EPCOR WATER SERVICES INC.

2022-2024
Performance Based Regulation
Drainage Application

February 16, 2021

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1.0 APPLICATION OVERVIEW

1.1 Introduction

1. EPCOR Water Services Inc. ("EWSI") has prepared this performance based regulation (PBR) application (herein referred to as the "Drainage PBR Application" or "Application") for its regulated drainage operations to permit an in-depth review by its regulator, Edmonton City Council, of the basis for the sanitary and stormwater rates applied-for under the proposed *EPCOR Drainage Services and Wastewater Treatment Bylaw No. 19627* (the "Bylaw"). This Drainage PBR Application describes how the forecast revenue requirements and rates for both the sanitary and stormwater utilities are determined for the period April 1, 2022 to March 31, 2025 (the "2022-2024 PBR term"). Under its Drainage Services business unit, EWSI provides sanitary and stormwater utility services to residents of the city of Edmonton. A separate Wastewater Treatment Rate Application has been prepared to explain EWSI's proposed wastewater treatment rates for the 2022-2024 PBR term set out under Bylaw 19627.

2. Under its Drainage Services business unit ("Drainage Services" or "Drainage"), EWSI provides safe and reliable sanitary and stormwater collection services using more than 6,900 kilometers of underground pipes and tunnels and 430,000 service connections to homes, businesses and industrial/commercial customers in the city. The overall Drainage system consists of three different types of sewer systems. The sanitary sewer system, the combined sewer system and the stormwater sewer system to manage wastewater and stormwater throughout Edmonton. EWSI's vision for Drainage Services is to be an industry leader valued by our customers and shareholder as environmental stewards who keep the public safe and the river healthy. This will be accomplished through effectively planning, focusing on excellence in engineering, managing capital projects well, and pursuing proactive operational practices informed by a rigorous stakeholder engagement process. The revenue requirements, as further detailed in this document, reflect the reasonable and prudent costs required to provide safe and reliable sanitary utility and stormwater utility services to the residents of the city of Edmonton.

3. As will be demonstrated in section 2 of the Application, the transfer of Drainage to EPCOR has been very successful. Not only has EWSI met its commitments to employees, customers and its shareholder, the transfer has provided EWSI with numerous opportunities to bring together the Drainage, Water and Wastewater Treatment operations in a manner that serves to strengthen all three of these businesses. The many natural synergy opportunities across key functional areas such as long-term infrastructure planning, integrated watershed management, trouble response, procurement, infill servicing, safety and more enable EWSI to provide better

services to its customers, better environmental management and a greater value for its shareholder while keeping rates lower than they would be if Drainage remained within the City of Edmonton. As will be presented in this Application, EWSI continues to seek additional benefits from the ongoing integration of these operations during the 2022-2024 period and beyond.

4. In this Application, EWSI is proposing to increase the sanitary and stormwater rates for the 2022-2024 PBR term from those currently approved for 2021. The rate increases are required for EWSI to recover its forecast costs associated with implementing its capital and operational plans for the 2022-2024 PBR term. The forecast operating costs for the 2022-2024 PBR term are explained in section 6.2 of the Application. Rate increases over the 2022-2024 PBR term are driven primarily by EWSI's plans to invest $754.3 million in capital expenditures (net of contributions and grant funding) for drainage infrastructure projects during the 2022-2024 PBR, an increase of $121.8 million from the prior three year period. Approximately half of the capital expenditures planned for the 2022-2024 PBR term are to implement EWSI's Stormwater Integrated Resource Plan (SIRP) and Corrosion and Odour Reduction (CORe) Strategies.

5. EWSI presented both the SIRP and CORe strategies to the City of Edmonton's Utility Committee in 2019. These two important initiatives for Drainage represent over 56% of its capital expenditures for the 2022-2024 PBR term. The SIRP Strategy focuses on addressing flood mitigation risks in the city of Edmonton. SIRP will also achieve environmental quality objectives by capturing peak storm water volumes at the source using green infrastructure (Low Impact Development (LID) and dry ponds) which reduces volumes of water at the outfalls and provides water quality improvements. Over the 2022-2024 PBR term, EWSI plans to invest $239.6 million in capital expenditures and an average of $7 million per year in operating expenditures in SIRP programs. SIRP involves many new strategies which require (i) newer technologies (various types of Low Impact Development (LID), smart sensors, automatic control gates); (ii) the need for extensive community engagement or regulatory processes prior to construction (to determine dry pond locations, outfall control gates in the river valley); (iii) rolling out new programs (enhanced building flood proofing program); and (iv) significantly expanding the size of existing programs (backwater valve subsidy program, maintenance and inflow and infiltration program, emergency response). As the SIRP Strategy is implemented there will be ongoing monitoring and evaluation of the effectiveness of these new strategies with adjustments made where appropriate. The SIRP Strategy is further described in Appendix I-1 to the Application.

6. Over the past decade, residents of Edmonton have reported over 10,000 instances of odours related to the sanitary and combined sewer network. To develop a robust strategy to

address odour issues, EWSI has conducted public consultation, engaged with community members, conducted advanced sewer air monitoring campaigns and expanded its sewer asset inspections. EWSI has produced the CORe Strategy to focus on preventing the formation of hydrogen sulphide gas (H_2S), which will reduce community odour impacts and lengthen the life of sewer network assets by mitigating sanitary pipe corrosion caused by H_2S. Having recently performed an increasing number of inspections, EWSI has identified that the conditions of many existing tunnels and sewers are at risk of failing due to the damages caused by H_2S corrosion. In addition to causing odour issues, if not addressed, these failures could impact the service provided to a large number of customers. Over the 2022-2024 PBR term, EWSI plans to invest $180.4 million in capital expenditures and an average of $5 million per year in operating expenditures in CORe programs. A significant portion of the capital investment in CORe is in rehabilitating large trunks including the CORe Duggan Tunnel Project. The CORe Strategy is further described in Appendix I-2 to the Application.

7. In addition to SIRP and CORe, EWSI plans to continue to invest $334.3 million in sanitary and stormwater assets. Half of this investment ($166.0 million) will be for rehabilitation or replacement of existing assets at the end of their useful lives to ensure risks are acceptable. Good capital management necessitates a good asset management program that has an appropriate level of maintenance capital and life cycle replacement spending. The level of spending is premised on a robust asset condition assessment program which ensures that assets are maintained and replaced before dangerous deterioration and failures occur. The focus of EWSI's asset management program is to assess asset condition and risk of failure regularly, ensuring that a significant component of its capital program is directed to capital maintenance and life cycle replacement. EWSI has a number of capital programs which focus on rehabilitation of different sanitary and stormwater infrastructure including trunks, pump stations, manholes and services. Included in this investment is a focus on addressing the increasing trend of emergency replacements by proactively replacing or rehabilitating infrastructure before reaching a high priority or emergency status. EWSI continues to look for opportunities to more efficiently upgrade the sanitary and stormwater utility infrastructure through its construction strategy review process and by developing unique solutions which include SIRP strategies such as LID infrastructure.

8. Other programs planned during 2022-2024 include the Drainage Neighbourhood Renewal ($76.5 million) to renew sanitary and stormwater infrastructure in mature neighbourhoods and programs to support the expansion of the sanitary and stormwater systems to accommodate growth in the city of Edmonton ($38.8 million). EWSI is also supporting the City's LRT expansion

by investing $48.5 million to relocate sanitary and stormwater infrastructure to facilitate the City's planned West Valley Light Rail Transit (LRT) extension.

9. Following the transfer of the Drainage Services operations from the City to EPCOR in 2017, EWSI identified an opportunity to transfer the Biosolids Management Program from EWSI's Drainage Services business unit to its Wastewater Treatment business unit. The Biosolids Management Program (which includes the processing of digested sludge from the wastewater treatment process, storage and recycling of biosolids) is closely aligned with the wastewater treatment process. This transition is reflected in EWSI's applied-for sanitary rates and wastewater treatment rates beginning with the 2022-2024 PBR term. For the purpose of this Application, EWSI's Wastewater Treatment operations includes both the Gold Bar Wastewater Treatment Plant and the Clover Bar Biosolids Recycling Facility.

10. In 2021, EWSI is forecasting a return on equity of 4.38% for the sanitary and stormwater utilities combined, well below a fair rate of return. In an effort to moderate Drainage rate increases for the 2022-2024 PBR term, EWSI proposes that the equity rate of return for sanitary (excluding CORe) and stormwater (excluding SIRP) revenue requirements be established at 5.50% for 2022 and "ramped up" in a linear fashion by approximately 1.1% per year, so that a fair rate of return of 9.95% is achieved by 2026. By ramping up the return, the average return on equity for EWSI's "base" operations is 6.61% over the 2022-2024 PBR, materially less than the proposed fair return of 9.95%. EWSI's Return on Equity Memorandum (Appendix D) explains the many risk factors which justify a fair return of 9.95%. EWSI recognizes the current economic climate is creating financial hardship for many customers and is voluntarily reducing the applied-for rate of return for Drainage Services in this Application. As a result of accepting a rate of return on equity on base operations that is far lower than the fair return, EWSI has reduced costs to ratepayers by over $66 million for the 2022-2024 PBR term[1]. SIRP and CORe differ significantly from the programs included in the base revenue requirements, because of their size, complexity and duration which contributes to higher levels of business and execution risks. EWSI is proposing a fair return of 9.95% return on equity for these two major strategic initiatives which will require significant capital expenditures for which EWSI must receive a fair return and be in a financial position to obtain debt financing at reasonable terms.

11. The significant capital expenditures planned for this PBR term, primarily driven by SIRP and CORe, along with the escalation of EWSI's return on equity to reach a fair return are both contributing to the need for sanitary and stormwater rate increases above inflation for 2022-

[1] Refer to Financial Schedule 14-1.

2024. These rate increases are partially offset by rate decreases associated with the transfer of the Biosolids Management Program to EWSI's Wastewater Treatment Operations in 2022 and lower than forecast capital expenditures during the 2018-2021 PBR term. The sanitary and stormwater rate increases above inflation are proposed to occur by way of Special rate Adjustments as further described in this Application.

1.2 Applied-For Sanitary and Stormwater Rates

12. For the 2018-2021 PBR term, EWSI committed to holding the sanitary and stormwater rate increases at an average of 3% per year. In 2019, City Council approved three Non-Routine Adjustments to the sanitary and stormwater treatment rates for SIRP, CORe and relocation of Drainage assets due to light rail transit construction. These Non-Routine Adjustments were added to the variable monthly service charges beginning January 1, 2020.

13. The current PBR term ends on March 31, 2022. EWSI is hereby applying to the Edmonton City Council for approval of an extension of the PBR for a three-year term commencing April 1, 2022 to March 31, 2025 ("the 2022-2024 PBR term"). As well, EWSI is applying for approval of the Schedules to the Bylaw which provide the applied-for sanitary and stormwater rates charged to its city of Edmonton customers for the 2022-2024 PBR term. In order to stagger the PBR terms and future regulatory proceedings, the Wastewater Treatment and Drainage PBR Applications are aligned under a three-year PBR term 2022-2024 (with subsequent PBR Applications proposed for five year terms) and the Water PBR Application is a five-year PBR term 2022-2026. Compared to a five-year PBR term, a three-year Drainage PBR term allows both EWSI and the City Council as regulator to better manage the risks of implementing SIRP and CORe Strategies which are both in the in the early stages, having just started in late 2019. The 2022-2024 PBR term will be a period of learning as Drainage Services gains further experience in these areas. A shorter PBR term provides an opportunity for an earlier re-assessment of these two major strategies during which EWSI will be gathering more information on asset conditions, particularly in areas of high expected deterioration, and will be gaining experience in new programs such as the SIRP LID Program. This additional information will better inform the capital and operating plans for the 2025-2029 Drainage PBR.

14. Beginning with the 2022-2024 PBR term, the PBR structure for Drainage Services will be fully aligned with EWSI's Water and Wastewater Treatment PBR framework. In the 2022-2024 PBR term, the PBR structure for Drainage Services includes the following elements: (i) establishing a PBR formula described in the Bylaw to set rates based on routine and Non-Routine Adjustments; (ii) Special rate Adjustments to the fixed charges and variable charges for 2022 to

re-base the revenue requirement for the 2022-2024 PBR to pass on to customers any cost savings achieved in the prior PBR term and to reflect the costs associated with continuing to provide safe and reliable sanitary and stormwater services to its customers; (iii) Special rate Adjustments to the sanitary fixed charges and stormwater rates for 2022 to recover costs incurred in 2020 associated with the 90-Day Utility Bill Deferral Program; (iv) Special rate Adjustments to the stormwater rate to recover costs for SIRP and Special rate Adjustments to the sanitary variable charges to recover costs for CORe; (v) a 0.25% efficiency factor; and (vi) a proposed return on equity of 9.95% for SIRP and CORe programs and 6.61% (average) return on equity for sanitary (excluding CORe) and stormwater (excluding SIRP) investments.

15. These elements of the PBR structure are reflected in the Bylaw. Schedules 1, 2, 3 and 4 of the Bylaw set out fixed, flat and variable rates, service charges, Terms and Conditions for the provision of sanitary and stormwater services, Routine Adjustments and Non-Routine Adjustments and performance measures. Refer to Appendix A to this Drainage Services Rate Application for the background and details behind the proposed revisions to the Bylaw.

16. EWSI has prepared this Application to provide its regulator, Edmonton City Council, with a comprehensive understanding of the basis for EWSI's proposed sanitary and stormwater rates, associated revenue requirement and proposed performance measures for the 2022-2024 PBR term. This application is prepared in accordance with Minimum Filing Requirements ("MFR") approved by Edmonton City Council in March 2013. In addition to implementing the MFR, EWSI has also complied with other motions passed by the City's Utility Committee which are addressed in this Application. A listing of these motions and explanation of how EWSI has addressed them is provided in Appendix B to this Application.

17. The following evidence provided in this Application will provide Edmonton City Council with greater visibility and transparency of EWSI's forecast revenue requirement and proposed rates:

- detailed financial schedules underlying the revenue requirement calculations;
- detailed business cases providing supporting rationale for capital projects for projects over $10 million in total capital expenditures and for programs over $10 million in capital expenditures during the 2022-2024 PBR term;
- historical capital cost variance explanations relative to the amounts approved in the City LTP and Non-Routine Adjustment Applications and a financial reconciliation of

EWSI's forecast operating costs for 2022 relative the target operating costs as determined based on the City's 2017 Budget operating costs less efficiencies;

- forecast assumptions and methodologies for wastewater volumes, operating and capital costs; and
- support for EWSI's proposed cost of capital, capital structure and efficiency factor.

18. EWSI has also included PBR Progress Reports for 2017, 2018 and 2019 which are provided annually to the City to review EWSI's operational and financial performance for the prior year. Refer to Appendices E-1 to E-3 for these PBR Progress Reports.

19. EWSI is confident that on the basis of the information provided, the Edmonton City Council will conclude that EWSI's applied-for sanitary and stormwater rates are just, reasonable, prudent and in the public interest.

1.3 Applied-For Performance Measures

20. For the 2022-2024 PBR term, operational performance of EWSI will continue to be assessed under the following four categories: (i) environment; (ii) customer service; (iii) system reliability and optimization; and (iv) safety. Each of these categories contains individual performance measures that represent the more specific performance standards (or targets) expected. The performance standards are based on historic trending and targeted future performance and where available, aligned with industry benchmarks. With each PBR renewal, EWSI typically revises the PBR performance metrics through updating the standards of performance, where reasonable, and introducing new metrics to better align with operational priorities and strategic goals. However, the current performance metrics for Drainage Services were only introduced on January 1, 2020 and EWSI has not yet completed a full reporting cycle. EWSI is proposing to maintain that program approved by City Council in February, 2020 through the 2022-2024 PBR term given it has only recently been introduced.

1.4 EWSI Background and Corporate Structure

21. EWSI is the legal entity under which the three separate regulated business units operate: Water Services (or "Water"); Wastewater Treatment Services (or "Wastewater Treatment"); and Drainage Services (or "Drainage"). EWSI is a wholly owned subsidiary of EPCOR Utilities Inc. ("EUI" or "EPCOR"). Through this ownership, EWSI is affiliated with other corporations within the EUI group of companies.

22. EWSI receives services from and provides services to other EPCOR corporations. This structure allows EWSI to benefit from both the extensive experience that resides within the other corporations of EUI, and from economies of scale and scope that arise from the EPCOR group's inter-corporate services approach to its business operations. Inter-corporate services costs are determined on a cost-recovery basis in accordance with EPCOR's Inter-Affiliate Code of Conduct and are reflected in service level agreements between the parties. Each of the business units operating under EWSI obtains corporate services from its parent corporation, EUI. Corporate services are comprised of activities that are centrally managed within the EPCOR group due to their nature and/or for the purpose of realizing economies of scale and greater effectiveness.

23. To the extent that technical or support staff services are provided from any of the regulated business units to any commercial or non-regulated business units, EWSI utilizes a time tracking system to facilitate appropriate cost recoveries in the regulated business units and to ensure no cross-subsidization occurs between any regulated services and any commercial services. Direct charges, such as consultants and contractors, are directly charged to the commercial services business.

1.5 Forecast Revenue Requirement – Sanitary and Stormwater Utilities

24. Drainage provides both sanitary and stormwater services to its customers. Although the sanitary and stormwater utilities share some facilities and resources and are both operated and accounted for on a combined basis, they provide separate and distinct utility services. Therefore, separate revenue requirements have been developed for each utility using the cost of service methodology described in Section 12. The sanitary utility revenue requirement is further segregated into a "base" revenue requirement, which excludes CORe, and the CORe revenue requirement. Similarly, the stormwater utility revenue requirement is segregated between the base revenue requirement, which excludes SIRP, and the SIRP revenue requirement.

25. Drainage's proposed sanitary and stormwater utility rates are designed to recover the forecast revenue requirements for the sanitary utility (row 25 of Table 1.5-1) and the stormwater utility (row 24 of Table 1.5-2) over the 2022-2024 PBR term. Besides the "base" rates, Drainage's proposed 2022-2024 rates include the Special Rate Adjustments for CORe, which are based on the CORE revenue requirement (row 16 of Table 1.5-1) and the Special Rate Adjustments for SIRP, which are based on the SIRP revenue requirement (row 15 of Table 1.5-2).

26. The cost components comprising EWSI's sanitary utility revenue requirement are shown on Table 1.5-1. The revenue requirement is based on the forecast costs for the 2022-2024 PBR

term, with EWSI's most recent forecast of amounts for 2021 (the "2021 Forecast") provided for comparison. The sanitary utility revenue requirement is shown in three parts: the sanitary utility revenue requirement excluding CORe; the revenue requirement for CORe; and the total sanitary utility revenue requirement.

