Minute No. 685
Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – June 28, 2022

Item No. 4 **Procurement Model Recommendation and Revised Cost Estimate for the North End Sewage Treatment Plant (NEWPCC) Upgrade – Biosolids Facilities Project**

COUNCIL DECISION:

Council concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment, as amended by the Executive Policy Committee, and adopted the following:

1. That the NEWPCC Upgrade: Biosolids Facilities Project be delivered using a Design Build procurement model.

2. That the revised cost estimate for the NEWPCC Upgrade: Biosolids Facilities Capital Budget be referred to the 2024-2027 Multi-Year Budget Process.

3. That the $15,334,000.00 2019 Capital Budget for the NEWPCC Upgrade: Biosolids Facilities, approved on January 30, 2020, as part of the 2020-2023 Water and Sewer Rate Report, be funded from the Environmental Projects Reserve rather than external debt.

4. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – June 28, 2022

DECISION MAKING HISTORY:

Moved by Councillor Mayes,

That the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment, as amended by the Executive Policy Committee, be adopted.

Carried

Dimple Roy, Director of Water Management, International Institute for Sustainable Development, submitted a communication with respect to the matter.

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On July 13, 2022, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment, with the following amendment:

- Add the following new Recommendation 1 and renumber the remaining recommendations accordingly:

  "1. That the NEWPCC Upgrade: Biosolids Facilities Project be delivered using a Design Build procurement model."

and submitted the matter to Council.

STANDING COMMITTEE RECOMMENDATION:

On June 28, 2022, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service, with the following amendment:

- Delete Recommendations 1 and 2 in their entirety, and renumber the remaining accordingly

and submitted the matter to the Executive Policy Committee and Council.

Remo Bucci, Deloitte, addressed the committee with respect to the matter.

Alexis Kanu, Executive Director, Lake Winnipeg Foundation, submitted a communication dated June 28, 2022, with respect to the matter.

ADMINISTRATIVE REPORT

Title: **PROCUREMENT MODEL RECOMMENDATION AND REVISED COST ESTIMATE FOR THE NORTH END SEWAGE TREATMENT PLANT (NEWPCC) UPGRADE: BIOSOLIDS FACILITIES PROJECT**

Critical Path: **Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – Executive Policy Committee – Council**

AUTHORIZATION

Author	Department Head	CFO	CAO
C. D. Wiebe, P. Eng., CAMP, Manager of Engineering Services	T. W. Shanks, M. Eng., P. Eng. Director, Water and Waste Department	C. Kloepfer	M. Jack

EXECUTIVE SUMMARY

This report is to recommend a procurement methodology for delivery of the NEWPCC Biosolids project and provide an updated AACE Class 3 cost estimate. This project is critical for compliance with the NEWPCC Environment Act Licence, and is also needed to increase the treatment capacity for future growth and wet weather events.

Procurement Recommendation

Based on the market sounding report tabled at Council on November 25, 2021 and lessons learned from the SEWPCC project, the Public Service is recommending a Design-Build-Finance (DBF) approach with the flexibility to adapt to a Design-Build model (DB). While the market indicated a preference for DBF, taking a flexible approach will ensure the optimum risk allocation and a robust competition when the project goes to tender.

This market sounding is based upon interviews that the Public Service and Deloitte conducted with several potential proponents from the Canadian consultant, construction, and finance sectors. A procurement team consisting of staff from the CAO's office, CFO's office and the Water and Waste Department, with the assistance of industry experts, will conduct more rigorous, in-depth market sounding to ensure the proper methodology is ultimately selected and to generate fulsome competition prior to procurement launch.

Neither recommended model is a privatization of City services, as the operations and maintenance remain City controlled in both procurement approaches. The finance component in the DBF model allows for a delayed payment schedule that provides greater certainty in price and schedule (vs. traditional monthly progress estimates) and incents the contractor to complete the project on budget and schedule.

A Value-for-Money analysis (VFM) also supports the use of a DBF approach, which is consistent with lessons learned from the South End Sewage Treatment Plant (SEWPCC) project. A full report on lessons learned from SEWPCC will be coming to Standing Policy Committee on Finance; however, a key highlight notes that selection of the appropriate procurement model and contract structure is critical for success in a project of this complexity and magnitude. The market sounding and VFM analysis are attached as Appendix B.

Community Benefits Clause

The procurement documents will also require that prequalification and proposal submissions incorporate the City's Social Procurement Framework. The procurement will specify social value outcomes like hiring, training, apprenticeships, or procurement and sub-contracting that ensures the project enhances social, cultural, Indigenous, environmental, and economic opportunities for the community. This will fulfill the community benefit clauses (CBA), as approved by Council on February 24, 2022. The development of the CBA will be an iterative process and criteria will be developed with key stakeholders and Indigenous groups.

Revised AACE Class 3 Cost Estimate

Council approved the submission of the Investing in Canada Infrastructure Program (ICIP) funding application for Project 2: Biosolids Facilities in September 2019. The AACE class 3 estimate of $552 million used for this ICIP application was based on wastewater treatment requirements in accordance with *The Save Lake Winnipeg Act.* This mandated the City to remove nutrients primarily through biological means, to minimize the use of chemicals, and to reuse the remaining biosolids. The ICIP submission did not include the revised Provincial requirement for interim chemical phosphorous removal, nor did it include the requirement for chemical phosphorous to 1 mg/L prior to Project 3: Nutrient Removal Facilities.

The 2019 AACE class 3 estimate was developed by the engineering consultant, validated by an independent cost consultant, and was audited by the City Auditor (clean opinion tabled at Council in September 2019).

Due to the NEWPCC Headworks DB contract award being $65 million higher than the budget in May 2021, Council approved updating the AACE class 3 estimates for Project 2: Biosolids Facilities and Project 3: Nutrient Removal Facilities projects to reflect current volatile market conditions.

