL	**$9,410,335.00**
Allow	**$9.45 M**

Note : 1) Unit prices are based on 2022 unit pricing rates where applicable.

2) Engineering Services for Environmental assessment, permits and incidentals are not included in the above costs.

3) Land acquisitions or appraisals are not included in the above costs.