Table 1.5-1
EWSI Forecast Sanitary Utility Revenue Requirement
(Financial Schedule 3-1)
2021-2024
($ millions)

		A **2021 F**	B **2022 F**	C **2023 F**	D **2024 F**
	Sanitary Utility excluding CORe				
1	Operating Costs	68.5	50.9	45.7	45.9
2	Franchise Fees and Property Taxes	9.9	9.6	9.9	10.4
3	Depreciation and Amortization	17.4	16.9	17.6	18.7
4	Return on Rate Base Financed by Debt	12.4	15.9	15.8	16.9
5	Return on Rate Base Financed by Equity	33.3	17.6	22.2	27.4
6	Revenue Requirement before Revenue Offsets	141.4	110.8	111.3	119.3
7	Less: Revenue Offsets	(9.0)	(5.6)	(4.5)	(4.6)
8	**Sanitary Utility Revenue Requirement, excluding CORe**	**132.4**	**105.2**	**106.7**	**114.7**
	CORe				
9	Operating Costs	4.1	5.4	4.1	5.5
10	Franchise Fees and Property Taxes	0.5	1.1	1.2	1.6
11	Depreciation and Amortization	0.8	1.5	2.1	2.7
12	Return on Rate Base Financed by Debt	0.9	2.0	2.5	3.4
13	Return on Rate Base Financed by Equity	(0.5)	4.1	5.4	7.1
14	**Revenue Requirement - CORe**	**5.8**	**14.2**	**15.2**	**20.4**
	Sanitary Utility				
15	Operating Costs	72.7	56.3	49.7	51.4
16	Franchise Fees and Property Taxes	10.3	10.8	11.2	12.1
17	Depreciation and Amortization	18.2	18.4	19.6	21.4
18	Return on Rate Base Financed by Debt	13.3	17.9	18.4	20.3
19	Return on Rate Base Financed by Equity	32.8	21.6	27.6	34.5
20	Revenue Requirement before Revenue Offsets	147.2	125.0	126.5	139.6
21	**Less: Revenue Offsets**	**(9.0)**	**(5.6)**	**(4.5)**	**(4.6)**
22	**Total Sanitary Utility Revenue Requirement**	**138.2**	**119.4**	**122.0**	**135.0**

27. The cost components comprising EWSI's stormwater Utility revenue requirement are shown on Table 1.5-2. The revenue requirement is based on the forecast costs for the 2022-2024 PBR term, with EWSI's most recent forecast of amounts for 2021 (the "2021 Forecast") provided for comparison. The stormwater utility revenue requirement is shown in three parts: the stormwater utility revenue requirement excluding SIRP; the revenue requirement for SIRP; and the total stormwater utility revenue requirement.

Table 1.5-2
EWSI Forecast Stormwater Revenue Requirement
(Financial Schedule 3-2)
2021-2024
($ millions)

		A **2021 F**	B **2022 F**	C **2023 F**	D **2024 F**
	Stormwater Utility excluding SIRP				
1	Operating Costs	50.9	47.8	48.5	49.1
2	Property Taxes	0.9	1.0	1.0	1.0
3	Depreciation and Amortization	20.4	21.9	22.3	23.4
4	Return on Rate Base Financed by Debt	11.6	15.4	15.3	16.4
5	Return on Rate Base Financed by Equity	(5.8)	17.0	21.5	26.6
6	Revenue Requirement before Revenue Offsets	77.9	102.9	108.6	116.4
7	Less: Revenue Offsets	(0.7)	(0.7)	(0.7)	(0.7)
8	**Total Stormwater Utility Revenue Requirement, excluding SIRP**	**77.2**	**102.2**	**107.8**	**115.7**
	SIRP				
9	Operating Costs	4.1	6.6	7.4	7.8
10	Depreciation and Amortization	-	1.7	4.1	6.3
11	Return on Rate Base Financed by Debt	-	1.2	2.7	4.0
12	Return on Rate Base Financed by Equity	0.1	2.4	5.6	8.3
13	**Total Revenue Requirement - SIRP**	**4.1**	**12.0**	**19.8**	**26.4**
15	**Stormwater Utility**	-	-	-	-
16	Operating Costs	55.0	54.4	55.9	56.9
17	Property Taxes	0.9	1.0	1.0	1.0
18	Depreciation and Amortization	20.4	23.6	26.4	29.7
19	Return on Rate Base Financed by Debt	11.6	16.6	18.0	20.3
20	Return on Rate Base Financed by Equity	(5.8)	19.4	27.1	34.9
21	Revenue Requirement before Revenue Offsets	82.0	114.9	128.3	142.8
22	Less: Revenue Offsets	(0.7)	(0.7)	(0.7)	(0.7)
23	**Total Stormwater Utility Revenue Requirement**	**81.3**	**114.2**	**127.6**	**142.0**

28. EWSI is proposing to re-base the revenue requirement based on the forecast costs for 2022-2024. The re-basing is primarily driven by the following factors: (i) the transfer of Biosolids Management Program to Wastewater Treatment in 2022; (ii) cost savings achieved over the 2018-2021 PBR term which are passed on to customers through re-basing; (iii) increases in the revenue requirements over the 2022-2024 PBR term; (iv) customer growth over the 2022-2024 PBR term; and (iv) declining consumption over the 2022-2024 PBR term.

29. Late in 2019, EWSI engaged HDR Engineering, Inc. to conduct a comprehensive cost of service study and analysis encompassing Wastewater Treatment, as well as Drainage's sanitary and stormwater utilities. HDR found that all classes of service are within a reasonable range of covering their respective costs. As such, EWSI is not proposing any cross-utility or interclass adjustments to sanitary and stormwater rate structure and design for the 2022-2024 PBR term. Instead, as HDR has recommended, EWSI plans to update the cost of service analysis over the

2022-2024 PBR term with the overall objective of implementing comprehensive improvements and refinements to rate structure and rate design in subsequent PBR terms.

1.6 Proposed Cost of Capital

30. EWSI has determined its revenue requirement based on its best estimates of the prudently incurred costs to provide sanitary and stormwater services plus a fair return on its investment of 9.95% based on a 40% equity ratio (refer to Appendix D Return on Equity Memorandum). In previous applications, EWSI contracted an external industry expert to develop the proposed fair return rate (return on equity) who based their analysis on traditional financial approaches and current financial market conditions. EWSI determined that this approach is not viable for the 2022-2024 application given the market conditions resulting from the global COVID 19 pandemic. In late February/early March 2020, investors and share markets reacted negatively to announcements surrounding the pandemic. Many countries, including Canada, began to "lock down" their economies; and federal governments and central banks used fiscal and monetary policy initiatives to diminish the economic impact of the lockdowns on citizens and businesses. The resulting changes on market data used to estimate equity rates of return impacted the viability of the traditional approaches.

31. EWSI instead proposes that an update of Grant Thornton's 2016 analysis (used to set the 2017-2021 PBR term's common equity return) be used to establish the 2022 – 2024 PBR common equity rate of return. A formulaic extension of the previously approved method is seen as the most straightforward approach and best aligns with the City's desire to establish a risk premium to the Alberta Utility Commission's (AUC) generic cost of capital to derive the allowed rate of return on equity for EWSI. EWSI has also provided commentary in the Return on Equity Memorandum (Appendix D) to document the differences in the risk profile of EWSI's businesses in relation to those regulated by the AUC in order to justify the risk premium over the generic allowed return on equity. Some of these key risk factors include higher revenue risks, higher health and environmental risks, capital recovery risk and risks associated with higher levels of contributed assets.

32. For this PBR term, EWSI is proposing to apply the 9.95% rate of return on equity for the SIRP and CORe revenue requirements. In an effort to moderate Drainage rate increases for the 2022-2024 PBR term, EWSI proposes that the equity rate of return for sanitary (excluding CORe) and stormwater (excluding SIRP) revenue requirements be reduced from the fair rate of return of 9.95%. This reduced rate of return will be established at 5.50% for 2022 and "ramped up" in a linear fashion by 1.1% per year to achieve a fair return of 9.95% by 2026 (averaging 6.61% for

the 2022-2024 PBR term). EWSI recognizes the current economic climate is creating financial hardship for many customers and so it is voluntarily reducing costs to ratepayers by over $66 million for the 2022-2024 PBR term by accepting a return on equity that is far lower than a fair rate of return. The proposed cost of new debt of 3.50% is based on EWSI's stand-alone debt rating of A (low) as provided by Dominion Bond Rating Service in September 2020 (refer to Appendix C).

1.7 Annual Drainage Rate Setting (2022-2024)

33. In accordance with Schedule 3 of the Bylaw, EWSI will submit annual rate filings. In general terms, the annual flat and variable charges for stormwater and sanitary utility services will be determined by applying the rate adjustment mechanism to the prior year rates. The annual rate adjustment mechanism includes Routine Adjustments and Non-Routine Adjustments. The current bylaw determines that the rates in the first year of a given PBR term are a formulaic extension of the rates of the last year of the prior term. For the 2022-2024 PBR term, EWSI is proposing to set the rates for the first year (2022) based on the actual rates as defined in this application rather than the formulaic adjustment of 2021 rates. All other years of the PBR term would follow the formulaic approach.

34. This proposed change in approach is based on two considerations. First, in order to accommodate the City of Edmonton's election cycle, this application is being submitted approximately 6 months earlier than was done of prior applications. This change has increased the forecast risk associated with determining the inflation rate that comprises the adjustment mechanism. Second, and perhaps most importantly, the turmoil in financial markets caused by the COVID 19 pandemic has compounded that forecast risk. By setting the first year rates at a defined rate, EWSI continues to bear the same risk within a PBR term as currently assumed, but is not exposed to the risk associated by factors beyond its direct control.

35. Routine Adjustments include: (i) inflation factor; (ii) less an efficiency factor; and (iii) plus Special Rate Adjustments. The proposed inflation factor, efficiency factor and three Special Rate Adjustments for the 2022-2024 PBR term are discussed below.

36. Non-routine Adjustments are, by their nature, unusual, significant in size or nature and beyond the scope of control of EWSI. Non-Routine Adjustments are comprised of the following seven categories which are described in detail in Schedule 3 of the Bylaw:

- changes to legislation, regulation or taxes;

- consequences of force majeure;
- deterioration of drainage or wastewater treatment systems;
- customer-initiated or City-initiated system expansion;
- City-initiated relocations of drainage assets;
- franchise agreement amendments;
- City initiatives (environmental initiatives);
- flood mitigation; and
- grant funding.

37. For the 2022-2024 PBR term, EWSI is proposing two minor changes to the Non-Routine Adjustment criteria. The first is intended to provide greater clarity to the existing clause regarding deterioration of the drainage system by including unanticipated asset failures or deterioration requiring immediate repair or restoration in the definition. The second change is the addition of a new clause for negative Non-Routine Adjustments related to the receipt of grants. This clause is intended for instances where grant funding is received for projects that are already included in rates. A negative Non-Routine Adjustment would allow a reduction to rates to eliminate duplicate funding of a single project. .

1.7.1 Inflation Factor

38. In the 2022-2024 PBR term, EWSI is proposing an inflation factor based on a weighting of 40% non-labour component and 60% labour component to represent the Drainage internal cost structure. This weighting is based on the proportion of forecast labour costs within Drainage operations relative to all other costs.

39. The non-labour component is measured based on the annual percentage increase in the Alberta Consumer Price Index (Alberta CPI); and the labour component is measured based on the annual percentage increase in the Average Hourly Earnings, Alberta, Industrial Aggregate (herein referred to as the "AHE index"). The labour escalator reflects a readily available and verifiable index provided by a third party (Statistics Canada).

1.7.2 Efficiency Factor

40. Under the PBR rate setting formula, an efficiency (or productivity) factor is applied as a reduction to the inflation factor to reduce rates to customers. The efficiency factor represents

the minimum amount by which EWSI must improve operational efficiency in order to maintain its allowed rate of return on equity. The efficiency factor was determined at 0.25% for the 2017 to 2021 PBR term for both Water and Wastewater Treatment.

41. In developing the efficiency factor evidence for the 2017 – 2021 PBR term, EWSI engaged Kaufmann Consulting, a recognized expert in advising utilities and regulatory agencies on efficiency factors. EWSI's believes that Kaufmann Consulting used the approach advocated by the AUC in determining the proposed efficiency factor by basing the proposal on industry wide-parameters. There were a limited number of instances where Kaufmann deviated from the AUC approach, but this was limited to the application of the underlying data to a water utility rather and a departure from the established method. Kaufmann Consulting recommended a negative 0.5% efficiency factor based on the clear evidence that comparable utility industry productivity levels have been less than 0%. In the application, EWSI proposed a 0% efficiency factor for the 5-year term in recognition of the continuing commitment to its customers to maintain operational efficiency even through the fourth renewal of its PBR while at the same time improving service levels to meet higher regulatory and safety standards and greater expectations for environmental performance. EWSI ultimately proposed to maintain the previous term's 0.25% efficiency factor in order to maintain alignment with City of Edmonton efficiency objectives.

42. EWSI believes that a new external consultant study would yield similar results to the previous Kaufmann Consulting report. The underlying industry parameters have not changed since that time. As an alternative, EWSI proposes maintaining the 0.25% efficiency factor in its application for Water, Wastewater and Drainage. This will allow EWSI to remain in alignment with City of Edmonton goals.

43. One counter argument to this approach is that the efficiency factor generally declines over successive PBR terms and the efficiency factor for drainage should be higher than 0.25% as the upcoming application will establish their first, formal PBR term. A declining efficiency factor was the historic trend for Water until the 2007-2011 PBR term where it was set at 0.25% and has been maintained at that level since then. Under normal circumstances, the approach to reduce the efficiency factor over time may be appropriate for Drainage. However, in transferring the Drainage utility to EPCOR, the City of Edmonton established aggressive efficiency expectations for both operating and capital costs (to deliver the capital program at 10% lower costs and 5% lower operating costs by 2021).

44. As discussed below, Drainage has met those targets, and therefore a significant level of efficiency has already been extracted. The ramped Drainage return on equity, as described above

and included in the Application, effectively reduces Drainage's return below a level commensurate with the risk the utility takes on. Drainage is seen as a higher risk business due to several factors explained in Appendix D. Thus, the addition of the Drainage business to the EWSI portfolio increases EWSI's overall business risk profile, yet EWSI has proposed a lower return on equity for Drainage in order to mitigate rate increases. Any efficiency factor above 0.25%, in combination with the ramped return on equity, is seen as moving the risk/return profile for Drainage beyond an acceptable level.

1.8 Special Rate Adjustments to Sanitary and Stormwater Rates

45. For the 2022-2024 PBR term, EWSI will require four Special Rate Adjustments for: (i) re-basing of the sanitary and stormwater revenue requirements ("Re-basing"); (ii) recovery of costs related to the 90 Day Deferral Program; (iii) recovery of costs related to CORe; and (iv) recovery of costs related to SIRP. These Special Rate Adjustments by rate class are provided in section 2.3 of Schedule 3 to the Bylaw.

1.8.1 Special Rate Adjustments for Re-Basing

46. EWSI is applying for Special Rate Adjustments for Re-Basing to be applied to sanitary and stormwater rates in 2022 to re-base the revenue requirement. The Special Rate Adjustments for Re-basing account for the difference between the revenue that would be realized by limiting annual rate increases to PBR inflation (row 6 of Table 1.8.1-1) and EWSI's revenue requirement forecast, excluding the portions of the revenue requirement attributable to SIRP and CORe (row 10 of Table 1.8.1-1). The resulting surplus of $30.7 million (Row 11 of Table 1.8.1-1) will be refunded to rate payers over the 2022-2024 PBR term through the Special Rate Adjustment for Re-basing applied to the fixed and variable charges. The portion of the revenue attributable to SIRP and CORe will be addressed through the Special Rate Adjustments discussed in sections 1.8.3.

Table 1.8.1-1
Revenue Requirement Shortfall
2022-2024
($ millions)

		A **2022-2024**
	Revenue Collected at Prior Year's Rates:	
1	Sanitary Utility, excluding CORe	402.5
2	Stormwater Utility, excluding SIRP	253.9
3	Total Revenue Collected at Prior Year's Rates	656.3
4	PBR Inflation Impact on Revenue	26.7
5	Total Revenue Collected at PBR Rates	683.0
	Revenue Requirement:	
6	Sanitary Utility, excluding CORe	326.6
7	Stormwater Utility, excluding SIRP	325.7
8	Total Revenue Requirement	652.4
9	**Revenue Surplus to be Refunded through Re-basing**	**30.7**
	Revenue Surplus attributable to:	
10	Transfer of the Biosolids Management Program to Wastewater Treatment	47.5
11	Cost savings achieved over the 2018-2021 PBR Term	20.0
12	Increase in Revenue Requirement over the 2022 and 2024 PBR Term	(38.1)
13	Customer growth over the 2022-2024 PBR Term	12.7
14	Declining Consumption over the 2022-2024 PBR Term	(11.4)
15	**Revenue Surplus to be Refunded through Re-basing**	**30.7**

47. The revenue surplus to be refunded to customers through the Special Rate Adjustments for Re-basing is comprised of the following: (i) a $47.5[2] million reduction in the sanitary utility revenue requirement reflecting the transfer of the Biosolids Management Program from Drainage Services to Wastewater Treatment effective April 1, 2022 (there is a corresponding increase in the Wastewater Treatment revenue requirement); (ii) a $20.0 million decrease in the 2017-2021 revenue requirements relative to forecast which includes some operating cost efficiencies which are passed on to ratepayers and lower than forecast capital expenditures; (iii) a $38.1 million increase in revenue requirements in the 2022-2024 PBR term primarily due to capital additions in sanitary (excluding CORe) and stormwater (excluding SIRP) operations and reflecting the ramp up in return on equity for these investments; (iv) a $12.7 million increase in revenues related to customer growth; and (v) a $11.4 million decrease in revenues due to a long-term decline in consumption per customer as explained in section 5.8.3.

[2] The offsetting increase in the Wastewater Treatment revenue requirement is $48.7 million which reflects the higher return on equity for Wastewater Treatment compared to Drainage during the 2022-2024 PBR term.

1.8.2 Special Rate Adjustment for 90 Day Deferral Program

48. In March 2020, EWSI implemented the 90 Day Deferral Program which allowed customers experiencing financial hardship directly related to the COVID-19 pandemic to have the option to defer water, wastewater treatment and drainage utility bill payments, without interest or penalty, for a 90-day period from March 18, 2020 to June 18, 2020. EWSI's program is aligned with the Government of Alberta's program for electricity and natural gas customers. EWSI summarized its plan for the 90 Day Deferral Program in a Report to Utility Committee dated October 2, 2020. In accordance with this plan, EWSI has established a deferral account to track and recover the costs for administering the deferral of customer payments, interest expenses and any incremental bad debts costs. In this PBR Application, EWSI is applying for a Special Rate Adjustment in 2022 to recover the forecast cost of $1.6 million for the incremental bad debt expense, administration, and carrying costs associated with the 90 Day Deferral Program. EWSI is proposing to adjust its final rates to reflect the actual costs incurred for this program as part of its 2022 Rate Filing and will submit to the City Manager for approval.