The revised AACE class 3 estimate presented in this report has increased by $360 million from $552 million to $912 million. The cost estimate now includes the requirement for full phosphorus removal to 1 mg/L using chemical means prior to completion of the Nutrient Removal Facilities, along with delay costs due to 2.5 years of increasing construction inflation and unprecedented market conditions. It was prepared by the engineering consultant and validated by an independent cost consultant. The major cost drivers are:

- $130 million to build additional digester capacity earlier than planned, in order to accommodate the revised requirement for chemical phosphorous removal to 1 mg/L;
- $190 million due to excessive inflation; and
- $33 million project financing.

There is an urgency to proceed with the biosolids project as soon as possible. These facilities will enable the City to:

- Increase hydraulic capacity through the plant, allowing the City to treat more flow during wet weather events;
- Improve regulatory compliance and provide benefit to the waterways in the city and province as soon as possible; and
- Increase digester capacity at the plant to enable continued residential and economic development in the City and the metro region.

The Public Service is not recommending a budget adjustment at this time as sufficient capital funds exist to advance the biosolids project without delay. It would also be premature to ask for a budget revision because:

- Council approved a budget of $15.3 million to advance consulting work required to complete the procurement processes to engage a DBF consortium. This process will take a number of years and has an anticipated contract award in 2025.
- Updated costs are based on current, unprecedented market conditions that include excessive inflation in fuel and commodity prices, global supply chain issues, recovery from a 100-year pandemic, and the Russia-Ukraine crisis.
- The Public Service would like to seek clarification from the Province on the cost-benefit of advancing enhanced phosphorous reduction prior to biological nutrient removal. The capital and ongoing operating costs of chemical phosphorous removal to 1 mg/L will have a significant impact on rates. Further, the use of chemical limits the reuse of phosphorous and requires careful handling because of its acidic properties.

Risk Mitigation

The Public Service will undertake all due diligence to mitigate cost increases, including:

- Significant market outreach to stimulate healthy competition (there were only two bidders on the Headworks project).
- Enhancing design/value engineering to reduce costs.
- Ensuring the procurement model allows for innovation in process, design, and schedule efficiency.
- Seeking additional funding sources that may be available.

The updated AACE cost estimate does not include any provision for penalties that could be levied against the City for non-compliance under the Environment Act. As disclosed in the NEWPCC Quarterly Financial Status Report tabled at Standing Policy Committee on Finance on May 10, 2022, the Province is requesting information by June 30, 2022 which cannot be provided. Under the Act, the penalties for a first offence could include a fine of up to $0.5 million and up to $1.0 million for each subsequent offence. The Public Service will work collaboratively with the Province to demonstrate Council's commitment to doing their part to protect the waterways and Lake Winnipeg

Any future budget increases will be referred to the 2024 to 2027 multi-year budget process, and multi-year utility rates process.

RECOMMENDATIONS

1. That the NEWPCC Upgrade: Biosolids Facilities Project be delivered using a Design-Build-Finance procurement model.

2. That the CAO be delegated authority to approve the alternative project delivery method of a collaboratively structured Design-Build procurement model if the market conditions indicate that the Design-Build-Finance procurement model is not favourable at the time of tender.

3. That the revised cost estimate for the NEWPCC Upgrade: Biosolids Facilities Capital Budget be referred to the 2024-2027 multi-year budget process.

4. That the $15,334,000.00 2019 Capital Budget for the NEWPCC Upgrade: Biosolids Facilities, approved on January 30, 2020, as part of the 2020-2023 Water and Sewer Rate Report, be funded from the Environmental Projects Reserve rather than external debt.

5. That the proper officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

REASON FOR THE REPORT

On October 28, 2021, Council directed the Public Service to review the AACE Class 3 cost estimates for Biosolids and Nutrient Removal facilities and refer any increases to the capital budget process.

Council approval is required to modify the funding source for an approved Capital Budget of a project and to select or alter the procurement model for major capital projects.

IMPLICATIONS OF THE RECOMMENDATIONS

The NEWPCC Upgrade: Biosolids Facilities Project is required to meet the City's Environment Act Licence. Using a Design-Build-Finance procurement method to deliver the project provides increased certainty of cost and schedule for construction.

The previously approved $15,334,000 for engineering services will be funded from the Environmental Projects Reserve rather than external debt, which was the only funding source approved in the 2019 Capital Budget other than Federal and Provincial funding.

HISTORY/DISCUSSION

The North End Sewage Treatment Plant (NEWPCC) treats biosolids for all the three sewage treatment plants in the City. NEWPCC also receives sludge from the Rural Municipality (RM) of East St. Paul and wastewater from portions of the RM of West St. Paul and Rosser. The existing Biosolids Facility is nearing its treatment capacity. Parts of the facility are also at the end of their service life and must be replaced to maintain reliable operation. A new Biosolids

Facility is required to maintain growth and meet revised regulatory requirements, including interim phosphorous reduction and beneficial reuse of biosolids. The scope of work for the Biosolids Facilities Project includes both new infrastructure and upgrades to the existing infrastructure.

In February 2019, Council approved the NEWPCC Biological Nutrient Removal Upgrade Project be executed as three separate capital projects to mitigate the risk associated with a single large, complex and lengthy project. The projects were identified as:

1. NEWPCC Upgrade: Power Supply and Headworks Facilities
2. NEWPCC Upgrade: Biosolids Facilities
3. NEWPCC Upgrade: Nutrient Removal Facilities

On December 17, 2020, Council approved the Biosolids Capacity Report that highlighted the City's remaining biosolids capacity was equivalent to a population of 90,000 and this remaining capacity could be consumed within the next five to nine years. This was identified as a limiting factor for growth in both the City and the Winnipeg Metro Region.

BIOSOLIDS PROCUREMENT MODEL RECOMMENDATION

For a detailed history and discussion of the procurement model recommendation, see Appendix A.

The City submitted their Investing in Canada Infrastructure Program (ICIP) application for the Biosolids Facilities project to the Province on September 27, 2019.

In March 2021, the Province directed the City to undertake a feasibility analysis of a Private-Public-Partnership (P3) procurement methodology, including a Design-Build-Finance-Operate-Maintain (DBFOM) model, for the Biosolids Facilities and Nutrient Removal Facilities prior to the Province forwarding the ICIP funding application to the Federal Government.

A single source negotiation to award a contract to Deloitte to conduct a market sounding for the Biosolids Facilities project was approved by Executive Policy Committee (EPC) in May 2021. Further, EPC directed that the operation and maintenance components of the City's sewage treatment plants remain with the Public Service and be excluded from the market sounding. The results were presented to Council in November 2021 and indicated the market's acceptance of a Design-Build-Finance (DBF) P3 model. A summary of the market sounding results are included in Appendix B.

On November 24, 2021, a joint news release by the Province and the City indicated the Province would advance the City's ICIP funding application for the Biosolids Facilities project to the Federal Government without a stipulated procurement model. This was confirmed in a letter from the Province to the City on May 10, 2022.

Delivery Model Analysis

In 2020, Deloitte was engaged to analyze the P3 market to assess the risks of delivering the Biosolids Facilities project under various P3 deal structures. The report concluded that a DBF procurement model balances the City's objectives of managing risks and operational integration

issues during construction and ensuring private lenders are incentivized to deliver the Biosolids Facilities project on time and on budget.

Following this, Deloitte undertook a market sounding on a DBF model in 2021. This market sounding is based upon interviews that the Public Service and Deloitte conducted with several potential proponents from the Canadian consultant, construction and finance sectors. The analysis indicated that the market was currently open to a DBF model. Deloitte then carried out a Delivery Model Analysis of the Design-Bid-Build (DBB), Design-Build (DB), and DBF procurement models to determine which procurement model:

- Appropriately allocates risks to the party best able to manage them
- Is commercially viable for the City and private contractor(s); and
- Results in the best Value for Money (VFM) for the City

The Deloitte Delivery Model Analysis report (Appendix B) recommends a DBF procurement model for the following reasons:

- A single entity will have responsibility for design and construction of the Biosolids Facilities; this improves integration of the two components and limits the City's risks while providing for a cost-effective and schedule efficient project delivery
- The financial elements of a DBF provide incentive for the DBF consortium to complete the project on time and on budget. Contrary to a DBB where the City pays the general contractor as the project progresses, in a DBF, the consortium is incentivized to complete the project on time to pay its lenders, as any incremental interest costs and financial penalties associated with delays are borne by the consortium. In addition, 50 percent of the construction cost is withheld until substantial completion
- The calculated VFMs (Figure 1) for both the DB and DBF procurement models were around 30 percent better than for the DBB model. A sensitivity analysis that considered varying discount, construction inflation, and private financing interest rates, resulted in 26 to 30 percent better VFMs for DB and DBF models

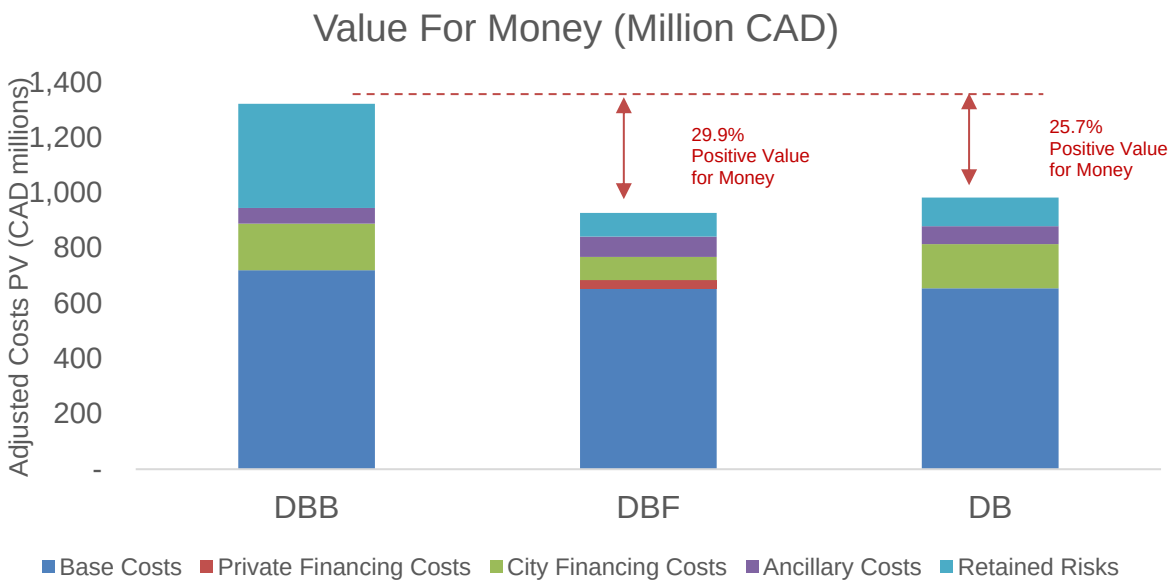


Figure 1: Value for Money Analysis

Should the market no longer be receptive to a DBF at the time of procurement, the report recommends including the ability to pivot to a collaboratively structured DB procurement model that would allocate risks to appropriate parties.

BIOSOLIDS REVISED COST ESTIMATE

For a detailed decision making history related to the updated project cost estimate, see Appendix C.