49. Table 1.8.2-1 summarizes the incremental bad debt expense, administration, and carrying costs associated with the 90 Day Deferral Program. EWSI is proposing to apply Special Rate Adjustments to the sanitary fixed monthly charge and to the stormwater rates in 2022 to recover the $1.6 million cost of the 90 Day Deferral Program. These Special Rate Adjustments will add $0.32 to the average residential bill in 2022, and will be removed from customer bills in 2023.

Table 1.8.2-1
90 Day Deferral Program
Forecast Revenue Requirement
(2020)
($ millions)

	Item	A Expense
1	Incremental Bad Debt Expense	1.2
2	Late Payment Charges	0.2
3	Carrying Costs	0.2
4	**Total Revenue Requirement**	**1.6**

1.8.3 Special Rate Adjustments for SIRP and CORe

50. EWSI received approval from City Council for Non-Routine Adjustments to rates in 2020 and 2021 to provide for the recovery of the costs of SIRP and CORe initiatives between 2018 and 2021. EWSI is proposing to apply Special Rate Adjustments to sanitary and stormwater rates to

recover the costs of SIRP and CORe over the 2022-2024 PBR term. The forecast costs of SIRP and CORE, shown in Section 4 and summarized in Table 1.8.3-1 below, are calculated in accordance with the cost of service methodologies described in Section 12. Consistent with the Non-Routine Adjustments, the Special Rate Adjustments for SIRP will be applied to the Stormwater Utility rate and the Special Rate Adjustments for CORe will be applied to the Sanitary Utility monthly variable charge. The impact of these Special Rate Adjustments on the average monthly residential bill are shown on line 7 of Table 1.8.3-1.

Table 1.8.3-1
SIRP and CORe Revenue Requirements
Recovered through Special Rate Adjustments
($ millions)

		A	B	C	D	E	F
			CORe			**SIRP**	
		2022F	**2023F**	**2024F**	**2022F**	**2023F**	**2024F**
1	Operating Costs	5.4	4.1	5.5	6.6	7.4	7.8
2	Franchise Fees	1.1	1.2	1.6	-	-	-
3	Depreciation and Amortization	1.5	2.1	2.7	1.7	4.1	6.3
4	Return on Rate Base Financed by Debt	2.0	2.5	3.4	1.2	2.7	4.0
5	Return on Rate Base Financed by Equity	4.1	5.4	7.1	2.4	5.6	8.3
6	**Total Revenue Requirement**	**14.2**	**15.2**	**20.4**	**12.0**	**19.8**	**26.4**
7	**Average Residential Bill Impact ($/month)**	**2.82**	**2.37**	**3.51**	**2.29**	**3.33**	**4.25**

1.9 Customer Bill Impacts

51. The impacts of the annual sanitary and stormwater rate increases on the bills for the average residential customer, the average multi-residential customer and the average commercial customer are shown on Tables 1.9-1, 1.9-2 and 1.9-3.

Table 1.9-1
Bill Impacts on the Average Residential Customer
($/month)

		A **2022**	B **2023**	C **2024**	D **Total / Average**
	Sanitary Utility				
1	Monthly Consumption per Customer - m^3	13.4	13.2	12.9	
2	Prior Year's Bill, excluding CORe	25.32	24.60	25.08	
3	Impact of Declining Consumption	-	(0.25)	(0.26)	
4	PBR Inflation – Eff. Factor (i-x)	0.53	0.51	0.52	
5	SRA – Re-basing	(1.48)	0.45	0.46	
6	SRA – 2020 Bad Debt Recovery	0.23	(0.23)	-	
7	Current Year Bill, excluding SRA - CORe	24.60	25.08	25.80	
8	Change in Bill, excluding SRA - CORe - %	-2.9%	2.0%	2.9%	0.7%
9	SRA - CORe	2.82	2.37	3.51	
10	Current Year Bill, including SRA - CORe - $	27.41	27.45	29.32	3.01
11	Change in Bill, including SRA - CORe - %	4.2%	0.1%	6.8%	3.7%
	Stormwater Utility				
12	Prior Year's Bill. Excluding SIRP	13.06	12.67	13.07	
13	PBR Inflation – Eff. Factor (i-x)	0.27	0.26	0.27	
14	SRA - Rebasing	(0.76)	0.23	0.24	
15	SRA - 2020 Bad Debt Recovery	0.09	(0.09)	-	
16	Current Year Bill, excluding SRA - SIRP	12.67	13.07	13.58	
17	Change in Bill, excluding SRA - SIRP	-3.0%	3.2%	3.9%	1.3%
18	SRA - SIRP	2.29	3.33	4.25	
19	Current Year Bill, including SRA - SIRP - $	14.96	16.40	17.83	4.07
20	Change in Bill, including SRA - SIRP - %	8.7%	9.6%	8.7%	9.0%
	Combined Sanitary and Stormwater	42.37	43.85	47.15	
21	Average Monthly Bill	2.30	1.48	3.30	7.08
22	Change in Bill	5.7%	3.5%	7.5%	5.6%
23	Average Bill Increase	13.4	13.2	12.9	

52. Table 1.9-1 shows that over the 2022-2024 PBR term, increases in residential sanitary and stormwater bills are largely attributable to SIRP and CORe. The average sanitary bill increase excluding CORe is 0.7% per year and the average bill increase including CORe is 3.7% per year. The average stormwater bill excluding SIRP is 1.3% per year and the average bill increase including SIRP is 9.0% per year.

Table 1.9-2
Bill Impacts on the Average Multi-Residential Customer
($/month)

		A **2022**	B **2023**	C **2024**	D **Total**
	Sanitary Utility				
1	Monthly Consumption per Customer - m^3	388.4	386.6	384.7	
2	Prior Year's Bill, excluding CORe	472.60	455.96	470.69	
3	Impact of Declining Consumption	-	(1.93)	(1.99)	
4	PBR Inflation – Eff. Factor (i-x)	9.83	9.44	9.75	
5	SRA – Re-basing	(27.58)	8.33	8.60	
6	SRA – 2020 Bad Debt Recovery	1.11	(1.12)	-	
7	Current Year Bill, excluding SRA - CORe	455.96	470.69	487.05	
8	Change in Bill, excluding SRA - CORe - %	-3.5%	3.2%	3.5%	1.1%
9	SRA - CORe	81.58	69.44	104.50	
10	Current Year Bill, including SRA - CORe - $	537.50	540.16	591.58	90.39
11	Change in Bill, including SRA - CORe - %	7.2%	0.5%	9.5%	5.8%
	Stormwater Utility				
12	Prior Year's Bill. Excluding SIRP	102.28	99.17	102.32	
13	PBR Inflation – Eff. Factor (i-x)	2.13	2.06	2.13	
14	SRA - Rebasing	(5.97)	1.82	1.88	
15	SRA - 2020 Bad Debt Recovery	0.74	(0.74)	-	
16	Current Year Bill, excluding SRA - SIRP	99.17	102.32	106.32	
17	Change in Bill, excluding SRA - SIRP	-3.0%	3.2%	3.9%	1.3%
18	SRA - SIRP	17.95	26.11	33.30	
19	Current Year Bill, including SRA - SIRP - $	117.13	128.43	139.62	31.86
20	Change in Bill, including SRA - SIRP - %	8.7%	9.6%	8.7%	9.0%
	Combined Sanitary and Stormwater Utility Bill				
21	Average Monthly Bill	654.63	668.59	731.20	
22	Change in Bill	45.67	13.96	62.61	122.25
23	Average Bill Increase	7.5%	2.1%	9.4%	6.3%

53. Similar to residential bills, Table 1.9-2 shows that over the 2022-2024 PBR term, increases in multi-residential sanitary and stormwater bills are largely attributable to SIRP and CORe. The average sanitary bill increase excluding CORe is 1.1% per year and the average bill increase including CORe is 5.8% per year. The average stormwater bill excluding SIRP is 1.3% per year and the average bill increase including SIRP is 9.0% per year.

54. The differences in the percentage increases in sanitary bills between the residential and multi-residential customer classes relates to changes in consumption per customer, since residential consumption per customer forecast is expected to decrease at a faster rate than multi-residential consumption per customer.

Table 1.9-3
Bill Impacts on the Average Commercial Customer
($/month)

	Commercial	A 2022	B 2023	C 2024	D Total
	Sanitary Utility				
1	Monthly Consumption per Customer - m^3	82.3	86.4	88.5	
2	Prior Year's Bill, excluding CORe	118.60	114.76	123.08	
3	Impact of Declining Consumption	-	4.28	2.28	
4	PBR Inflation – Eff. Factor (i-x)	2.47	2.48	2.61	
5	SRA – Re-basing	(6.92)	2.18	2.30	
6	SRA – 2020 Bad Debt Recovery	0.62	(0.63)	-	
7	Current Year Bill, excluding SRA - CORe	114.76	123.08	130.27	
8	Change in Bill, excluding SRA - CORe - %	-3.2%	7.2%	5.8%	3.3%
9	SRA - CORe	17.28	15.52	24.05	
10	Current Year Bill, including SRA - CORe - $	132.02	138.67	154.37	29.72
11	Change in Bill, including SRA - CORe - %	5.9%	5.0%	11.3%	7.4%
	Stormwater Utility				
12	Prior Year's Bill. Excluding SIRP	162.01	157.09	162.07	
13	PBR Inflation – Eff. Factor (i-x)	3.37	3.27	3.37	
14	SRA - Rebasing	(9.46)	2.88	2.97	
15	SRA - 2020 Bad Debt Recovery	1.17	(1.17)	-	
16	Current Year Bill, excluding SRA - SIRP	157.09	162.07	168.42	
17	Change in Bill, excluding SRA - SIRP	-3.0%	3.2%	3.9%	1.3%
18	SRA - SIRP	28.44	41.35	52.74	
19	Current Year Bill, including SRA - SIRP - $	185.50	203.46	221.20	50.50
20	Change in Bill, including SRA - SIRP - %	8.7%	9.7%	8.7%	9.0%
	Combined Sanitary and Stormwater Utility Bill				
21	Average Monthly Bill	317.51	342.13	375.57	
22	Change in Bill	22.16	24.62	33.44	80.22
23	Average Bill Increase	7.5%	7.8%	9.8%	8.3%

55. Increase in average monthly bills for commercial customers are consistent with those of the residential and multi-residential customer classes. Sanitary Utility bills for commercial customers are forecast to increase at a greater rates than other classes because consumption per customer is forecast to increase over the PBR term as the economy recovers from the pandemic.

1.10 Stakeholder Consultation

56. EWSI completed a stakeholder engagement process as part of the PBR development to ensure that programs and initiatives remained aligned with stakeholder expectations. The approach taken was consistent with the City's public engagement policy and was reviewed with the Utility Committee. The public engagement process was designed to identify stakeholders' perspectives and preferences related to: Values, Performance Priorities and Rate and Investment level sensitivity.

57. The stakeholder engagement results (see Appendix K) support continuation of the current practices and approaches that place a great deal of emphasis on water quality, safety, customer service and responsiveness as well as the protection of the environment. Further, EWSI believes its planned capital programs are aligned with stakeholder priorities and the proposed rate increases are below the level stakeholders view as acceptable. A summary of the stakeholder engagement results includes the following:

Values

58. Customers indicated that the most important performance areas for Drainage Services are customer response times, maintaining performance and reducing contaminants to the North Saskatchewan River. Overall, across Water, Wastewater Treatment and Drainage, customers confirmed that EWSI has identified the main issues of importance in their performance measures.

Performance Priorities

59. Customers are satisfied overall with EWSI services. EWSI is described as reliable & consistent, safe & responsible, trustworthy, and is a company they like – although commercial customers are slightly more critical, with more moderate opinions than their residential counterparts. EWSI is given the most credit for reliability, and criticism for cost among both residential and commercial customers.

60. EWSI is generally seen as a trusted operator who is meeting customer expectations. Safe/quality water is so valued by Edmontonians it is seen as worth protecting above all else. Consistently Drainage Services rated lower in terms of performance, but with the acknowledgement that EPCOR is trying to move Drainage Services to a more acceptable level (i.e. inherited issues that are in the plans to address over time). Stakeholder groups believe Drainage Services needs a more aggressive plan with greater investment now to reduce the likelihood of failures.

Rate and Investment Levels

61. The infrastructure risks EWSI is managing are viewed to be increasing. Although the nature and source of risk varied by group, the consensus among stakeholders is that the cost associated with failure will in fact be greater with a negative social consequence than spending now to avoid it.

62. To avoid risk, stakeholders support EWSI investing in these services for longer-term benefits and efficiencies. At a minimum, they want to maintain status quo; however, many

stakeholder groups lean toward smart investment with protecting water, protecting the river, and elevating Drainage renewal as top priorities for investment. Based on price modelling, the acceptable average monthly bill increase for utility services is between $7 and $11, with $8 being optimal.

1.11 Organization of EWSI's Drainage PBR Application

63. The introductory sections of the Application include a review of the Drainage Transfer (section 2.0) and an over view of the sanitary and stormwater systems and discussion of historical performance and future expectations (section 3.0). Part A of this Application describes the methodology and assumptions used to determine the forecast revenue requirement and explains the forecast revenue requirement by each component (operating costs, capital costs, depreciation expenses, rate base and return on rate base, revenue offsets). In Part B of this Application, EWSI describes the methods by which each of the revenue requirement components are allocated between the three regulated customer segments in order to determine the cost of service for each customer segment. In Part B of this Application, EWSI describes the cost of service methodology for determining the sanitary and stormwater revenue requirements (section 12.0) and the calculation of sanitary and stormwater rates for each customer class (section 13.0). Part C of this Application summarizes EWSI's performance measures for 2022-2024, the terms and conditions and service fees in the Bylaw.

64. Organization of this Drainage Rate Application is summarized in Table 1.11-1.

Table 1.11-1
Organization of Drainage Rate Application

		A
	Section	**Topic**
1	1.0	Application Overview
2	2.0	Drainage Transfer Review
3	3.0	System Overview and Future Expectations
4	**Part A**	**Revenue Requirement**
5	4.0	Revenue Requirement Summary
6	5.0	Methodology and Key Assumptions
7	6.0	Operating Costs
8	7.0	Capital Expenditures
9	8.0	Depreciation and Amortization
10	9.0	Rate Base
11	10.0	Return on Rate Base
12	11.0	Revenue Offsets
13	**Part B**	**Cost of Service and PBR Rates**
14	12.0	Cost of Service
15	13.0	PBR Rates
16	**Part C**	**Performance Measures and Terms and Conditions of Service**
17	14.0	Performance Measures
18	15.0	Terms and Conditions of Service Fees

2.0 DRAINAGE TRANSFER REVIEW

65. EPCOR believes the Drainage transfer has been very successful, as will be demonstrated in this section:

- Commitments to employees have been met,
- Commitments to develop plans to address flooding and odour have been met,
- Commitments to find and achieve capital efficiencies of 10% below the City's forecasts have been far exceeded,
- Commitments to achieve a 5% operating efficiency by the start of the 2022-2024 PBR term have been exceeded and further efficiencies will be achieved and implemented during 2022 and 2023,
- Commitments to increase the dividend have been met,
- The relationship and interfaces between the City and Drainage continue to be strong,
- Drainage has developed a plan to rehabilitate the system on a prioritized basis, and
- The commitment to maintain the rate increase for the base operations (excluding SIRP and CORe) at 3% for the period 2018-2021 have been met.

66. Furthermore, EWSI's requested rate increase for the 2022-2024 PBR, is significantly lower than projected at the time of transfer. At the time of the transfer, it was noted in the Grant Thornton report that the continuation of the 3% annual average bill increase was not sufficient to fund the level of projected capital expenditures anticipated and that the financial performance would degrade over time. Grant Thornton's analysis anticipated that annual average bill increases in the range of 12% to 14% per year would be required during the 2022-2024 period regardless of whether Drainage remained with the City or was transferred to EPCOR[3]. EWSI's 2022-2024 PBR reflects annual average increases in the monthly sanitary and stormwater bill of 5.6%. This increase includes both the SIRP and CORe components.

67. EWSI has accomplished lower rate increases through: diligently assessing cost reduction opportunities for both operating and capital costs; prioritizing capital to include only the most urgently needed projects; implementing the SIRP Strategy at a far lower cost than the original City estimates; and EWSI accepting a lower than fair rate of return over the 2022-2026 period to

[3] Refer to columns F, G, H of Tables 2.1-1 and 2.1-2. These bill increases reflect forecast investments in flood mitigation but do not include significant investments in corrosion and odour reduction as in EWSI's CORe Strategy.

minimize rate increases to its customers. EWSI has achieved lower rate increases relative to the Grant Thornton analysis even with higher required capital costs for base Drainage operations (operations excluding SIRP and CORe components) than what was projected at the time of the transfer due the number of unplanned emergencies and failures that needed to be addressed.

68. Transitioning Drainage Services to EPCOR in 2017 has provided EWSI the opportunity to integrate all four components of the water utility cycle under its management. Since that time, significant effort has been placed on integrating Drainage Services with other EPCOR business units and identifying and realizing synergistic opportunities to meet the commitments set out in EPCOR's Letter of Intent[4]. EPCOR committed that Drainage Services could achieve significant capital and operating cost efficiencies following the transfer. Specifically, EPCOR determined that it could achieve a 1% annual efficiency savings in operating costs, increasing to 5% by 2021 relative to the City's forecasted Drainage operating costs[5]. EPCOR also committed to delivering the City's 10-year forecast Drainage capital program at 10% lower costs[6]. EWSI has exceeded its commitments on capital cost efficiencies through the implementation of the SIRP Strategy and improvements in capital project management. EWSI has also exceeded its operating cost efficiencies. The specifics of the EWSI's operating and capital efficiencies are outlined below.

69. Since the transfer, EWSI has successfully implemented EPCOR's Health & Safety Management System within Drainage. This has led to significant improvements in safety performance, injury reduction and a positive change in safety culture. Over 200 formalized work procedures have been developed for Drainage employees and training has been provided on these procedures to allow for safe work execution. EPCOR's Near Miss and Incident reporting system was introduced at the time of the transfer and Drainage employees have consistently reported 1600+ near misses and hazardous conditions each year. Efforts to implement near miss reporting, improve work processes, increase training and hazard awareness, and improved incident reporting and injury management have led to a 79% reduction in total injuries and a 75% reduction in incident severity. Drainage employees are actively involved in Joint Health and Safety Committees, development of work procedures and training, and process improvements.

[4] The Letter of Intent between the City of Edmonton and EPCOR, dated April 11, 2017, sets out the terms of the transfer of the City's Drainage Services utility assets and liabilities to EPCOR including EPCOR's commitments to satisfy the City's principles for the transfer.
[5] Page 17 of the December 15, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis - Comparative Outlook on Rates.
[6] Page 18 of the December 15, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis - Comparative Outlook on Rates.

Drainage also achieved a certificate of recognition from the Partnerships in Injury Reduction program in 2020.

2.1 Background

70. After a public process that lasted almost a year, on April 12, 2017 Edmonton City Council approved a transfer of the Drainage utility to EPCOR, with a transfer date of September 1, 2017.

71. The process began with a proposal from EPCOR to City Council which was made in public to allow for transparency. In its initial proposal, EPCOR committed to:

- Maintain the current 3% annual rate increase for a period of 5 years following the transfer,
- Increase the dividend by $20 million in the year following the transfer, and
- No layoffs of staff who transferred to EPCOR from the City.

72. After the proposal was presented, City Council voted to proceed with hiring a consultant to assess the merits of EPCOR's proposal. Grant Thornton was selected, and a due diligence process was undertaken.

73. Grant Thornton completed a forecast of the financial results of the Drainage utility for a ten year period following the transfer. Initially, the financial forecast utilized the assumptions in the City's 3-year budget, including the 3% rate increase, and projected these assumptions for 10 years, taking into account the capital forecast for the Drainage utility and the commitments made to find and implement operating and capital efficiencies.

74. Based on the financial analysis, Grant Thornton reached the conclusion that the 3% annual rate increase was not sustainable for either EPCOR or the City in the longer term as it would result in erosion of the return on equity, which became negative in some years of the forecast.

> *"Monthly Drainage rates increase by approximately 3.0% annually, resulting in a $1.00 increase in 2017 to a $1.30 increase in 2026 for a typical residential monthly bill. This was achieved by adjusting the Return on Equity (ROE) on the equity component of the rate base, and the capital structure for utility-financed capital for the Sanitary and Stormwater Utilities (i.e. additional borrowing). With a 3.0% rate increase hold, equity returns are held low, and turn negative in forecast year 2025 and 2022 for the Sanitary and Stormwater Utilities,*

respectively. This suggests that rate revenues do not cover a ROE portion of financing, which erodes into the Utilities' equity balances.

While the current state of Drainage appears to be fairly healthy as of the 2016F, the combination of additional capital expenditures and the 3.0% annual rate increase over the forecast period places significant pressure on the Utility's financial performance. Given that utility rate increases have been kept low over past years, there are minimal reserves available to fund the future capital program. Under these modelling constraints, the Utility would likely not remain financially self-sufficient without increases to its revenues (e.g. higher rate increases) or decreases in its costs (e.g. decreased capital and/or operating expenditure costs)."[7]

75. Grant Thornton then completed a financial forecast for the Drainage utility that included a 3% annual rate increase from 2017 to 2021, followed by a 10.5% return on equity from 2022 onward. Two scenarios were presented in this analysis. The first scenario evaluated the rate increase that would be required if Drainage remained with the City and the second scenario evaluated the rate increases that would be required if Drainage were transferred to EPCOR.

76. In the scenario where Drainage remained within the City, illustrated in Table 2.1-1, Grant Thornton commented[8]:

"…in forecast year 2022, when the 10.5% ROE is introduced, total rate revenues increase 27.7% over the previous year. Moreover, to sustain this increased ROE, the average annual total rate revenue increase over the last four years of the forecast is 6.2%. This suggests that ratepayers will have a significant increase to their average monthly utility rates particularly in 2022, as well as to the end of the forecast period. Specifically, this iteration of the City Model estimates that the typical residential monthly bill for Drainage services will increase by 20.2% from 2021 to 2022, going from an annual monthly bill increase of approximately $1.13 in 2020 to 2021, to an increase of $7.75 in 2022."

[7] Page 25 of the October 5, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis – Final Report

[8] Page 70 of the October 5, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis – Final Report

Table 2.1-1
Economic Comparison: Ratepayers
City Ownership
($ millions)

	A	B	C	D	E	F	G	H	I	J	K
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Average**
1 Total Rate Revenues	171.9	179.3	186.9	195.6	204.7	261.3	277.6	298.5	312.9	331.8	
2 Annual Increase (%)		4.3%	4.3%	4.6%	4.6%	27.7%	6.2%	7.5%	4.8%	6.1%	7.8%

77. In the scenario where Drainage was transferred to EPCOR, taking into account the projected capital and operating efficiencies, illustrated in Table 2.1-2, Grant Thronton commented[9]:

> *"As shown in the table below, in forecast year 2022, when the 10.5% ROE is introduced, total rate revenues increase 25.1% over the previous year (compared to 27.7% for Scenarios 1B and 3B). To sustain this increase ROE, the average annual total rate revenue increase over the last four years of the forecast is 5.4%..."*

Table 2.1-2
Economic Comparison: Ratepayers
EPCOR Ownership
($ millions)

	A	B	C	D	E	F	G	H	I	J	K
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Average**
1 Total Rate Revenues	171.9	179.3	186.9	195.6	204.7	257.3	272.4	286.5	301.1	317.4	
2 Annual Increase (%)		4.3%	4.3%	4.6%	4.6%	25.7%	5.9%	5.2%	5.1%	5.4%	7.2%

> *"..ratepayers are forecast to have significant increases to their average monthly utility rates in 2022, however the severity of the rate increase is likely to be lower in EPCOR compared to Scenarios 1B and 3B* [scenarios where Drainage remains under the City]*. This is largely due to EPCOR's proposed operating and capital and operating efficiencies. Additionally, EPCOR is expected to have a lower total rate base on which it can generate a regulated return, since the book value of its assets may be lower due to proposed capital efficiencies. Moreover, should EPCOR realize additional cost savings (e.g. lower shared services costs),*

[9] Page 71 of the October 5, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis – Final Report

further benefits to ratepayers could be achieved."

78. Based on the financial projections, along with an assessment of operating and capital efficiencies, ability to finance the required capital, and overall benefit to the City, Grant Thornton recommended that Drainage be transferred to EPCOR[10].

2.2 Letter of Intent

79. After further debate and analysis, City Council requested that a Letter of Intent[11] be drafted that would outline the terms of a transfer of the Drainage utility. Key elements of the Letter of Intent included:

- EPCOR assumed responsibility for all liabilities relating to Drainage after the transfer date as well as any claims for environmental liabilities prior to the transfer date that would normally be recoverable in utility rates as an expense, with the City retaining responsibility for any that would not be so recoverable.
- It was agreed that land used exclusively by the Drainage utility would be transferred to EPCOR. Land which was jointly used for utility and non-utility purposes would be subdivided, with the portion utilized for utility purposes transferred to EPCOR.
- EPCOR agreed to provide $75.0 million in compensation to the City for certain stranded costs related to Drainage that will remain with the City as well any liabilities, including environmental, retained by the City.
- EPCOR and the City entered into a Drainage Franchise Agreement, with an initial 20 year term (the maximum allowed by the Municipal Government Act) to allow EPCOR to collect from ratepayers an 8% franchise fee, which was equal to the City`s current local access fee, and for remittance to the City.
- EPCOR committed to increase its dividend to the City in the first full year following the transfer of Drainage and a prorated amount for any partial year, subject to Board and shareholder approval.
- The City, through City Council and the Utility Committee, will remain the regulator of the Drainage utility and rates charged to ratepayers. Bylaw changes were made to adapt the regulatory framework for the Drainage utility including changes to address

[10] Page 6 of the December 15, 2016 Grant Thornton Report - 2016 EPCOR Proposal for Drainage Transfer Analysis – Comparative Outlook on Rates – Final Report

[11] EPCOR Letter of Intent, included as Attachment 1 to City Financial and Corporate Services report CR_4436, dated April 11, 2017.

certain of the transfer principles agreed upon by the parties. EPCOR will pay for direct costs by the City in supporting City Council's regulator function as it does for the Water and Wastewater Treatment utilities.

- EPCOR committed to hold Drainage rates to a 3.0% annual increase through to March 31, 2022, to be followed by performance based regulation similar to how Water Services and Wastewater Treatment are regulated by the City.
- All Drainage employees and certain employees who provide shared services to Drainage transferred to EPCOR with comparable salary, benefits and seniority. EPCOR committed that there will be no layoffs of employees as a result of the transfer and that it would honour all existing collective bargaining agreements until such time as they expire or new agreements are negotiated between EPCOR and the relevant unions.
- Any future divestiture of all or substantially all of the Drainage assets by EPCOR will require Edmonton City Council approval through a public hearing.
- EPCOR agreed to implement certain processes to allow for great transparency, including the adoption of the City's stakeholder engagement process. In addition to adopting these transparency measures, EPCOR further agreed to build a process to mirror compliance with the Freedom of Information and Protection of Privacy (FOIP) Act with respect to the Drainage utility. This process includes an appeals body that is mutually agreeable to EPCOR and the City.

80. In addition to the commitments outlined in the Letter of Intent and transfer agreements, EPCOR maintained its initial commitments in the transfer proposal and also committed to develop a Stormwater Integrated Resource Plan to deal with flooding concerns, to develop an odour control plan to address citizen concerns, and to immediately harmonize union wages with those of other EPCOR employees.

81. The Drainage Utility transferred to EPCOR on September 1, 2017 as planned. Many of the agreements were finalized prior to the transfer, with some work remaining related to ongoing interface points between EPCOR and the City.

2.3 Current Status of Commitments

82. EPCOR has diligently pursued the commitments made to City Council prior to the transfer and has been successful in those efforts.

2.3.1 Employees

83. Prior to the transfer, EPCOR initiated discussions with the IBEW 1007, CUPE 30, and CSU 52 unions. Interim agreements were negotiated and signed, and a process was implemented to determine which job classification in the EPCOR collective agreements would apply to each employee. These new agreements harmonized the wage and terms of employment for Drainage employees with those of the other employees in EPCOR. Employees were transferred with similar benefits, including all employees remaining in their existing pension plan. EPCOR has also honoured the commitments related to job security for transferring employees.

2.3.2 Dividend

84. The dividend was increased by $20.0 million following the Drainage transfer as committed to by EPCOR.

2.3.3 2018-2021 Rates

85. The rates in the Drainage Services Bylaw for 2018-2021 were based on a combined average increase of 3% per year for stormwater and sanitary combined. This annual 3% increase was determined based on the City's projection of required rate increases prior to the transfer and were intended to cover capital costs foreseen by the City at the time of the transfer. The Drainage Services Bylaw 18100 allowed for non-routine adjustments for major initiatives not contemplated by the City prior to the transfer, such as for the SIRP and the CORe Strategies. During 2018-2021, EWSI has managed the base business (operations excluding SIRP and CORe) within the 3% rate increase, and City Council approved non-routine adjustments for new programs to deal with the SIRP and CORe Strategies and relocation of assets required due to LRT construction.

2.3.4 SIRP and CORe Implementation

SIRP

86. Edmonton, like many other municipalities, has seen increased flooding over the years as storms have become more severe in very localized areas. The City was given a "C" rating on its efforts related to flood mitigation in 2015 ICCA report, and had repeatedly experienced severe damage to homes in flooded neighbourhoods. The City of Edmonton Drainage department previously proposed four scenarios for investment in City Wide Flood Mitigation. The detailed submission was presented at the Utility Committee meeting on June 9th, 2017. The proposed

investment focused on the upgrading of the existing storm pipe network to a particular design standard to be selected by Utility Committee. Four design storms were analyzed and capital investment types limited to the installation of tunnels and trunks, sewer separation and dry ponds were proposed. The estimated costs ranged from $2.2 billion to $4.7 billion over a 60 to 80 year time frame for the four scenarios presented.

87. As part of the transfer, EPCOR committed to developing a comprehensive SIRP Strategy to address this issue. Utility Committee was kept informed of progress and was provided with opportunities to provide input, and the SIRP Strategy was approved in 2019. SIRP is based on a risk methodology aligned with the vulnerability risk analysis underway through the City of Edmonton's Climate Change Resiliency and Adaptation initiative being led by the City Environmental Strategies group, and a recommendation to prioritize the stormwater sub-basins for flood mitigation efforts with a focus that provided an additional emphasis on flood mitigation to reduce the health, safety and social risks and impacts of flooding. EWSI developed the investment recommendations considering a mix of grey and green infrastructure components installed within the public right-of-way or within City or EPCOR owned parcels. The $1.6 Billion capital program proposed through the SIRP allows for a lower overall capital investment than seen with traditional engineering approaches through the inclusion of operational programs that support the overall community in responding to flooding events. Additional discussion of SIRP in the context of EWSI meeting its capital cost efficiency commitments is below. Through EWSI's efforts, Edmonton's rating from the Intact Centre on Climate Adaptation on its flood mitigation plans has recently increased from "C" to "B+"[12]. It is anticipated that this rating will continue to improve as work is completed. Appendix I-1 contains additional details on the SIRP Strategy.

CORe

88. Edmonton has experienced an increase in odours within its sanitary and combined sewer network, causing customer complaints and reducing the ability of Edmonton residents to enjoy their time outdoors. To develop a robust strategy to address odour issues, EWSI has conducted public consultation, engaged with community members across the city, conducted advanced sewer air monitoring campaigns and expanded its sewer asset inspections. The assessment has determined that the presence of odours is a precursor to more serious corrosion and premature failure of sewer assets. Unlike previous odour mitigation plans that focused on the controlled release of H_2S gas, EWSI has produced the CORe Strategy that focuses on preventing or minimizing the formation of hydrogen sulphide (H_2S) gas, which will reduce community odour

[12] https://www.intactcentreclimateadaptation.ca/wp-content/uploads/2021/02/16-Cities-Flood-Preparedness.pdf

impacts and lengthen the life of sewer network assets. In addition to the odour impacts, H_2S gases are extremely corrosive to the sewer trunk network, which can result in major system failures and impacts to roadways and other infrastructure above the pipes.

89. EWSI presented its CORe Strategy to Utility Committee on June 24, 2019. The CORe Strategy was developed using similar principles and approaches to the SIRP Strategy to determine an optimized mix of operational and capital solutions to reduce corrosion and odour. The current CORe Strategy differs from previous plans by segregating the city into areas with consistent odour issues, those with dynamic odour issues and those with emerging odour issues, rather than focusing on reducing community impacts by controlling and treating sewer gas releases across the city as proposed in previous odour mitigation plans. EWSI is implementing different approaches for each area to ensure that causes of the odour are fully understood and to ensure that capital projects will provide sustainable relief. Odours within different areas have distinct causes and require a different mix of solutions. Work has begun on both the capital and operating components of this plan, and costs for continuing this work are included in the forecasts for 2022 to 2025. Appendix I-2 contains additional details on the CORe Strategy.

2.3.5 Transparency

90. During the transfer discussion, Council made it clear that they wanted to ensure that the transparent approach to providing services was maintained after the transfer and not impacted by EPCOR's FOIP exemption. EPCOR committed to implementing a FOIP-like process for the Drainage utility, including an escalation process if a dispute occurred. EPCOR further committed to continuing to provide information for the City's Open Data portal, and to enhance customer information on EPCOR's website. EPCOR has enhanced access to customer information for Drainage customers, has continued to send information for the City's Open Data portal, and has implemented a process mirroring FOIP for Drainage. This process has been working smoothly and has processed a number of inquiries since implementation. To date, no requests have required the use of the escalation process, and EPCOR has received no complaints on the process.

2.3.6 Capital Efficiencies

91. EWSI proposed that it would be able to generate at least 10% cost efficiency on new capital projects and programs relative to the City's long term plan. These savings were predicated on EWSI delivering the City's 10-year forecast Capital Program at a 10% lower cost which equated to $193 million over the 10-year forecast period. EWSI also committed to applying effective strategies for improving capital delivery in Drainage capital, including using in-house engineering

design for routine projects and using master service agreements with a limited number of highly qualified engineering/construction firms to manage risks and keep costs low.

2.3.6.1 Capital Cost Efficiencies Achieved through SIRP

92. The most significant capital cost savings relative to the City plan will be achieved from EWSI's implementation of its SIRP. SIRP includes approaches and technologies that were not considered in the previous City Wide Flood Mitigation Plan (CWFM), which was presented to Utility Committee in June 2017. The CWFM approach focused on building a large pipes and tunnel networks to move stormwater volumes rapidly to the creeks and river. This involved upgrading of the existing storm pipe network to a particular design standard to mitigate certain sizes of storm events. Sewer separation projects and large dry pond projects were also included. Forecast capital expenditures for CWFM ranged from $2.2 billion to $4.7 billion depending on the size of storms to be mitigated (ranging from 1 in 50 year small storm to a 1 in 100 year large storm), with the implementation to occur over a 60 to 80 year timeframe.

93. As an alternative to CWFM, EWSI has developed an innovative and comprehensive approach to mitigating flood risk across the city of Edmonton under the SIRP Strategy. The SIRP Strategy is a system-wide integrated approach to mitigate flood risk by focusing investment on the high risk areas of the city to reduce the health, safety and social risk of flooding with lower overall capital investment than compared to traditional engineering approaches that were used in the development of CWFM.

94. The success of SIRP is possible through the integration of the five themes of Slow, Move, Secure, Predict and Respond to balance investments and increase the alternatives considered to meet the flood protection requirements within each community. The SIRP Slow strategy involves capturing stormwater volumes in dry ponds prior to reaching the storm trunk network to provide additional capacity in the pipes in the immediate path of the storm. The SIRP Slow strategy also includes Low Impact Development (LID) infrastructure, an emerging technology in Edmonton, which implements vegetation, engineered soils and natural processes in developed areas as another method to capture stormwater volumes prior to reaching the storm trunk network. The SIRP Move strategy includes some tunnels, trunks and sewer separation in locations where, due to the configuration of the community, there is limited space to install additional ponds or LID components to fully capture the expected water volumes during a major storm event. The SIRP Secure strategy uses an enhanced building flood proofing program to protect properties in high risk locations, upgrades of infrastructure in sag locations to prevent inflow and infiltration, additional outfalls and control gates and upgrades to existing outfall gates. SIRP Respond strategy

also includes developing emergency response stations located throughout the city with enhanced flood barriers positioned to reduce the time to respond during flooding events. The SIRP Predict strategy uses new monitoring and real-time controls to aid in improving response times to major storm events.

95. Following the Drainage Transfer to EPCOR, EWSI presented the SIRP plan to Utility Committee in May 2019, which estimated $1.6 billion in capital expenditures to implement the strategy to reduce flood risk across the city over a 20-30 year timeframe. Compared to the CWFM approach, SIRP provides a direct cost saving of between $0.6 billion to $2.9 billion, far surpassing EWSI's commitment to achieving a 10% capital cost saving on the City's 10-year plan. These SIRP investments are categorized into five themes, as shown in Table 2.3.6.1-1 below, which compares SIRP to the CWFM approach in terms of the investments in different infrastructure types. The SIRP Strategy is further explained in Appendix I-1 and in the Appendices H-14, H-15, H-16 and H-17 which provide the SIRP business cases for the large capital components of the strategy in this PBR.