On February 28, 2019, the Public Service indicated in a report to Council that the budget for the Biosolids Facilities project was $552,712,000. This budget, which was conditional on funding from other levels of government, was based on an AACE International Class 3 cost estimate classification with an expected accuracy range of -20% to +30% ($442,169,600 to $718,525,600). The construction estimate was confirmed by an independent cost consultant, Hanscomb. The class estimate was also audited and approved by Turner & Townsend through the City Auditor. The September 17, 2019 audit report to Council included a caution that “since the estimate project costs are based on assumptions about future events, actual results will vary from the estimate, and variations may be material.”

In January 2020, Council approved the spending of $15,334,000 from the Capital Budget to proceed with engineering services for the Biosolids Facilities project. The Public Service engaged AECOM in May of 2021 to carry out enhanced preliminary design (EPD) revisions for the Biosolids Facilities Project. The revisions included updates to capacity and sizing of the facilities to reflect a new population forecast, inclusion of revised regulations for interim phosphorus reduction, and an update to the Class 3 construction cost estimate to reflect current market conditions and the delayed start on the project.

In December 2021, Hanscomb was engaged as an independent cost consultant to provide a third-party Class 3 construction cost estimate for the Biosolids Facilities project based on the draft EPD provided by AECOM.

Enhanced Preliminary Design

The original design for the Biosolids Facility was based on the integrated NEWPCC Upgrade design from 2018. The design was modified following Council's 2019 approval to execute the upgrade in three separate projects. Following the award of the Headworks Facilities project in May 2021, which came in $65 million above the City's affordability limit, Council directed the Public Service to review the AACE Class 3 cost estimates for both the Biosolids Facilities and Nutrient Removal Facilities projects and refer any increases to the capital budget process.

A number of changes were incorporated into the EPD, including:

- The 2018 preliminary design sized the digesters to accommodate population growth to 2037 using growth projections from 2016. This equated to a design population of 512,000. In August 2021, to ensure consistent use of key economic and demographic variables across the City, the Public Service released new growth projections; this led to a revised 2037 design population of 547,000.

- The 2018 preliminary design sized the digesters based on wastewater treatment requirements in accordance with *The Save Lake Winnipeg* Act to remove nutrients primarily through biological means, minimize the use of chemicals and reuse the remaining biosolids. In 2021, the province took a more aggressive approach on phosphorous removal and mandated the City to include interim chemical phosphorous reduction to 1 mg/L from the time the Biosolids Facilities were finished to when the mostly biological Nutrient Removal Facilities come online. This advanced the future work that was planned for chemical phosphorous during the Nutrient Removal Facilities project and also advanced the expansion of digester capacity from approximately 2037 to now.

    - Chemical phosphorous removal generates significant volumes of sludge which decreases available capacity in the digesters to accommodate growth.

    - In order to accommodate both the sludge bulking and the 2037 projected growth, the digesters had to be designed to accommodate an equivalent growth to 2050 by the time the Biosolids Facilities were substantially complete in 2030. This resulted in a revised design population equivalent of 631,000.

- Once the Nutrient Removal Facilities are online, ferric chloride dosing will be decreased and phosphorous removal will be primarily biological. This will significantly reduce sludge bulking, creating additional capacity in the digesters to accommodate economic growth in Winnipeg and the Metro Regions until approximately 2050.

- The land drainage system for the Biosolids Facilities was initially planned to connect to works installed as part of the Chief Peguis Trail (CPT) extension. Since Biosolids is proceeding ahead of CPT, the scope of work was revised to reflect additional land drainage requirements.

Updated Construction Cost Estimates

Class 3 construction cost estimates, excluding escalation, were provided by the Owner's Advocate, AECOM, and the Independent Cost Estimator, Hanscomb, for both the 2018 design and the 2021 EPD.

	Construction Cost Estimates		
Estimator	2018 Design	2021 Design	Increase since 2018
Hanscomb	$369,086,000	$541,535,000*	$172,449,000 (46.7%)
AECOM	$283,932,000	$463,717,000*	$179,785,000 (63.3%)
Difference between AECOM and Hanscomb	$85,154,000 (30.0%)	$77,818,000 (16.8%)	

*Costs were adjusted based on AECOM's updates to the draft report to represent estimates for the final EPD

Both estimates provided indicated a substantial increase in the overall construction cost as a result of project delay, revised EPD requirements, and current market conditions. The information also shows that, while Hanscomb's estimate was greater than AECOM's for both design years, the relative difference between the cost estimates of the two parties decreased based on the 2021 design. The cost difference between the two could be attributed to:

- AECOM's estimate was provided in the fourth quarter of 2021 after completion of the EPD while Hanscomb's estimate was provided in the first quarter of 2022. During this time, there were continued changes in global market conditions

- Hanscomb's core business is providing cost estimates to the construction industry, confirming quantity take offs and construction pricing. Their approach to identifying risks and mitigation costs look at the project from a construction point of view compared to AECOM's core business being the provision of engineering, design and construction management. Based on their different perspectives, Hanscomb anticipates higher labour and material pricing in the market

Updated Estimate of Total Project Cost

In addition to the construction cost, other costs associated with the project, such as consultants, engineering, contingencies, internal financing and overheads, are included to estimate the total project cost for the Biosolids Facilities.

	$2022 Capital Budget
Construction*	628,548,000
Consultant & Other	56,549,000
Contingency	143,130,000
Administrative Charges	24,847,000
External Debt Charges	58,896,000
Total	911,970,000

* Inclusive of escalation and DBF related costs

The revised cost estimate of $911,970,000 represents an increase of $359,258,000, or 68 percent, to the original Council approved Biosolids Facilities budget of $552,712,000. The increase over the base cost is shown in Figure 2 and detailed below.