Table 2.3.6.1-1
City-Wide Flood Mitigation (CWFM) and SIRP[13]
Forecast 20-30 Year Capital Expenditures
($ millions)

	SIRP THEME	A **CWFM Low Scenario (1:50 Year Small Flood)**	B **CWFM High Scenario (1:100 Year Large Flood)**	C **SIRP Strategy**
1	SLOW (Ponds, LID)	515	635	940
2	MOVE (Trunks, Sewer Separation)	1,690	4,045	300
3	SECURE (outfall and controls, I&I, Flood Proofing)			190
4	PREDICT (Monitoring and Controls)			70
5	RESPOND (Emergency Response)			45
6	**Total**	**2,205**	**4,680**	**1,545**

2.3.6.2 Capital Efficiency Initiatives

96. To date, a number of capital cost efficiency initiatives have been enacted, including the use of internal engineering resources to reduce engineering and design costs for routine projects; the use of Master Agreements and improved procurement processes to reduce costs; and completion of Project Management Methodology Review and procurement process

[13] City Wide Flood Mitigation Report (CR_4408) to Utility Committee, June 9, 2017.

improvements to generate efficiencies. These initiatives, as well as other smaller initiatives to improve capital project management, are expected to result in more significant capital cost savings over time as these initiatives are fully implemented across Drainage Services. These initiatives on their own would contribute significantly to achieving the capital efficiencies promised, and when combined with SIRP savings that are approximately triple the promised savings, the total capital efficiencies are far in excess of the level committed to prior to the transition.

Lower Engineering and Design Costs for Routine Projects

97. Rather than relying on 3rd party consultants, EWSI generally relies on internal engineering resources for routine projects such as neighborhood renewal projects which is more cost effective. Prior to the transfer to EPCOR, engineering and project management costs comprised 15% to 20% of the total capital project budgets in Drainage Services. As referenced in the 2016 Grant Thornton Report, EWSI provided the following comments on project costs for routine projects:

> *"By utilizing internal engineering design resources and similar specialized GIS based design tools, we expect to reduce engineering design and project management costs from 20% of construction costs to 5% for this category of projects (Type A – Recurring Projects).*[14] *"*

98. By relying on its standard processes and GIS-based design tools, EWSI has achieved a reduction in engineering and project management costs to 5% of the cost of routine projects. EWSI reviewed existing practices to identify what work could be done internally and to reduce low value-added work, efforts, and duration to complete design packages. For example, EWSI has reduced the content and quantity of printed drawing packages and maps and has implemented digital approvals. EWSI also leveraged ProjectWise, an efficient drawing control system, to reduce the time spent during handoffs and reviews. Other existing processes, such as CCTV inspection that are required to evaluate drainage assets condition, were analyzed to reduce inefficiency or eliminate duplication of efforts.

[14] EWSI response to Grant Thornton information request #7, Appendix G to the 2016 Grant Thornton Report, dated October 5, 2016.

Master Service Agreements and Improvements in Procurement Processes

99. Opportunities to reduce costs through the use of Master Service agreements and other procurement-related options were identified in the 2016 Grant Thornton Report. EWSI determined that previously used procurement approaches caused some significant delays in the delivery of Drainage Capital Projects. As a result, EWSI undertook a complete review of the procurement process, from the preparation of procurement documents to the issuance of purchase orders, in an effort to improve cycle times. EWSI has implemented a number of strategic changes that have achieved substantial cost and time savings. These changes include: creating or modifying templates to clarify requirements; early planning and improved visibility of annual procurement needs; improved engineering packages; bundling of projects; and appropriate utilization of different procurement approaches such as Master Service Agreements and Request for Proposals or quotations. EWSI estimates that cycle times for open competition procurements and project request processes have been reduced by more than 50% in the last two years. These changes also improved predictability, reduced market risks and provided the ability to deliver more capital work and take advantage of favourable market conditions, ultimately resulting in lower project costs. EWSI will continue to evaluate additional cost-savings opportunities through taking advantage of synergies with other EPCOR operations, using different risk-sharing frameworks and procurement tools review.

Project Management Methodology Review

100. EWSI has completed a review of Project Management Methodologies, which has identified the need to implement a standard project and program delivery model with effective tools. Accordingly, EWSI has implemented many project management-related initiatives, with some still being in progress, to improve capital project delivery performance. Following the transfer of Drainage to EPCOR, initial training requirements for resources were quickly identified and provided. EWSI also drafted process maps to clarify the existing approaches on capital delivery to identify areas for improvement and prepared roles and responsibility matrices. In parallel, EPCOR's company-wide Organizational Project Management (OPM) initiative, was also started to help align, develop and share project management best practices across the organization and develop a standardized Capital Delivery Model applied to all of EPCOR's businesses. The Capital Delivery Model uses industry best practices to develop a standardized yet flexible model that clarifies how capital projects and programs are delivered at EPCOR. It is described in section 4.2.3 of the Application. Other capital delivery tools are also being aligned and improved to support scheduling, estimating, cost control and reporting. Together, all of these

initiatives will result in improved clarity, efficiency and risk reduction for the delivery of capital projects, while also improving predictability, resources management and reducing project costs.

Additional Capital Efficiencies

101. Additional capital savings have also been identified and implemented including the following:

- Reducing crew sizes, resulting in completing the same quantity of work with significantly fewer resources. While this change has been implemented recently and is still being refined, it is anticipated that it will result in significant labour cost reductions for work performed by internal resources.
- Utilizing central dispatch of shared tandem trucks, rather than having one truck per crew. This reduces the amount of time that tandem trucks sit idle. While this change has been implemented recently and is still being refined, an immediate reduction in the cost of tandem trucks was observed initially after implementing this change.

2.3.7 Operating Efficiencies

102. EPCOR's commitments to the City of Edmonton included the realization of a 1% savings per year in operating costs which translates to approximately $5.9 million of savings in 2022. In EPCOR's response to Grant Thornton's information request 8[15], EPCOR identified potential opportunities to achieve these savings.

103. EWSI's 2022 forecast operating cost for Drainage of $110.6 million (refer to Table 6.1-1) reflect efficiencies including:

- **Building synergies across EWSI** – Operational functions, including Private Development and Inspection Services, One Water Planning, Quality Assurance and Environment, Customer Analytics, Procurement, Inventory Management, and Operational Excellence have been combined with Water Services, providing efficiencies in the delivery of these functions across Water, Wastewater Treatment and Drainage;
- **Reducing contractor and consultant costs** – EWSI decreased the use of contractors and consultants and increased the use of internal resources to provide services that had previously been provided by contractors or consultants, such as inspections, engineering and design work, and environmental consultation and assessment.

[15] Appendix G of Grant Thornton's "2016 EPCOR Proposal for Drainage Transfer Analysis", dated October 5, 2016

- **Reducing lost time incidents** – Prior to the transfer, Drainage experienced 42 lost time incidents over a 4-year period. Since the transfer, EWSI has successfully implemented EPCOR's Health & Safety Management System within Drainage. This has led to significant improvements in safety performance, injury reduction and a positive change in safety culture. Efforts to implement near miss reporting, improve work processes, increase training and hazard awareness, and improved incident reporting and injury management have led to a 79% reduction in total injuries and a 75% reduction in incident severity. EWSI's investments in Health & Safety and Technical Training have also provided significant reductions in lost time injuries. Over the past 3-year period 2018-2020, there were seven lost time incidents in Drainage. Besides reducing the direct costs of medical leave for injured employees and overtime for replacement workers, WCB rebates have increased as a result of Drainage's improved safety record;
- **Optimizing shift scheduling** – Drainage identified opportunities to reduce overtime through shift scheduling and has implemented three cost saving initiatives: adopting improved work schedules in System Control; establishing a dedicated trouble response crew; and improving scheduling during spring run-off;
- **Strengthening financial controls over cost recoveries -** Drainage has implemented EPCOR processes to ensure the completeness, accuracy and timeliness of collection of claims for third party damages, and recovery of the costs of service locates;
- **Increasing fleet fuel efficiency** – EWSI has improved fleet fuel efficiency since the transfer by replacing older vehicles with newer more fuel-efficient vehicles and with the implementation of telematics which will also reduce vehicle maintenance costs. Telematics has been implemented very recently and we expect to realize additional efficiencies in future years from this implementation, including routing optimization.

2.3.8 Operating Efficiencies - Financial Reconciliation

104. The following analysis shows the calculation of the 2022 Drainage Operating Cost Target (the "2022 Target") of $111.3 million (Table 2.3.8-1). The 2022 Target is derived from Scenario 1A of the October 5, 2016 Grant Thornton Report and reflects the 2017 City Budget financial model provided to Grant Thornton for purposes of the Drainage transfer review (referred to as the "City Budget"). The 2022 Target requires EWSI to achieve $5.9 million in efficiencies by 2022 based on the commitment to achieve 1% per year for 5 years.

105. The 2022 Target is compared to EWSI's Adjusted 2022 Forecast Operating costs of $110.6 million (Table 2.3.8-2). Since the intent of the efficiency commitments was to find and implement savings as compared to what the City would have experienced, certain items have been adjusted for as shown in table 2.3.8-2.

106. Table 2.3.8-3 presents the comparison of the 2022 Target with EWSI's Adjusted 2022 Forecast Operating costs indicating that EWSI will exceed the efficiency commitment of $5.9 million by an additional $0.7 million.

Table 2.3.8-1
Calculation of the 2022 Drainage Operating Cost Target
($ millions)

		A **2022 F**
1	City Budget Operating Expenses	107.9
2	Less: Franchise Fee and Property Taxes	(10.8)
3	City Budget Operating Expenses, net of Franchise Fees	97.1
	Accounting Differences:	
4	Expensing of Cancelled Projects	1.6
5	Expensing of Shared Services	5.0
6	Expensing of Design and Construction	8.5
7	Capitalization of Planning	(0.2)
8	Capitalization of SSSF	(1.3)
9	Expensing of Public Consultation Costs	0.2
10	City Budget Restated to Regulated Basis of Accounting	110.9
	Additional Costs incurred if Drainage under City:	
11	Utility Locates Charges	0.5
12	Meter Reading Charges	0.5
13	New Positions	4.3
14	Dewatering Contract Costs	1.0
15	Adjusted City Budget	117.2
16	Less: Target 5% Efficiency Reduction	(5.9)
17	**2022 Drainage Operating Cost Target**	**111.3**

107. The 2022 Target is derived from the 2022 Forecast Drainage Operating Costs from Scenario 1A of the Grant Thornton Report[16] (row 1 of Table 2.3.8-1) and reflects the City Budget. Franchise fees and property taxes are deducted. Adjustments to the City's 2022 Forecast Drainage Operating Cost are presented in two categories: (i) accounting policy adjustments and (ii) costs that would have been incurred by Drainage even if the transfer had not occurred.

[16] Refer to Appendix F of Grant Thornton's "2016 EPCOR Proposal for Drainage Transfer Analysis", dated October 5, 2016. The $107.9 million forecast operating expenses in 2022 is derived from the sum of operating and maintenance, customer billing services, shared services, biosolids disposal, SSSF payment and local access fees in the table for Scenario 1A Forecast.

Accounting Policy Adjustments

108. The financial information presented in the City Budget was prepared in accordance with Public Sector Accounting Standards (PSAS). These standards differ from the regulated accounting policies and practices described in Section 5 that provide the basis for the presentation of the financial information in this Application. Therefore, the City Budget has been restated from a PSAS basis to a regulated accounting basis. This restatement includes the following adjustments (rows 4-9 of Table 2.3.8-1):

- **Expensing the costs of cancelled projects.** The costs capitalized in the City Budget included $1.6 million in cancelled project costs that are expensed under regulated accounting;
- **Expensing Shared Service costs.** The costs capitalized in the City Budget included $5.0 million of corporate allocations that are expensed under regulated accounting;
- **Expensing Design and Construction costs.** In the City Budget, all staff costs in the Design and Construction Group were capitalized. Regulated accounting has much more stringent requirements for capitalization of staff costs than PSAS. EWSI has calculated that $8.5 million of indirect labour, pre-approval engineering and planning, and initial design costs that were capitalized by the City would be expensed under regulated accounting;
- **Capitalizing Planning Department costs.** The costs reflected in the City Budget were understated by $2.2 million compared to the actual consultant and planning services to be obtained from the City. In the City Budget, all charges from the Planning Department were expensed. Based on a review of the services provided, EWSI determined that $2.4 million of costs related to drawing reviews along with the review of land development applications and permanent area contributions would be capitalized under regulated accounting. The net impact of these adjustments on the 2022 Target is a $0.2 million decrease;
- **Capitalizing annual payments to the SSSF.** In the City Budget, the $1.3 million annual payment to the SSSF was expensed. Under regulated accounting, this payment would be capitalized; and
- **Expensing costs of Public Consultation.** In the City Budget, $0.2 million of public consultation costs were capitalized. Under regulated accounting, these costs would be expensed.

Costs that would have been Incurred by Drainage under City Operations:

109. Based on review of updated City forecasts, EWSI identified additional costs which were not included in the Grant Thornton Scenario 1A operating cost forecast of $107.9 million, but would have been incurred even if the Drainage transfer had not occurred. Since the intent of the efficiency commitments was to find and implement savings as compared to what the City would have experienced, these items have added to determine the 2022 Target. These cost adjustments to the amounts in the City Budget (rows 11-14 of Table 2.3.8-1) include:

- **Utility locate costs.** In 2018, the Edmonton Locate Consortium increased the rates charged to utilities for surveys to locate underground utility infrastructure. This change increased costs of $0.5 million from the City Budget;
- **Meter Reading charges.** In 2018, the AUC-regulated rate for meter reading services provided to Drainage by Water was increased. This change increased costs by $0.5 million from the City Budget;
- **New Positions.** An updated version of the City Budget, included net new positions with a cost of $4.3 million. At the time of Drainage transfer, EPCOR stated that eliminating these positions would be part of the efficiencies; and
- **Additional Dewatering Costs for Biosolids Management Program** – In the City Budget the cost of dewatering services for the Biosolids Management Program was assumed to be $259 per dry tonne. When the compost facility closed, the City informed Drainage that their actual cost was approximately $450 per dry tonne and that the City would be discontinuing its dewatering operations. Drainage negotiated a new dewatering contact with the existing system operator at a rate of $362 per dry tonne in 2022. Therefore, Drainage has adjusted the City Budget to reflect a $1.0 million increase in the cost of dewatering services, based on the difference between the City Budget rate of $259 per dry tonne and the negotiated rate of $362 per dry tonne applied to the 10,000 dry tonnes of biosolids forecast to be dewatered in 2022.

110. After reflecting adjustments for the different bases of accounting and other cost changes, EWSI calculated that the adjusted City Budget was $117.2 million (row 15 of Table 2.3.8-1). The adjusted City Budget increases the 5% efficiency commitment to $5.9 million (row 16 of Table 2.3.8-1), resulting in a 2022 Target of $111.3 million (row 17 of Table 2.3.8-1).

Calculation of EWSI's Adjusted 2022 Forecast Operating Costs

111. The calculation of EWSI's Adjusted 2022 Forecast Operating Costs is presented in Table 2.3.8-2.

Table 2.3.8-2
Calculation of the 2022 Adjusted Drainage Net Operating Cost Forecast
($ millions)

		A **2022 Forecast**
1	2022 Forecast Operating Costs	110.6
2	Less: SIRP and CORe Expenditures	(7.6)
3	Plus: Biosolids Management Program	12.6
4	Less: Additional Revenues	(2.1)
5	Less: Additional Capacity from Existing Resources	(2.4)
6	Less: Additional Cost Recoveries	(0.3)
7	Less: Customer Analytic Position	(0.2)
8	**Adjusted 2022 Forecast Operating Costs**	**110.6**

112. In order to provide a basis for comparison to the 2022 Target, EWSI's 2022 Forecast Operating Costs have been adjusted as follows:

- **SIRP and CORe expenses** - EWSI's 2022 forecast operating costs have been reduced by the $7.6 million forecast operating costs for the SIRP and CORe programs, which are incremental to the City Budget;
- **Biosolids Management Program expenses -** As described in Section 6.2.1, the Biosolids Management Program was transferred to Wastewater Treatment on April 1, 2022. Therefore, EWSI's 2022 Forecast Operating expenses include only three months of Biosolids Management Program expenses. Accordingly, operating costs have been increased by $12.6 million to reflect the full year operating costs of Biosolids Management Program, thereby providing a proper comparison to the full year costs included in the City Budget;
- **Additional Stormwater Utility revenues** – During the 2018-2021 Drainage transition, EWSI found that many stormwater utility customers had been under-billed, because of either set up errors, such as omission of the stormwater component from a commercial customer's billing record, or because of incorrect rate classification. EWSI has implemented improvements to controls over customer billing records to ensure the completeness and accuracy of stormwater revenues. In EWSI's 2022 forecasts, these improvements are forecast to yield additional revenues of $2.1 million;

- **Additional Capacity from Existing Resources** – Process improvements have allowed Drainage Operations to expand the scope of its work to include capital inspections and environmental consultation and assessment that would have been performed previously be external contractors. In 2022, the forecast value of the capital transfers related to this work is $2.3 million for inspections and $0.1 million for environmental consultation and assessment. The total $2.4 million represents an efficiency in the form of avoided cost by having existing resources do additional work rather than hiring contractors to perform the work.
- **Additional Cost Recoveries** – In EWSI's 2022 forecast, it expects to realize an additional $0.3 million in third party recoveries for inspections and similar services; and
- **Customer Analytic Position -** Drainage and Water Services have been able to achieve synergies in customer analytics, which have allowed a position to be eliminated. Although this position resided in Water Services, the saving resulted from a Drainage and Water Services initiative. Therefore, savings of $0.2 million have been treated as a Drainage efficiency.

113. The net effect of these adjustments is $0.0 million, resulting in adjusted 2022 forecast operating costs of $110.6 million (row 8 of Table 2.3.8-2).

114. Table 2.3.8-3 presents the 2022 Target compared to EWSI's adjusted 2022 forecast operating costs, indicating that EWSI has achieved savings of $0.7 million in addition to the 5% ($5.9 million) efficiency commitment. As reflected in its operating cost forecasts for the 2022-2024 PBR term, EWSI anticipates that it will achieve an additional $1.0 million of operating cost efficiencies in 2022 and 2023 from the Real Estate Consolidation Project. After adjusting for these additional efficiencies, Drainage will have exceeded the target by $1.7 million.