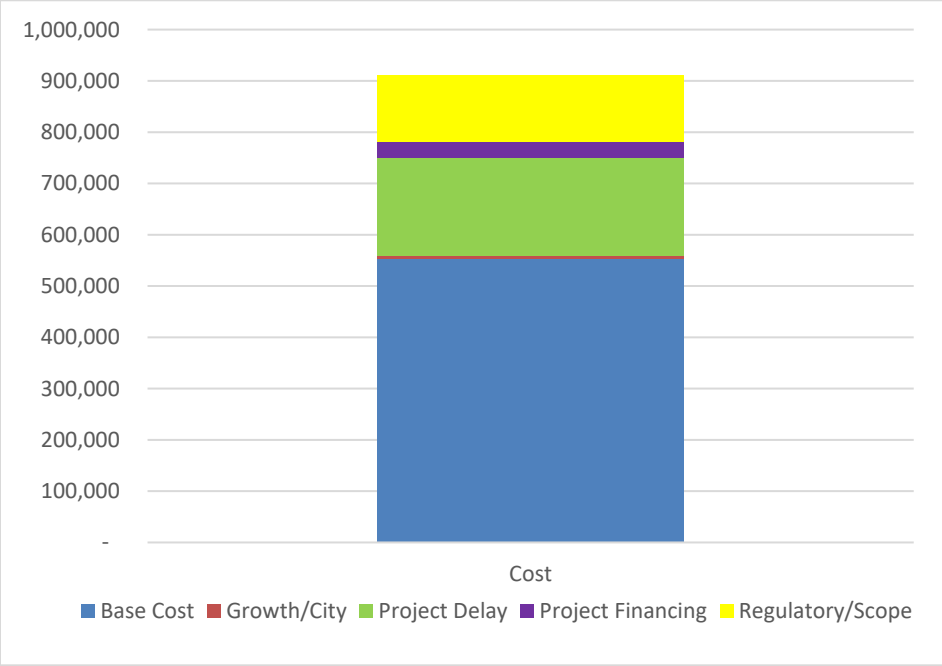


Figure 2: Biosolids Capital Cost Estimate Increase

2018 Base Cost			552,712,000
2022 Cost Increases			359,258,000
Growth/City		*6,650,000*	
Project Delay		*189,904,000*	
Escalation	*70,000,000*		
Market Risk Related	*119,904,000*		
Project Financing		*32,704,000*	
Regulatory/Scope Increase		*130,000,000*	
Revised Project Cost			**911,970,000**

- Growth/City
  This is due to the change in the City's economic growth curve and inclusion of additional scope of land drainage requirements that were previously planned to connect to future infrastructure that will not be constructed in time. As a result, the Biosolids Facility must now discharge to an existing system which is further away.

- Project Delay
  The City initially submitted their biosolids ICIP application in 2019 with the intention of proceeding with the project immediately following confirmation of external funding. However, delay's in funding approval have resulted in a multi-year delay in the project. This delay occurred at a time when the market has seen unprecedented escalations. The delay costs are a result of a number of factors, including:

    - Base escalation from 2018 to 2022

    - Unprecedented market volatility and ongoing supply chain issues resulting in increased material, equipment, and shipping prices as well as labour price increases, recovery from a pandemic, fuel prices, shipping costs and the Russia-

Ukraine crisis. From 2017 to 2021, the thermal hydrolosis process equipment increased by 44 percent from $16 to $23 million; biosolids loading hoppers have increased by 157 percent from $120 thousand to $2 million per hopper due to increases in steel price

- Increases to items that are typically proportional to construction costs, such as financing interest rates, debt servicing costs, internal financing, overhead and contingency costs due

- Decreased risk tolerance of design builders due to unknowns related to current market conditions; this is reflected through increased contingencies built into the overall construction costs

- Project Financing
  The Province directed the Public Service to explore P3 delivery models prior to approving the ICIP application. A DBF procurement model increases the project costs as the DBF consortium owns more of the financial risk. The cost of this risk is offset by improved cost and schedule certainty.

- Regulatory/Scope Increase
  When the province included the requirement for the City to accommodate interim chemical phosphorous reduction at the biosolids facility, it resulted in the need to expand plant capacity earlier than anticipated (i.e. now versus 2037).

The Public Service acknowledges the current volatility in the market – services and commodity price fluctuations have been unprecedented. This makes it particularly difficult to estimate a reasonable project cost for a project that won't be awarded for three years. In this time, markets could correct or fluctuations and uncertainty may become more commonplace. However, there is an urgency to proceed with the biosolids project as soon as possible as these facilities will enable the City to:

- Increase hydraulic capacity through the plant, allowing the City to treat larger flows during wet weather events;
- Improve regulatory compliance and provide benefit to the waterways in the city and province as soon as possible; and
- Increase digester capacity at the plant to enable continued residential and economic development in the City and the metro region.

While the Public Service recommends proceeding with the procurement phase of the Biosolids project, they are not recommending a budget adjustment at this time for a number of reasons:

- Council approved a budget of $15.3 million to advance consulting work required to complete the procurement processes to engage a DBF consortium. This process will take a number of years and has an anticipated contract award in 2025.
- Updated costs are based on current, unprecedented market conditions that include excessive inflation in fuel and commodity prices, global supply chain issues, recovery from a 100-year pandemic and the Russia-Ukraine crisis.
- The Public Service would like to seek clarification from the Province on the cost-benefit of advancing enhanced phosphorous reduction prior to biological nutrient removal. The capital and ongoing operating costs of chemical phosphorous removal to 1 mg/L will have a significant impact on rates. Further, the use of chemical limits the reuse of phosphorous and requires careful handling because of its acidic properties.

Risk Mitigation

Costs will likely be higher than the $552 million submitted in the ICIP application. The Public Service will do their due diligence to mitigate cost increases by:

- Creating as much industry interest for this project as possible to get competitive bids (the Headworks Facilities project only had two bidders).
- Enhancing design/value engineering to reduce costs.
- Selecting the appropriate procurement model that allows for innovation in process and design while balancing project risks and schedule.
- Seeking additional funding sources that may be available.