Table 2.3.8-3
2022 Target compared to Adjusted 2022 Forecast Operating Costs
($ millions)

		A **2022 Forecast**
1	2022 Target	111.3
2	Adjusted 2022 Forecast Operating Costs	110.6
3	**Operating Costs Savings in Excess of 5% Commitment**	**0.7**

2.3.9 Future Operating Cost Efficiencies

115. More substantial operating cost savings will arise from opportunities that require a realignment of work responsibilities and methods. These opportunities include identification of synergies with Water Services which will be largely facilitated through the Real Estate Consolidation Project (business case attached as Appendix F5) that will see co-location of Water and Drainage functions/personnel and through a common information systems platform (GeoFit) for the identification and management of work assignments.

116. Both of these initiatives are in process and are anticipated to be completed by 2021 with the completion of the Real Estate Consolidation Project and implementation of GeoFit, with further operational cost savings occurring in 2023 as Water and Drainage teams are integrated at the new Aurum facility. Identifying additional process improvements to achieve operating cost efficiencies, improve safety and environmental performance and ensure reliable service delivery is an ongoing focus.

117. In section 3 of the Application, EWSI provides an overview of current and future initiatives to integrate Water and Drainage operations which will lead to further operating efficiencies. These include the Integrated Watershed Management Strategy, One Water Planning, Drainage Operational Efficiency Review and Real Estate Consolidation Project. The Drainage Construction Strategy Review will also look at opportunities for both capital and operating cost savings by looking at work groups and functions to determine an optimal split of in-house and contracted resources to move efficiently deliver capital projects and programs.

2.4 Changes Since the Transfer

2.4.1 Stormwater Revenue

118. As part of the development of the Stormwater Integrated Resource Plan, an audit of the Stormwater Utility was completed that revealed multiple discrepancies in the billing system that resulted in incorrect charges to customers or inconsistencies in charges across a given customer class. These discrepancies are due to a number of factors including: incorrect data entry, lack of auditing since system inception in 2003, lack of written standards, information system limitations and billing system limitations. As such, a revenue leakage project was developed and initially focused on correcting those issues with the underlying intent of developing a standard and consistent approach to the stormwater utility charges. This approach, based on ensuring equity

and fairness across all stormwater utility ratepayers, is managed through a set of guiding principles:

- All parcels of land in Edmonton contribute to the storm and snowmelt run-off into the stormwater system and therefore responsible eligible to pay a stormwater utility fee.
- Parcels are billed based on their land use zone.
- Stormwater are billed to the account holder for a parcel unless there is a written agreement from the property owner / property manager / lessee.
- Wherever reasonable, parcels are divided equally amongst the total number of active water meters in the event of multiple accounts on one parcel.
- All non-residential customers have the opportunity to apply for a rebate through the Stormwater Utility Credit Program if they have a stormwater management system on site or can demonstrate a significantly lower amount of runoff as compared to the typical runoff for their land zoning.

119. The audit noted that the City of Edmonton is the largest stormwater utility customer and the current charges are not aligned with these principles. As with other customers, some of the discrepancy is due to lack of auditing, lack of written standards and system limitations. This results in a deficit and/or cross subsidization across customers for EWSI's stormwater utility revenue.

120. A decision needs to be made regarding the treatment of City of Edmonton properties, including green spaces and parks. Drainage proposes that during the 2022 – 2024 PBR term, obvious inequities between neighbouring properties be resolved, and that a cost of service study be performed, along with research on best practices for the treatment of municipal properties. Results from this study will be incorporated into a proposal for a new rate structure in the 2025-2029 Drainage PBR application.

2.4.2 Stormwater Management Facilities (Wet Ponds)

121. Historically stormwater management facilities have been built on Public Utility Lot (PUL). At the time of the transfer of Drainage to EPCOR, stormwater management facilities were transferred along with the associated land (PUL). The stormwater management facility takes up only part of PUL and the rest of the land is utilized as park area with trails, benches, landscape and other City infrastructure. The Letter of Intent stipulated that land used exclusively for Drainage utility purposes would be transferred to EPCOR, and land with joint use would be

subdivided. During the transfer process, it was determined that subdividing was not practical. EWSI and the City are discussing the ownership of PUL to allow both EWSI and the City to appropriately maintain their assets and their function to their customer's and the public's satisfaction.

2.4.3 Culverts and Ditches

122. At the time of the transfer, it was intended that work that was historically performed by Drainage and funded by drainage rates would continue to be the responsibility of Drainage, and work performed by the City and funded by taxes would continue to be the responsibility of the City. After the transfer it was discovered that neither the City nor Drainage had been performing maintenance or repairs on culverts or ditches. The appropriate division of responsibility was discussed as part of the service level agreement, and it was agreed that Drainage would be accountable to maintain and repair culverts and ditches required to support overland drainage, while the City would be accountable to maintain and repair bridge culverts (greater than 1500 mm in diameter) conveying natural water courses. In situations where a natural water course intersects with a roadway, and the means of conveyance of the natural water course is deemed undersized since water ponding is regularly occurring that impacts the integrity of the roadway and / or impacts adjacent property to the detriment of the owner, the City and EPCOR shall jointly assess the situation and determine the most practical and cost effective means of rectifying the situation. The joint assessment will include the appropriate allocation of the upgrade costs between the Condition of Assets.

2.4.4 Neighbourhood Renewal Program

123. The Drainage Neighbourhood Renewal Program is an annual program that focuses on the renewal and replacement of aging local sanitary, storm and combined sewers in mature neighbourhoods around the city of Edmonton. The Drainage Neighbourhood Renewal Program runs in coordination with the City of Edmonton's (City) Building Great Neighbourhoods and Open Spaces Neighbourhood Renewal Program. The intent of the program is to replace assets in poor condition prior to the City's Neighbourhood renewal work, and coordinating the proactive renewal with the reconstruction of roadways is less disruptive to customers and mitigates the risk of having to cut into newly reconstructed pavement. Work performed under Drainage's Neighbourhood renewal project is driven by asset condition and is therefore funded by utility rates. Any additional Drainage relocations required as a result of the City's Neighbourhood renewal work is driven by changes in neighbourhood design (such as changing sidewalk or curb

locations) and is therefore funded by the City's Neighbourhood Renewal project. Those assets are then transferred to EWSI upon completion as contributed assets.

124. Since the transfer, Drainage has continued to work in close collaboration with the City to leverage available cost-saving opportunities. Various communication channels have been established to ensure that both parties have an awareness of respective upcoming projects and initiatives that may impact the other party. As part of an ongoing efficiency initiative, Drainage work will opportunistically get combined with and managed by the City and its contractor that already performs other work in an area. Through the use of a cost-sharing agreement or per the provision of the Franchise Agreement, the Drainage assets and their related costs will then get invoiced or appropriately transferred to EWSI once the work is completed.

2.4.5 Major System Failures

125. Drainage had initiated an increase in the inspections performed on the sanitary system prior to the transfer, and EWSI has continued to increase the number of assets inspected and assigned an asset condition rating. In addition, the CORe Strategy included projects to install access shafts to parts of the system where inspections have not been possible due to a lack of access points. EWSI's inspections have shown that many of the sanitary trunk assets that were previously not accessible for inspection in the Drainage system are in poor or very poor condition. Several large asset failures have occurred in the pipes within the sanitary and combined sewer network, in the membranes separating the sanitary from the storm sections of "double barrel" pipes, in the pump stations that keep the sewage moving through the system, and in control structures such as gates. Failures within sanitary and combined sewer pipes have resulted in the formation of voids, and all failures require a response from operational resources, road closures, bypass pumping, and unplanned capital projects. Inspections have also found several places with excessive solids build-up in the sanitary system, requiring extensive specialized cleaning. The Figures below illustrate a few asset condition examples with a brief description of the associated capital projects.

126. Figures 2.4.5-1 and 2.4.5-2 show the Trestle 7 emergency replacement. Trestle 7 is a sanitary sewer line that crosses Whitemud Ravine that conveys the sewage from approximately 55,000 customers across the ravine towards the trunk network flowing to Gold Bar Wastewater Treatment Plant. In August of 2020, during the extreme summer storms, the pipe surcharged and failed in a number of locations due to internal corrosion that had been occurring underneath the pipe insulation coating. EWSI is completing a $1.1 million repair and replacement of this pipe in 2021 and has installed a temporary scaffolding structure and parallel bypass pipe to carry

flows until the repair has been completed. The Trestle 7 project is included in EWSI's CORe Large Trunk Rehabilitation Program (Appendix H-5).

Figure 2.4.5-1
Trestle 7

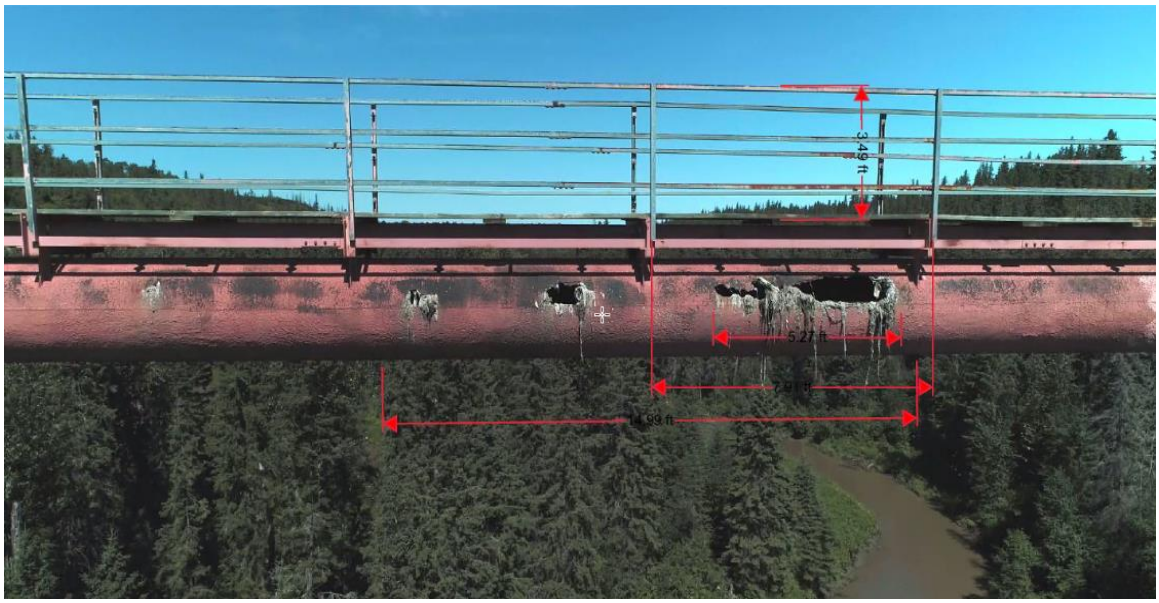
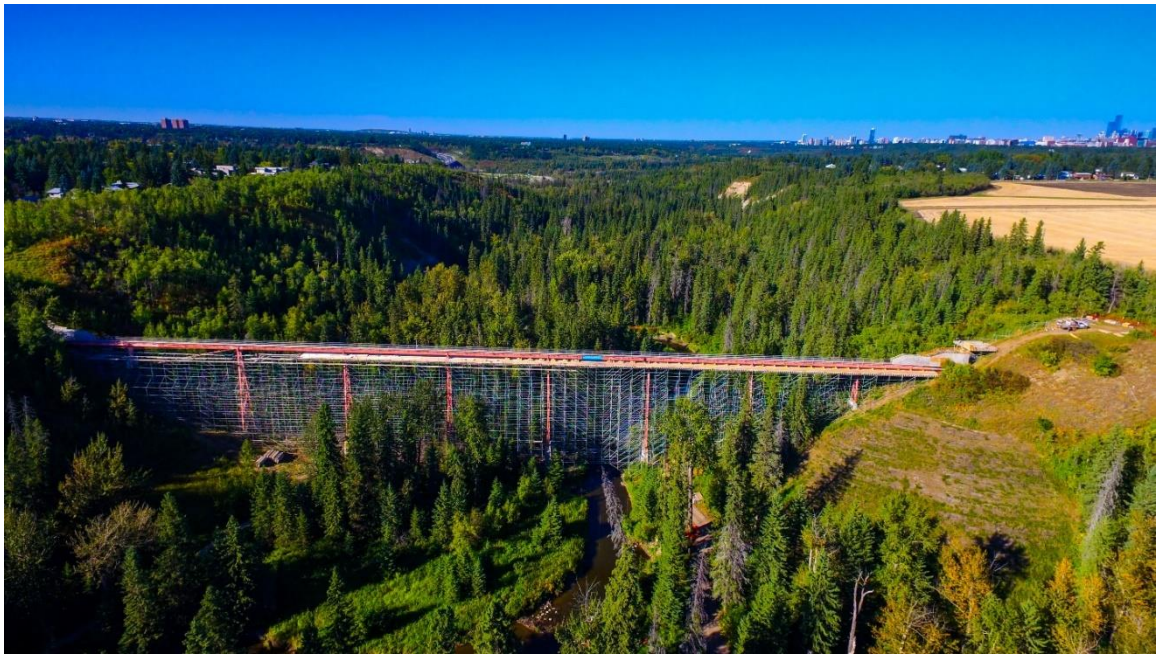


Figure 2.4.5-2
Trestle 7



127. Figures 2.4.5-3 and 2.4.5-4 show the San-11 Double Barrel pipe and Drop Structure located at 116Street and 108Ave. This double barrel pipe was inspected in 2019 and discovered to have the membrane separating the storm and sanitary system completely missing in some locations and a major void forming at one of the drop structure manholes that connects the sanitary portion of the double barrel pipe to the combined sewer trunk network. EWSI has the San-11 project with a combined cost of $5.2 million for the emergency work and longer term solution underway to rehabilitate the void location and construct additional access points to allow the repair of the double barrel pipe to proceed. This project is included in the CORe Large Trunk Rehabilitation Program (Appendix H-5). Timing for the full rehabilitation is impacted due to construction coordination with the west LRT alignment that crosses this pipe. In the interim, the sanitary service line connections to this pipe are being redirected to an adjacent pipe to limit the environmental impacts of this failure.

Figure 2.4.5-3
Sanitary Drop Pipe 116 Street and 108 Avenue

Figure 2.4.5-4
Sanitary Drop Pipe 116 Street and 108 Avenue

128. Figure 2.4.5-5 is of the missing pipe on the top of the San 50 - Duggan tunnel located adjacent to the Duggan pumpstation in south Edmonton. The inspection completed in March 2020 as part of the preparation for the replacement of this tunnel as part of the CORe initiatives identified that this portion of pipe immediately downstream of the pumpstation required immediate repair. Work is currently underway to repair this pipe as part of the CORe Duggan Tunnel Project (Appendix H-4). The CORe Duggan Tunnel Project was initiated in 2019 to provide timely odour mitigation in the community. Construction start is planned for late 2021, and the project is expected to be completed and placed in service in mid-2025. Total capital expenditures for this project are forecast at $85.89 million.

Figure 2.4.5-5
Duggan Tunnel

129. Figure 2.4.5-6 shows solids accumulation inside the NL1 deep trunk, which begins at 153 Avenue and 88 Street. The inspection that occurred in September 2020 was required to decommission pump station 174 and accommodate the connection with the new NC2/NC3 tunnel project. The NC2-3 tunnel section is part of the NEST system being developed to meet the rising sanitary demand in North Edmonton and mitigate flooding potential in the NC1 system. The NC2/NC3 Tunnel will connect the existing NC1 tunnel, terminating at the NC1 Pump Station (located at 153 Ave / Castledowns Rd) and the NL1 tunnel. In addition to the specialized cleaning requirements, the standing fermenting solids visible in the picture generate H_2S gas, causing corrosion where the gas migrates or accumulates.

Figure 2.4.5-6
NL1 Tunnel solid accumulation

3.0 SYSTEM OVERVIEW AND FUTURE EXPECTATIONS

130. Transitioning Drainage Services to EPCOR in 2017 has provided EWSI the opportunity to integrate all four components of the water utility cycle under its management. During the 2018–2021 PBR term, a significant effort has been placed on integrating Drainage Services with other EPCOR business units and identifying and realizing synergy opportunities to meet its commitments. As will be demonstrated in this PBR Application, EWSI considers the transfer has met Council's principles including maintaining public interests as the top priority, ensuring transparency of its operations, following effective asset management practices and meeting Council's priorities for flood mitigation and odour reduction, among others. Although much progress has been achieved to date, EWSI continues to prioritize the continued implementation of SIRP and CORe Strategies; rehabilitation of deteriorating infrastructure to ensure safe and reliable sanitary and stormwater services; and identification of efficiencies across all aspects of its operations to generate future cost savings to pass on to ratepayers. EWSI plans to address these challenges in its capital and operating plans for the upcoming 2022-2024 PBR term.

131. In the sections that follow, EWSI provides: (i) an overview of the sanitary, stormwater and combined systems in Edmonton and background on EWSI's environmental regulatory requirements for Drainage (section 3.1); (ii) an overview of the operating and financial performance during the 2018-2021 PBR term (section 3.2); and (iii) a discussion of EWSI's expectations and plans for the 2022-2024 PBR term and beyond (section 3.3).

3.1 Drainage System Overview

3.1.1 System Overview

132. EWSI's Drainage system provides Edmonton with sanitary and stormwater services through more than 6,900 kilometers of underground pipes and tunnels and 430,000 service connections to homes, businesses and industrial/commercial customers in the city. The overall Drainage system consists of three different types of sewer systems: the sanitary sewer system, the combined sewer system and the stormwater sewer system. Nearly one third of the sewers are combined sewers which are typically located in older areas of the city and collect and convey sanitary and stormwater in a single pipe. In newer areas, sanitary sewers collect and convey wastewater in a system separate from the stormwater sewers. Figure 3.1.1-1 illustrates the types of infrastructure within the Drainage system and the sewer types associated with each. The following sections provide more info on these components and how they fit into each of the

sanitary, stormwater and combined systems. As indicated in Figure 3.1.1-1, many components of the system support the sanitary, stormwater and combined systems.

Figure 3.1.1-1
EWSI's Drainage System Overview

Sanitary System

133. The sanitary sewer system in Edmonton consists of over 2,800 kilometers of underground pipes and tunnels and more than 262,000 service connections. It is a complex system that includes a number of different types of infrastructure that are critical to the movement of wastewater from customers to EWSI's Gold Bar Wastewater Treatment Plant (WWTP) or, for some customers in north Edmonton, to the Alberta Capital Region WWTP.

134. The configuration of the sanitary sewer system determines how wastewater generated within the region is distributed between the two WWTPs. Currently Gold Bar WWTP receives the majority of the wastewater from within Edmonton and the Alberta Capital Region WWTP (owned by the Alberta Capital Region Wastewater Commission) receives the majority from the surrounding areas. Both the Gold Bar WWTP and the Alberta Capital Region WWTP provide treatment of wastewater, and treated effluent from these plants is returned to the North Saskatchewan River. The treated effluent is required to meet environmental requirements established by Alberta Environment and Parks (AEP) and set out in the facilities' Approval to Operate. EWSI and the Alberta Capital Region Wastewater Commission have agreed to exchanging wastewater transmission and treatment services to provide efficient and cost-effective services to both city of Edmonton and regional customers under a swap agreement. Through this swap agreement, the majority of the regional customers south of Edmonton are serviced by the Gold Bar WWTP and the majority of Edmonton customers in the north are serviced by the Alberta Capital Region WWTP.