The true market value of this work will not be known until the project is tendered. Additional funds may be required in the future to award this critical work; budget changes will be referred to the 2024-2027 multi-year budget and multi-year utility rates processes.

This report recommends that the previously approved $15,334,000 for engineering services be funded from the Environmental Projects Reserve rather than external debt, which was the only funding source approved in the 2019 Capital Budget other than Federal and Provincial funding.

The province directed the Public Service to submit a plan by June 30, 2022 that would provide schedule and funding information to complete the entire NEWPCC upgrades by 2030, as disclosed in the NEWPCC Quarterly Financial Status Report tabled at Standing Policy Committee on Finance on May 10, 2022. This information is currently unavailable; as such, the Public Service will not be able to meet this request by June 30, and there is potential for enforcement action under the Environment Act. Penalties for a first offence could include a fine of up to $0.5 million and up to $1.0 million for each subsequent offence. The Public Service will work collaboratively with the Province to demonstrate Council's commitment to doing their part to protect the waterways and Lake Winnipeg

CUSTOMER IMPACTS

In addition to the critical NEWPCC Upgrade projects, the Department is also undertaking significant Combined Sewer Overflow (CSO) and Basement Flood Management Strategy program upgrades. This work, along with other capital renewal and service level projects, may have a substantial impact on rate payers and affordability for services.

Figure 3 demonstrates the estimated customer impact when factoring in the cost increases to sewage treatment plant upgrades and CSO mitigation, from the Council approved 2020 water and sewer rate report to current budget estimates, and considering future government funding.

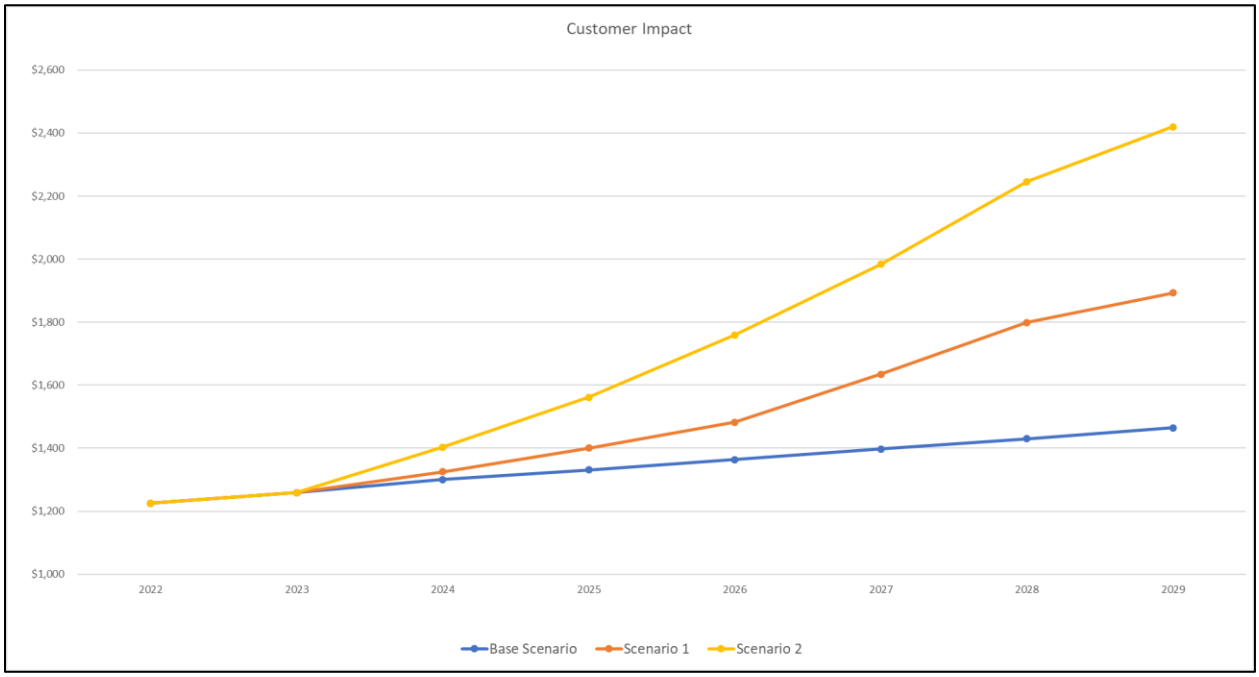


Figure 3: Customer Impacts of Provincial and Federal Funding Scenarios*

If funding for the NEWPCC Upgrades: Nutrient Removal Facilities (NR) project is shared equally by all three levels of government, the annual bill for a residential customer (family of four, 200 m^3 annual consumption) will be 28 percent less than if the project is funded independently by the City.

Scenario Description		**2029 Annual Bill***
Base Scenario	2020 Water and Sewer Rate Model	$1,464
Scenario 1	Equal split between City, Manitoba and Canada for NR	$1,893
Scenario 2	No Government Funding for NR	$2,420

* All scenarios are subject to change and are intended for illustrative purposes only.

The amount of federal and/or provincial funding provided will impact rates, borrowing, and/or the planned sewage treatment upgrade projects.

NEXT STEPS

Following Council approval of the procurement approach, the City will update the ICIP application for the Biosolids Facility to reflect a DBF model and continue to work collaboratively with other levels of government to secure funding for this as a stand-alone project as expediently as possible.

Following confirmation of ICIP funding, the City will initiate a two-stage process to procure the DBF consortium. A procurement team consisting of staff from the CAO's office, CFO's office and the Water and Waste Department, with the assistance of industry experts, will conduct more rigorous, in-depth market sounding to ensure the proper methodology and to generate fulsome competition prior to procurement launch. A Request for Qualification is anticipated to be

issued in late 2022 in order to shortlist proponents. A Request for Proposal is anticipated to be issued to shortlisted consortiums in mid 2024 with an anticipated contract award in late 2025. The construction period is anticipated to be five years; this may be decreased when the successful DBF consortium reviews the work components and provides the most efficient schedule.

In order to avoid additional delays, the procurement documents will allow for flexibility in the percentage of funds being held until substantial completion and a collaboratively structured DB procurement approach if market conditions are no longer favourable for a DBF at time of posting.

The procurement documents will also require that prequalification and proposal submissions incorporate the City's Social Procurement Framework, which outlines the City's long-term vision and goals for positive social and indigenous impacts throughout the supply chain. The procurement will specify social value outcomes like hiring, training, apprenticeships, or procurement and sub-contracting that ensures the project enhances social, cultural, Indigenous, environmental, and economic opportunities for the community. This will fulfill the community benefit clauses (CBA), as approved by Council on February 24, 2022. The development of the CBA will be an iterative process and criteria will be developed with key stakeholders and Indigenous groups.

The Public Service has sufficient funds approved to proceed with the procurement process. Prior to award, a review of the market conditions at that time will determine if the recommended budget increase has changed. Any changes will be referred to the 2024-2027 multi-year budget and multi-year utility rate processes.

After project completion, the new Biosolids Facility will be turned over to the City to operate and maintain.

The Public Service will continue to look for funding opportunities for the Nutrient Removal Facilities to limit impacts on rate payers. As per Council direction on October 28, 2021, the ten-year water and sewer financial plan will be updated with a report back to Council in 2023.

FINANCIAL IMPACT

Financial Impact Statement Date: June 9, 2022

Project Names:
PROCUREMENT MODEL RECOMMENDATION AND REVISED COST ESTIMATE FOR THE NORTH END SEWAGE TREATMENT PLANT (NEWPCC) UPGRADE: BIOSOLIDS FACILITIES PROJECT

COMMENTS:
This report has been submitted for information purposes. There are no financial implications associated with the recommendations in this report.

The revised AACE class 3 estimate presented in thisreport has increased by $360 million from $552 million to $912 million. The Public Service is not recommending a budget adjustment at this time, as sufficient funds exist to advance the Biosolids project without delay.

This report also recommends that the previously approved $15,334,000 for engineering services be funded from the Environmental Projects Reserve rather than external debt, which was the only funding source approved in 2019 Capital Budget other than Federal and Provincial funding.

Lucy Szkwarek, CPA, CGA
Lucy Szkwarek, CPA, CGA
Manager of Finance and Administration

CONSULTATION

This Report has been prepared in consultation with:

- Legal Services (as to legal issues)
- CAO's Office
- Corporate Finance Department, Treasury Division

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg policies through Section 02-2 Environment as it will reduce the environmental impact of our citizens on the Red River and the downstream lakes and rivers. It is in collaboration with the Regulatory Licence requirements issued by the Province of Manitoba.

OurWinnipeg Reference: Section 02-2 Environment

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

NEWPCC Upgrade: Biosolids Facilities Project aligns with the Strategic Opportunity #6 Waste Reduction and Diversion found on page 51 of the Climate Action Plan approved by Council on September 20, 2018; Key Directions 6.3 and 6.4.

The Water Protection Act requires the City to reuse the wastewater biosolids, and to recover the nutrients from the biosolids to the maximum extent possible. The intent is for the facility to produce a Class A Biosolids which can be reused resulting in diversion of Biosolids from the landfill.

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

On February 24, 2022, Council directed that bidders for the Biosolids Facilities Project include the following their submissions:

- Specific commitments to engage skilled labour including targets for employment of Indigenous peoples and other under-represented groups within the Manitoba market
- Proposed plans and partnerships with organizations to promote employment and training initiatives for Indigenous and other under-represented groups within the Manitoba market

This aligns with Goal 1 - Equity and a Culture of Caring are Demonstrated through Strategy Implementation and Systems Change; Topic- Community Benefits in City Projects of the Winnipeg Poverty Reduction strategy Implementation Plan.

SUBMITTED BY

Department: Water and Waste
Division: Engineering Services
Prepared by: Remi Adedapo, Cynthia Wiebe
Date: June 20, 2022
File No.: S-1192

ATTACHMENTS:

Appendix A: Detailed History and Discussion of the Biosolids Procurement Model Recommendation

Appendix B: NEWPCC Biosolids Delivery Model Analysis Report

Appendix C: Detailed Decision Making History Related to the Updated Cost Estimate

Appendix A: Detailed History and Discussion of the Biosolids Procurement Model Recommendation

Decision Making History

On December 17, 2020, Council approved the Biosolids Capacity Report that highlighted that the City's remaining biosolids capacity was equivalent to a population of 90,000 and that this remaining capacity could be consumed within the next five to nine years. This was identified as a limiting factor for both the City and the Winnipeg Metro Region.

On March 25, 2021, the Department presented an update report to Council that highlighted the requirement from the Province for the Department to perform a feasibility analysis of a Private-Public Partnership (P3) procurement methodology for the NEWPCC Biosolids and Nutrient Removal Projects prior to submitting the ICIP funding application to the Federal Government. Accordingly, Council approved the update report which recommended that the Department not proceed with detailed design for the Biosolids Facilities Project and that the Province confirm the procurement methodology for the Biosolids Facilities Project.

On March 30, 2021, the Province directed the City to proceed with a P3 market sounding with a specific focus on Design-Build-Finance-Operate-Maintain (DBFOM) procurement model in addition to other forms of P3.

On May 18, 2021, Executive Policy Committee approved a single source negotiation to award a contract to Deloitte to conduct a market sounding for the Biosolids Facilities Project. Executive Policy Committee also mandated that the operation and maintenance components of the City's sewage treatment plants remain with the Public Service and be excluded from the market sounding.