135. As wastewater leaves homes and businesses in Edmonton, it passes through the service connection and into primary collection pipes that are 200 mm to 1,050 mm in diameter, located below city streets. Wastewater flowing through these pipes converges into the larger trunklines that collect wastewater from subdivisions and lead to the Gold Bar WWTP. Large trunklines are 1,200 mm to 3,400 mm in size and located from 5 meters to 44 metres below ground. In the larger primary collection system pipes (600 mm – 1,200 mm), EWSI has seven trestles which carry above ground pipes over creeks or natural areas where traditional underground pipes could not be constructed. Some of the trunklines are also oversized and/or connected to underground storage systems to help manage the peak flows reaching the WWTPs. The large trunklines are rehabilitated under the CORe Large Trunk Rehabilitation Program and the primary collection pipes and trestles are rehabilitated under the Small Trunk Rehabilitation Program and the Local Sewer Rehabilitation Program. Local sewer pipes and services are also renewed under the Drainage Services Neighbourhood Renewal Program.

Combined Sewer System

136. A combined sewer is a single sewer system that carries both stormwater runoff and wastewater in one pipe to the WWTP. The construction of combined sewers occurred prior to 1960 and was standard practice in communities across North America at that time. Edmonton's combined sewer system consists of over 800 kilometers of pipes, 19 combined sewer overflows and over 9,800 manholes.

137. The combined sewer system presents challenges for wastewater collection and treatment. During intense rainfall events in the City, when stormwater and wastewater flows in the combined sewer exceeds the capacity of the system, combined sanitary and surface runoff flow can discharge through a number of known and monitored overflow sites directly into the river. These combined sewer overflow locations reduce the risk of the combined sewer pipes surcharging which can result in flooding of basements and or wastewater spilling out of manholes and flooding roadways. These events are known as Combined Sewer Overflow (CSO) events and they are reported annually to both provincial and federal governments. The volume of wastewater that bypasses treatment during CSO's is about two percent of the total volume of all Edmonton discharges.

138. In 1999, A CSO Control Strategy[17] was developed and approved by AEP to reduce the environmental impacts of Edmonton's combined sewer system. The goals for the CSO Control Strategy are to increase the average annual capture and treatment of wet weather flows in the sewer system to over 86%, and a reduction in average annual CSO occurrences (spills of untreated runoff and sewage to the North Saskatchewan River). The CSO Control Strategy includes temporary storage of sanitary flows in the collection system to prevent mixing with stormwater flows, diversion of CSO to Gold Bar WWTP for primary treatment, and opportunistic separation of the combined sewer into separate sanitary and storm collection systems. Gold Bar WWTP is required to treat CSO events to the flow specified in its Approval to Operate. With the successful implementation of the CSO Control Strategy, the management of CSO have been updated with the Total Loading Plan and the CSO Discharge Strategy.

139. EWSI is also initiating the Sanitary Integrated Resource Plan (SanIRP) which will involve developing strategies to optimize the diversion of wet weather flow to Gold Bar WWTP or to the Alberta Capital Region WWTP to optimize the diversion of wet weather flow to the WWTPs in the region and reduce loadings of bacteria and solids to the North Saskatchewan River. Under SIRP, EWSI's plan for widespread installation of LID features will further reduce peak flow rates in the drainage pipes and reduce the likelihood of a CSO event and impacts to Gold Bar WWTP and the environment.

140. The combined sewer system can also contribute to odour problems in the drainage system. The original design of the combined system relies on large pipes to move large volumes of untreated stormwater and wastewater during wet weather events. During normal weather,

[17] http://www.edmonton.ca/city_government/urban_planning_and_design/combined-sewer-overflow-control-strategy.aspx

when only wastewater is flowing through the system, increased solid deposition can occur resulting in increased generation of sewer odours that escape from catch basins and manholes connected to the combined system. Under the CORe Strategy, EWSI has a comprehensive plan to reduce the impacts of sewer corrosion and odours.

Stormwater Sewer System

141. The stormwater sewer system collects, holds and moves stormwater and snowmelt from properties and streets in Edmonton to creeks, ravines and the North Saskatchewan River. The system includes over 3,300 kilometres of storm sewer pipes, over 168,000 storm service connections, over 87,000 manholes, 25 pump stations and 293 stormwater management facilities. During a storm event, rain flowing on city streets enters the stormwater system through catchbasins located at the edge of sidewalks or curbs. In Edmonton there are over 62,000 catchbasins. In the outer ring of Edmonton stormwater flowing into catchbasins enters the mainline storm pipes and flows into a stormwater management facility.

142. There are two types of stormwater management facilities used in Edmonton, wet and dry ponds. These facilities are strategically incorporated within the stormwater collection system to reduce the risk of flooding in neighbourhoods. Wet and dry ponds found in the outer ring of Edmonton are installed when developers are building the neighbourhood. Wet ponds collect stormwater and snowmelt from neighbouring properties and city streets. They hold this water allowing nutrients and other contaminants to settle to the bottom of the facility prior to entering the stormwater sewer system for discharge into creeks, ravines and the North Saskatchewan River at one of 262 drainage outfalls. These outfalls are being rehabilitated under EWSI's Outfall Gates Rehabilitation Program. Historically stormwater management facilities have been built on Public Utility Lot (PUL). At the time of the transfer of Drainage to EPCOR, stormwater management facilities were transferred along with the associated land (PUL). The stormwater management facility takes up only part of PUL and the rest of the land is utilized as park area with trails, benches, landscape and other City infrastructure. EWSI and the City are discussing the ownership of PUL to allow both EWSI and the City to appropriately maintain their assets and their function to their customer's and the public's satisfaction.

143. Dry ponds are depressions in parkland or other open areas that hold large amounts of stormwater during a weather event. When a storm event has ended, water accumulated in a dry pond will slowly drain into the stormwater system for release to nearby waterways. These facilities often serve a dual function and either have recreational amenities incorporated in the basin or they are naturalized with water tolerant plantings. Many dry ponds incorporate parkland

and trails as well which are owned and maintained by the City. Dry ponds are also constructed in mature neighbourhoods as a means of mitigating flood issues associated with storm events where amounts of stormwater exceed the design standard for the sewers installed in that neighbourhood. Infrastructure in dry ponds that move stormwater are owned by EWSI. The dry pond and any amenities located within them are owned and maintained by the City of Edmonton. Under the SIRP Strategy, EWSI is implementing a new capital program, the SIRP Dry Ponds Program, to install dry ponds in areas of the city facing higher flood risks to capture large volumes of stormwater during a storm event and then release the stormwater slowly back into the existing piped storm trunk network thereby reducing the requirement for large trunk lines to the river.

144. An emerging infrastructure class that EPCOR has begun to develop involves Low Impact Development (LID). Infrastructure in the LID class is local infrastructure that uses engineered soils and structures to capture stormwater flows close to where the rainfall lands on the ground. LID holds the water which is then used by specially selected plants or it evaporates. Excess water drains into the stormwater system slowly after the storm has passed. LID infrastructure could be bio retention gardens, bio retention basins, box planters or soil cells. EWSI is implementing the SIRP LID Program, to construct LID in the form of vegetation, engineered soils and natural processes to capture, absorb, slow and filter stormwater before it flows into the sewer system, groundwater or surface waters.

Manholes

145. To gain access to operate and maintain the sanitary and stormwater systems, EWSI uses manholes of varying types of structures including traditional manholes, drill drop manholes and access chambers depending on the depth and size of the pipe being accessed. These are spaced along the sewer mainlines and trunklines providing drainage teams with the ability to inspect, clean and rehabilitate the sewer system. Within the 2022-2024 PBR term, there are a number of capital programs related to manholes including the Drill Drop Manholes Program, CORe Access Manholes Program, the SIRP Proactive Manhole Relining Program and the Manhole and Catch Basin Replacement Program. The first three of these programs are over $10 million and, as such, are described in further detail in the Drainage Services business cases attached to this Application.

Pump Stations and Forcemains

146. The sewer system in Edmonton is gravity fed through pipes that are gradually sloping into the earth allowing wastewater to move naturally through the system. As wastewater continues

moving through the system it will eventually need to be lifted from lower pipes to higher elevations, thereby allowing the gravity system to continue moving the wastewater towards the WWTP. This is accomplished through pump stations. In the city of Edmonton there are currently 90 pump stations. Necessary upgrades to these pump stations are completed under EWSI's Pump Station Rehabilitation Program.

147. In areas of the city where gravity flow is insufficient, EWSI has pressurized pipes connected to pump stations to help push wastewater through the sewer system. These are called force mains and in Edmonton there are 67 kms of these pressurized pipes. The operation of these pump stations and pressurized pipes is managed through the flow control systems.

Flow Control Systems

148. The flow control systems consist of SCADA, Real time control (RTC) gates and monitoring instruments to provide information on flow rates and water depths in the collection systems. These devices are installed in the sanitary, combined and storm systems and the SIRP and CORe strategic initiatives have identified increased investments in these devices in the coming PBR to better optimize the operation of all three drainage network systems.

3.1.2 Environmental Regulatory Requirements

149. The environmental regulatory requirements for the EWSI's drainage system are set out the Environmental Protection and Enhancement Act Approval (#639-03-03) issued by Alberta Environment and Parks (AEP) in 2015. This 10-year approval sets monitoring requirements for both the Drainage combined sewer systems and the Gold Bar WWTP discharges. The approval specifically requires that EWSI implement a Total Loadings Management Plan (the "Total Loadings Plan") in coordination with the Alberta Capital Region Wastewater Commission and as authorized in writing by AEP. Total loadings refers to the annual mass of total suspended solids (TSS) released to the North Saskatchewan River (NSR) from all sources and includes loads from the Gold Bar WWTP effluent and by-passes, combined sewer overflows and the storm sewer system. The majority (more than 80%) of solids loading to the river occurs through stormwater system discharges. The guiding principle of the Total Loadings Plan is to have no net increase in TSS loadings to the NSR in order to achieve the long-term goal of no net degradation of the NSR relative to the 2000-2008 time period.

150. The original Total Loadings Plan was developed in 2009 when Drainage Services was under the City and had set a target for TSS of 29,000 kg/d based on average daily TSS in the 2000-2008 period. Following the initial development of the Total Loadings Plan, the City, and later EWSI,

have continuously worked to refine the estimation of TSS loading to the NSR. There has also been ongoing work on the CSO Control Strategy, which includes sewer separation and upgrades at the Gold Bar WWTP to help meet the target. Stormwater TSS reductions have been achieved through end-of-pipe projects such as the Kennedale Constructed Wetland and the Groat Basin Filter Facility. Low Impact Development (LID) implementation is ongoing as well as other activities to achieve the new objectives of the Total Loadings Plan. These other activities include volume control and reduction, increased monitoring and system controls and protection of creeks and streams and studies investigating where to target future TSS reductions City-wide. As part of EWSI's Integrated Watershed Management Strategy discussed below, EWSI will consolidate the Total Loadings Plans for Wastewater Treatment and Drainage stormwater utility as a key component of an overall unified watershed management strategy.

3.2 EWSI Drainage Services Performance Summary (2018-2021)

151. The following is a brief overview EWSI's performance during the 2018-2021 PBR term. Section 3.2.1 provides a summary of EWSI's operating performance metrics during the 2018-2021 period. Section 3.2.2 summarizes EWSI's financial performance for the 2018-2021 PBR term. Further discussion of EWSI's 2018-2021 performance is provided in the capital and operating cost sections of the Application and in the Annual PBR Progress Reports for 2018 and 2019 (Appendices E-2 and E-3 of the Application).

3.2.1 Operating Performance Review (2018-2021)

152. When Drainage Services initially transitioned to EPCOR, the existing City of Edmonton performance program was maintained in order to ensure continuity of service as well as the allow sufficient time to develop a track record upon which to base a new metrics program. The requirements for the new program were detailed in a Letter of Intent that documented the transfer from the City to EPCOR. The Letter of Intent included the following statement related to establishing performance measures:

> *"Service quality metrics patterned after current Drainage Utility service quality metrics, with appropriate targets detailed in a manner similar to Schedule 3 of Bylaw 17698 EPCOR Water and Wastewater Treatment Bylaw."*

153. EWSI developed a PBR style metrics program in late 2019 and sought approval through the Utility Committee. The proposal culminated in the introduction of the current metrics program through a bylaw amendment in early 2020. Under provisions of the Bylaw, EWSI will

report on its actual performance results on each of the performance measures as part of the annual PBR Progress Report (presented to City of Edmonton Utility Committee) and the annual Drainage rate filing (note: the prior metrics program carried over for the City was reported in the 2018 and 2019 Progress Reports).

154. As the PBR style metrics programs was only introduced January 1, 2020 and has not yet completed a full reporting cycle, there is currently no reporting history. EWSI is proposing to generally maintain that program as approved by City Council through the 2022-2024 PBR term given it has only recently been introduced. As is the case with Water and Wastewater, the Drainage metrics program is based on a single standard of performance that is applied to all years of a PBR term. However, the Utility Committee has recently requested that the annual standards or targets set for the metrics intended to assess the implementation of the SIRP and CORe programs, namely Green Hectares and Sewer Odour Hotspots, be escalated over the PBR term. Unlike most metrics that are outcome based on operational performance, SIRP and CORe are primarily driven by the implementation of defined initiatives. The targets for these metrics have been updated in order to align with the planned initiatives.

155. A detailed description of EWSI's performance metrics for the 2022-2024 PBR term is provided in section 13 of this Application. The Annual PBR Progress Reports for 2018, 2019, (Appendices E-2 and E-3 of the Application) provide the specific annual results for each metric under the prior City of Edmonton program.

3.2.2 Financial Performance Review (2018-2021)

156. A summary of the financial performance of EWSI Drainage Services over the 2018-2021 period is detailed in Table 3.2.2-1. Drainage Services' 2018 to 2021 rates were approved by Edmonton City Council at the time of the transfer of Drainage Services to EWSI. These sanitary and stormwater rates over this time period were not supported by a PBR application, but fixed at 3% per year based on EPCOR's Drainage transfer commitments. Therefore, unlike Water Services and Wastewater Treatment, Table 3.2.2-1 does not include approved amounts for comparison. Instead, the financial performance review focuses on year over year changes in actual amounts. More detailed financial results and variance explanations are available in the Annual PBR Progress Reports for 2018 and 2019 (Appendices E-2 and E-3 to the Application).

Table 3.2.2-1
Drainage Services Financial Performance 2018-2021
Financial Schedules 3-1, 3-2, 14-1, 15-5
($ millions)

		A **2018 A**	B **2019 A**	C **2020 F**	D **2021 F**
1	Revenue	194.9	200.4	215.9	229.3
2	Operating costs	(101.4)	(107.9)	(116.8)	(127.7)
3	Franchise fees and property taxes	(9.8)	(10.0)	(10.6)	(11.2)
4	Depreciation and amortization	(32.0)	(32.7)	(35.5)	(38.6)
5	Interest expense	(19.9)	(21.3)	(22.5)	(24.9)
6	Net Income	31.7	28.5	30.5	27.0
7	Capital Expenditures (Net of Contributions)	103.8	141.9	225.0	265.6
8	Rate Base	1,147.7	1,230.0	1,365.4	1,562.8
9	RoE (%)	5.63%	4.76%	5.06%	4.38%

157. Between 2018 and 2019, revenue increased by slightly less than 3%, as sanitary revenues were impacted by lower than forecast customer consumption. Beginning in 2020, the increase in revenues is related to the 3% rate increases and the additional revenues from approved non-routine adjustments for SIRP, CORe and LRT relocations, which were required to offset the costs of these programs.

158. Operating expenses increased by $26.3 million between 2018 and 2021 due to the following:

- $6.2 million in inflation;
- $8.3 million in costs associated with implementing SIRP and CORe programs;
- $3.2 million increase in facilities costs, a portion of which are one-time costs associated with the Real Estate Consolidation Project;
- $2.7 million increase in costs associated with the Biosolids Management Program which related to changes in volumes and rates;
- $1.8 million increase in project support costs primarily due to a change in capitalization policy;
- $1.8 million increase in pipeline maintenance costs; and
- $2.2 million in other net increases in costs related to other areas including Drainage Services administration, corporate allocations, billing and meter reading services and supply chain.

159. Even with these operating cost increases over the 2018-2021 PBR term, EWSI will have achieved its operating efficiency commitments during the 2022-2024 PBR term as demonstrated in section 2.3.8 of the Application.

160. Increases in depreciation and amortization, and interest expense reflect capital additions over 2018-2021. Overall, cost increases more than offset increases in revenues, resulting in average return on equity over the 2018-2021 period of 4.96%, far lower than the 10.175% rate of return on equity approved for the Water Services and Wastewater Treatment utilities.

161. Annual capital expenditures increased by $161.8 million. Almost 80% of the $161.8 million increase in capital expenditures net of contributions over the 2018-2021 period relates to capital expenditures on the three programs funded through non-routine adjustment, including SIRP ($41.2 million), CORe ($54.4 million) and LRT relocates ($32.9 million). The remainder reflects general increases in renewal, expansion and rehabilitation, as well as the Real Estate Consolidation Project.

3.3 Future Challenges and Opportunities (2022-2024 and beyond)

162. The following sections highlight some key challenges and opportunities facing EWSI's Drainage Services operations over the 2022-2024 PBR term and beyond. Some of these challenges and opportunities are associated with serving a growing city of Edmonton (section 3.3.1) and implementing the Drainage Services' two major new strategic initiatives, SIRP and CORe (section 3.3.2). Identifying and leveraging opportunities to continue to integrate the functions of the Water and Drainage business units continues to be a key focus area for EWSI into the 2022-2024 PBR term. The areas of focus for aligning Water and Drainage strategies and operations include the Integrated Watershed Management Strategy (section 3.3.3); One Water Planning (section 3.3.4); and Drainage Operational Efficiency Review and the Real Estate Consolidation Project (section 3.3.5). With better integration of these functions, EWSI anticipates further cost savings will continue to be achieved. EWSI's goal is to continue to find ways to achieve cost savings beyond the efficiencies already achieved in meeting its Drainage transfer commitments. Finally, EWSI is also considering different options for delivering its capital projects and programs through initiation of the Drainage Construction Strategy Review in 2019 (section 3.3.6).