On November 24, 2021, a joint news release by the Province and the City was issued regarding the advancement of the City's funding application to the Federal Government of Canada for the Biosolids Facilities Project through the ICIP without a stipulated procurement model.

On November 25, 2021, the market sounding results were presented to Council and indicated the market's acceptance of DBF (or some variation thereof). The results of the market sounding report were received as information by Council; a summary of the market sounding results is included in Appendix 1 of that report.

On February 24, 2022, Council approved that future tenders for the NEWPCC Upgrade Projects require bidders to include the following as part of their bid submissions:

- Specific information on their intended partnerships or self-directed plans to secure a skilled project labour workforce
- Estimated numbers of and classifications of skilled tradespersons to be employed
- Specific commitments to engage skilled labour including targets for employment of Indigenous peoples and other under-represented groups within the Manitoba market
- Proposed plans and partnerships with organizations to promote employment and training initiatives for Indigenous and other under-represented groups within the Manitoba market

Procurement Model Recommendation

Deloitte was engaged in 2020 to analyze the P3 market and create a comparative assessment of the risks and opportunities to deliver the Biosolids Facilities Project under a P3 deal structure. Deloitte's report concluded that a DBF procurement model balances the City's objective of avoiding operational integration issues during construction and ensuring private lenders are still incentivized to deliver the Biosolids Facilities Project on time and on budget. As next steps, the report recommended that the City perform a market sounding to confirm that a DBF model is amenable to the market and a Delivery Model Analysis prior to proceeding with a procurement model.

In 2021, Deloitte was tasked with carrying out market sounding on a DBF model. The analysis indicated that the market was in acceptance of the DBF model and suggested that consideration should be given to other alternative delivery methods such as a more collaborative structured DB procurement model.

Subsequently, Deloitte carried out a Delivery Model Analysis of the DBB, DB, and DBF procurement models to determine a procurement model that:

- Appropriately allocates risks to the party best able to manage them
- Is commercially viable for the City and private contractor(s); and
- Results in the highest Value for Money (VFM) for the City
    - A VFM analysis develops and compares the total costs (including base costs, ancillary costs, financing costs, and risk costs) of a project when delivered as a DB and DBF procurement model, expressed in dollars measured at the same point in time, relative to a traditional procurement model (DBB). The procurement model with the highest VFM is desirable
    - Similar VFM analyses were performed for the Disraeli Bridges, the Southwest Transitway, and Chief Peguis Trail Extension projects

The Deloitte Delivery Model Analysis report recommends a DBF procurement model for the following reasons:

- A single entity will have responsibility for design and construction of the Biosolids Facilities Project, resulting in the integration of design and construction. Accordingly, the City is not exposed to risks and claims associated with design errors and omission, integration of multiple construction contracts, and interface of design and construction phases, providing for a cost-effective and schedule efficient project delivery. Disputes are limited to a single entity and can be effectively managed before they arise. Design and construction risks can also be effectively transferred to a DBF consortium based on their experience and expertise
- In comparison to a DBB general contractor where the City pays for the project as it progresses, private capital will be at risk and the DBF consortium is incentivized to complete the project on time in order to pay its lenders, as any incremental interest costs and financial penalties associated with schedule delays are borne by the DBF consortium. In addition, 50 percent of the construction cost will be withheld until substantial completion. These two incentives further encourage the schedule

completion providing the DBF consortium strong motivation to complete the Biosolids Facilities Project in a timely manner

- The calculated VFMs for both the DB and DBF procurement models were around 30 percent better than for the DBB model. A sensitivity analysis that considered different scenarios such as varying City discount rates, construction inflation rates, and private financing interest rates resulted in a calculated VFMs for DBF and DB procurement models that were 24 to 31 percent positive VFM when compared to the DBB procurement model

The report also highlights the ability to pivot to a more collaborative structured DB procurement model that would allocate risks to appropriate parties if the market conditions are no longer conducive for a DBF procurement model.

Appendix C: Detailed Decision Making History Related to the Updated Cost Estimate

On February 28, 2019, the Public Service indicated in a report to Council that the budget for the Biosolids Facilities Project was $552,712,000.00. However, the budget was conditional upon funding from other levels of government. The estimate was based on an AACE International Class 3 Cost Estimate classification with an expected accuracy range of -20% to +30% ($442,169,600.00 to $718,525,600.00). The construction estimates were confirmed by an independent cost consultant (Hanscomb) and the budget was audited and approved by Turner & Townsend through the City Auditor.

On September 26, 2019, Council approved the Investing in Canada Infrastructure Program Funding application for the Biosolids Facilities Project with expected funding of approximately $200,873,000.00 from the Government of Canada and $167,377,000.00 from the Province of Manitoba.

On January 30, 2020, Council approved the spending of $15,334,000.00 from the Capital Budget for Biosolids Facilities Project to proceed with engineering services for the project.

On May 25, 2021, AECOM was engaged to carry out professional engineering consulting services for the Biosolids Facilities Project enhanced preliminary design revisions. The revisions included updates to the capacity and sizing of the system, revised requirements for phosphorus control as required by the Province, interface with the other projects, and the revision to the Class 3 construction cost estimate.

On May 27, 2021, Council approved the “Preferred Proponent for Design Build of the NEWPCC Upgrade: Headworks Facilities Project and Increase in the Capital Budget” Report recommending that, given current market conditions, the Public Service be directed to review the AACE Class 3 cost estimates for Biosolids and Nutrient Removal facilities projects and refer any increases to the 2022 Capital Budget process.

On December 2, 2021, Hanscomb was engaged as an independent cost consultant to provide a third-party Class 3 Construction Cost estimate for the Biosolids Facilities Project based on the updated draft preliminary design provided by AECOM.