3.3.1 City Growth

163. The City of Edmonton is targeting an additional 1 million population by 2065 with 50% of new residential units added through infill development. EWSI is collaborating with the City of Edmonton planning groups as they implement the City Plan, update their infill strategies and industrial lands servicing strategies and update the zoning bylaws for the City. These City led initiatives provide an opportunity for EWSI to focus water and sewer main upgrades to provide increased capacity in the targeted growth nodes and corridors. The infill strategy allows for coordination of the LID and water efficiency targets for the utility as the City includes development guidelines for infill building forms.

164. Through coordinated development of its integrated resource plans (IRPs), EWSI will be able to ensure that IRPs for Water, Wastewater Treatment, Sanitary and Stormwater operations are in alignment with the growth and development plans for the City and the Region in terms of population numbers and locations of growth nodes. EWSI will look at various scenarios and impacts on its Integrated Watershed Management Program strategies including how growth and climate change impacts our North Saskatchewan River allocations for water withdrawals. The City Plan and Edmonton Metropolitan Region Growth will inform EWSI's growth scenarios for consumption and sewer generation by geographic location to support its hydraulic modeling and IRP updates.

165. While the decision on routing of the sanitary trunk lines (SESS routing) to either Gold Bar WWTP or the Alberta Capital Region WWTP is many years away, development of the SanIRP will help to inform this decision. An additional focus of the SanIRP will be on the development of a decision support tool to assess capacity constraints and opportunities to improve solids management in the trunks and reduce excess inflow and infiltration flows into the system to provide growth capacity in the existing system.

3.3.2 Implementation of SIRP and CORe Strategies

166. The SIRP and CORe Strategies and initiatives are described in detail Appendices I-1 and I-2 with additional detail provided in the SIRP and CORe business cases attached to the Application. The following describes some key challenges that EWSI anticipates with implementing these strategies over the 2022-2024 PBR term.

167. The SIRP strategy expands the traditional role of the utility to include working closer with the customers and leveraging privately owned land to install dry ponds and LID infrastructure.

Increased communication with customers is required to encourage private side flood proofing of properties and enhanced emergency response protocols. There may be some property owners in high risk areas who may not be able to work with EWSI initially and so EWSI will need to be flexible to move to other high risk areas. The COVID-19 response protocols has also limited EWSI's ability to reach out and enhance the flood proofing program. EWSI has instead reprioritized the effort to focus on overland flooding related to the areas of the City with stormwater managed through ditches and swales in the initial years of the plan and is working closely with the City on the Industrial Lands Servicing Strategy as part of this review.

168. The biggest future challenge with the CORe Strategy lies with the need to accommodate higher levels of emergency trunk line repairs as EWSI is entering trunk lines that have never been inspected and finding major structural failures and voids in the soils above and adjacent to these trunk lines. The CORe Trunk line rehabilitation program has been added to the CORe strategy in recognition of this challenge based on the structural failures identified since the CORe program was initiated in 2019. It is expected that by the time of the subsequent PBR filing for 2024, EWSI will have completed sufficient inspections of the trunk network to identify any additional major infrastructure failures in the system.

3.3.3 Integrated Watershed Management Strategy

169. With the transition of Drainage Services to EPCOR in 2017, all four components of the water utility cycle (water treatment, water distribution and transmission, wastewater and stormwater collection and treatment) are delivered by EWSI. Until 2020, watershed management was done separately within Water Services and Drainage Services. In 2020, work has begun to create an Integrated Watershed Management Strategy (IWMS) which provide a unified watershed management program to: i) manage total loadings to the North Saskatchewan River (NSR) and loadings to the tributaries and urban creeks within Edmonton; ii) ensure drinking water security; iii) ensure source water protection for the Edmonton water supply; iv) maintain urban creek health; and v) reduce the negative impacts of urban environment on the creeks through protection of riparian areas, preservation of natural hydrology and water quality improvement. This unified and coordinated watershed program provides the optimum environmental benefit and the best value for the Edmonton rate-payer. The strategy will be grounded though the focus on clear NSR and urban creek health outcomes (water quality and aquatic ecosystem health) which are set through regulation, partnership commitments, and EWSIs internal environmental policies.

170. As the one water utility provider to the citizens of Edmonton, it is key that EWSI ensures alignment of the IWMS with broader watershed policy objectives that are integrated in the Canadian Council of Ministers of the Environment Watershed Management definitions, Alberta Environment and Parks (AEP) Water for Life program and the Water Management Framework for the Capital Region and Industrial Heartland. Most importantly, the IWMS must meet the City of Edmonton's Connect Edmonton policy goals to:

- Ensure the safety and security of Edmonton's water supply, food systems and natural ecosystems to support long term resilience to flooding, droughts and extreme weather events;
- Manage stormwater runoff and improve water quality by ensuring a high standard of design at the area, neighborhood and site level and preserving the natural hydrology of the creeks and streams;
- Improve community flood resilience through ongoing risk management, infrastructure planning and operation, financial analysis and stakeholder engagement; and
- Manage and protect the watershed and water supply to maintain the quality of Edmonton's drinking water supply.

171. The key objectives of EWSI's IWMS are:

- ensuring alignment, optimization and enhancement of environmental monitoring of the NSR and its tributaries and urban creeks in Edmonton;
- coordinating emergency response for spills/unauthorized releases to the NSR;
- ensuring that the health of the urban creeks within the City of Edmonton is maintained;
- enhancing the source control program to deter the release of sediment to Edmonton's storm system from urban development and/or construction activities through increased awareness, monitoring and, if necessary, punitive corrective action;
- reducing the negative impacts of urban development on the creeks through protection of riparian areas, preservation of natural hydrology and water quality improvement.

- leveraging the partnership with the North Saskatchewan Watershed Alliance to facilitate discussion with regional municipalities, counties, and First Nations on regional watershed issues that impact Edmonton, such as urban creek erosion;
- completing effluent characterization programs for wastewater and water discharges in 2020 and as per the AEP Water Management Framework requirements;
- consolidating of the wastewater/stormwater Total Loadings Plan, River for Life Strategy, the source water protection plan and the water treatment residuals management plan into overall unified IWMS strategy document that will be shared with external interested parties to demonstrate EWSI's commitment to environmental stewardship and water resource management, and to enhance the EPCOR brand as a leader in the community; aligning reporting to AEP;
- prioritizing and research, education and awareness partnership funding; and
- initiating discussions with AEP on integrated watershed management and total loadings planning and setting the strategic objectives and requirements for the 2025 renewal of the Edmonton wastewater system approval.

3.3.4 One Water Planning

172. EWSI has established a One Water Planning approach to align the long range planning initiatives across its water, wastewater treatment, sanitary and stormwater operations. The One Water approach has been used by other utilities around the world as a holistic approach to sustainable water management that breaks down the traditional silos within the water utility sector and encourages collaboration between water utilities, drainage utilities and other sectors. The end objective of One Water Planning is to align the long-range planning activities across Water, Wastewater Treatment and Drainage to ensure that decisions are based on data that is consistent within each individual IRP. This will enhance EWSI's capital planning, hydraulic modelling and revenue forecasting competencies.

173. Under One Water Planning, EWSI will also be able to confirm that the Integrated Resource Plans (IRPs) in all of EWSI's operations are in alignment with the growth and development plans for the City and the Region in terms of population numbers and locations of growth nodes. One Water will take into account the recent update of the City Plan, the Edmonton Regional Municipal Board long range development plans and the Climate Change Adaptation Plan recently approved by the City of Edmonton. EWSI is completing the review of the impacts of wildfire and ice storms on the drainage assets using a risk based approach. EWSI will need to do similar assessments for

other climate events expected in Edmonton including drought, heat waves, and high winds and will need to look at the carbon footprint as considered in the City's Energy Transition Strategy.

174. The development of SIRP has been well received across the industry and is seen as a leading approach to adapt for the changing climate conditions expected in the future. With the initiation of the Sanitary IRP and the recent update of the Water IRP, EWSI has brought together resources from both Water and Drainage Services as a synergy to work jointly on the aspects that intersect both of the plans.

175. The One Water initiative will further support the ongoing Water/Drainage synergies initiatives that have been underway since the transfer of the Drainage utility. Teams have been integrated to support both Water and Drainage for long term planning of infrastructure supporting both greenfield and infill growth, operational strategies to optimize pumping and improve water quality and reduce odour generation including development of models to support this analysis, IT strategies for improved leveraging of data and GIS tools, and asset management strategies leveraging the EPCOR risk approach considering asset conditional and operational impacts of infrastructure failure.

3.3.5 Operational Efficiency Review and Real Estate Consolidation

176. Drainage Services is completing an operational excellence review to ensure the right work is completed at the right time with the right resources. The review includes a review of the current state of operations, industry best practices and benchmarking, assessment of risks, identification of opportunities, revisioning of Drainage operations and development of an implementation plan. To date, the current state assessment, benchmarking, assessment of risks and identification of opportunities phases have been completed and the revisioning phase is underway.

177. Key areas of focus for Drainage operations re-visioning include:

- Improve operations workforce management – simplifying our workforce practices and creating long-term opportunities for staff;
- Deliver best practices in operations and maintenance to continuously improve work processes;
- Establish clear lines of accountability and set clearly defined roles and responsibilities;
- Protect public health and the environment by ensuring Drainage operations is able to meet regulatory requirements now and in the future;

- Deliver customer value by being a responsible steward of ratepayer dollars;
- Deliver services effectively and efficiently ensuring the right resources on the right work at the right time.

178. Over the majority of their history, Water, Wastewater Treatment and Drainage Services worked closely together as departments of the City and leveraged many of the natural operational synergies that existed between them. With the transfer of Drainage to EPCOR, these synergies can be redeveloped to realize operating and capital efficiencies in both business units.

179. The exploration and analysis of potential opportunities to gain synergies between Water and Drainage began with the transfer of Drainage Services and will continue to build momentum over the next several years. The initial focus post transfer was on integrating Drainage into EPCOR processes and ensuring appropriate change management practices were utilized to minimize operational disruption. Next, EWSI identified efficiencies within existing operations. IT strategies have been identified to merge common systems, in particular GIS. Shared services have been merged where opportunities for efficiency gains were available. One Water Planning was created in 2020 to bring together the common strategic planning functions of Water and Drainage Services. Similarly, development coordination was combined at the same time. The combined unit addresses coordinated planning, growth coordination and common hydraulic modelling and design standards.

180. As further discussed in Appendix F-05, the Real Estate Consolidation Project has been executed with the objective of reducing the overall cost to customers through cost reduction and cost avoidance, while maintaining the service quality level that EWSI currently delivers, both during the transition to the single service center and in the long term. An important driver of cost minimization is synergies between Drainage Services and Water Services, some of which are only possible through consolidation.

181. Cost reductions will be attainable by not having to fill vacancies created through attrition with consolidation. Cost avoidance is possible with improved and coordinated scheduling and planning of activities to reduce multiple trips to execute work. Additional operational benefits to be achieved over time include improved communications between engineering and field construction with staff being located in the same service centre.

3.3.6 Drainage Construction Strategy

182. The objective of the Drainage Construction Strategy is to examine each work group and its functions to determine the optimal split of work performed by in-house resources and by contractors. EWSI will continually consider what skills and equipment exist within Drainage, the number of contractors available, whether the work is emergent in nature and the risk of technology obsolescence. The goal is to ensure Drainage Services can deliver fast and effective responses to emergent situations and provide efficient and effective delivery of its capital programs. The Drainage Construction Strategy is based on a rolling review of the 10 year capital plan for Drainage Services.

183. As part of developing the Drainage Construction Strategy, EWSI completed a review in 2019 of its in-house tunnelling capabilities and determined that EWSI should transition away from using in-house resources to complete new tunnel construction. This decision was based on a comprehensive risk assessment, benchmarking activities, market assessment and other factors. In order to manage the transition of employees and resources to other capital programs EWSI completed a review of all in-house construction activities.

184. EWSI has determined that in-house construction resources should continue to deliver reactive repairs, including emergency and high priority work, mainline repairs (less than 1.2m diameter), all shafts including access shafts (as part of CORe) and new customer service connections. Five areas of review to further develop the Drainage Construction Strategy are being progressed in the 2022-2024 PBR term including: emergencies, infill property servicing strategy; small pipe and manhole relining program; trunk rehabilitation and a revised procurement strategy.

185. **Emergencies -** Over the last few years there has been an increase in emergent situations primarily related to premature infrastructure failure. These emergencies require significant operational resources and unplanned capital expenditures to ensure public and employee safety, minimize service disruption, mitigate environmental, customer and other impacts. Examples of the type and scale of emergencies include:

- **Allendale Road and 61 Avenue void** – Trunk serving 100 businesses, 1.2 metre diameter, 24 metres deep, immediately adjacent to Calgary Trail, creating business interruption due to road closures.
- **Whitemud Creek trestle** – Serving 56,000 people, suspended 30 metres above Whitemud Creek for 230 metre, resulting in trail closures.

- **109 Street and 61 Avenue void** – Serving 100,000 people, 23 metres below ground, major intersection, causing road closures and business impacts.
- **Whitemud and 170 Street Trunk** – 34,700 people served, 1.2 metre diameter, 23 metre below ground, resulting in a freeway impact.

186. Although EWSI emergency response processes and procedures are robust, this type of occurrence is increasing and in order to continue to respond to these emergencies other capital expenditures will be effected. EWSI will continue to use a risk based approach to prioritise capital projects and programs.

187. Given the impacts of these failures, and the increasing frequency of their occurrence, the vision is for EWSI to begin the development of the breadth and depth of knowledge, skills and expertise to execute the majority of repairs with in-house resources and equipment. These in-house resources would be supplemented by external contractors, depending on the number and scale of emergency situations underway at any one time.

188. To achieve this vision an "Emergency SWAT" team will be in place through the 2022-2024 PBR term. The Emergency SWAT team will consist of resources from across EWSI that will be available to respond to emergency situations. To support these resources, the typically required equipment and materials will be identified and available. Appropriate agreements will be in place with pre-selected, vendors and contractors that have specific skills, products and knowledge.

- **Infill Property Servicing Strategy** – Based on informal feedback from developers, concerns have been raised with the efficiency of the current model for new water, wastewater and storm service connection delivery. EWSI is gathering feedback be gathered from developers, developing delivery model options and conducting benchmarking against other jurisdictions. A sub-committee has been established with City of Edmonton, Infill Developers of Edmonton (IDEA) and EWSI to progress this initiative.
- **Small Pipe and Manhole Relining Program** – EWSI is completing a small pipe and manhole relining program business case to determine if any of this work should be done in-house, including a strategic sourcing strategy and procurement plan required for external work.
- **Trunk Rehabilitation** – Access manholes being delivered through the CORe program will provide improved asset condition data on the EWSI trunk system and potential

rehabilitation requirements. Trunk rehabilitation methodologies and in house capabilities will be reviewed annually.

- **Procurement Strategy** – The Procurement Strategy will focus on increasing the clarity and visibility of opportunities in the EWSI capital plan for the contracting industry. The strategy will mitigate risks and develop an effective, efficient and innovative process for the utilization of contractors while meeting all EPCOR governance requirements to deliver the EWSI capital and operating plans through the 2022-2024 PBR term.

4.0 REVENUE REQUIREMENT SUMMARY

189. EWSI has determined its revenue requirement forecast based on its best estimates of the costs to provide sanitary and stormwater utility services plus a fair return on its investment. EWSI's drainage infrastructure system supports the operations of its regulated sanitary utility and stormwater utility operations. As such, EWSI determines its total revenue requirements based on the operating and capital cost components associated with supporting the entire drainage infrastructure system. EWSI then allocates the revenue requirement components (operating costs, depreciation, and return on rate base) to the sanitary and stormwater utilities according to the cost allocation methodologies described in section 12.

190. Table 4.0-1 provides a breakdown of the cost components comprising EWSI's sanitary utility revenue requirements based on the forecast costs for the 2022-2024 term. The latest forecast amounts for 2021 (the "2021 Forecast") are provided for comparison. Separate revenue requirements are shown for the sanitary utility excluding CORe, CORe, and the total sanitary utility.

191. Two key factors contribute to the majority of the $27.2 million decrease in the sanitary utility revenue requirement, excluding CORe, from the 2021 forecast to the 2022 forecast. First, in 2021, the forecast return on the equity-financed portion of the sanitary utility rate base is the "achieved" return, with the 2021 revenue requirement equal to 2021 forecast revenue. In 2022, the forecast rate of return on the equity-financed portion of the rate base is based on the applied-for rate of return of 5.50%. The difference in rates of return on equity accounts for approximately $15.7 million of the difference in revenue requirements. Second, the transfer of the Biosolids Management Program to Wastewater Treatment reduces the 2022 forecast revenue requirement by approximately $13.0 million from the 2021 forecast to the 2022 forecast. The remainder of the difference in revenue requirements is described in Sections 6, 8, 10 and 11.

192. The forecast sanitary utility revenue requirement reflected on line 22 of Table 4.0-1 forms the basis for determining EWSI's PBR sanitary utility rates for the 2022-2024 PBR term. These rates include the 2022-2024 special rate adjustments for CORe developed from the CORe revenue requirements on line 14 of Table 4.0-1.

Table 4.0-1
Financial Schedule 3-1
Sanitary Utility Revenue Requirement
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
	Sanitary Utility excluding CORe				
1	Operating Costs	68.5	50.9	45.7	45.9
2	Franchise Fees and Property Taxes	9.9	9.6	9.9	10.4
3	Depreciation and Amortization	17.4	16.9	17.6	18.7
4	Return on Rate Base Financed by Debt	12.4	15.9	15.8	16.9
5	Return on Rate Base Financed by Equity	33.3	17.6	22.2	27.4
6	Revenue Requirement before Revenue Offsets	141.4	110.8	111.3	119.3
7	Less: Revenue Offsets	(9.0)	(5.6)	(4.5)	(4.6)
8	**Sanitary Utility Revenue Requirement, excluding CORe**	**132.4**	**105.2**	**106.7**	**114.7**
	CORe				
9	Operating Costs	4.1	5.4	4.1	5.5
10	Franchise Fees and Property Taxes	0.5	1.1	1.2	1.6
11	Depreciation and Amortization	0.8	1.5	2.1	2.7
12	Return on Rate Base Financed by Debt	0.9	2.0	2.5	3.4
13	Return on Rate Base Financed by Equity	(0.5)	4.1	5.4	7.1
14	**Revenue Requirement - CORe**	**5.8**	**14.2**	**15.2**	**20.4**
	Sanitary Utility				
15	Operating Costs	72.7	56.3	49.7	51.4
16	Franchise Fees and Property Taxes	10.3	10.8	11.2	12.1
17	Depreciation and Amortization	18.2	18.4	19.6	21.4
18	Return on Rate Base Financed by Debt	13.3	17.9	18.4	20.3
19	Return on Rate Base Financed by Equity	32.8	21.6	27.6	34.5
20	Revenue Requirement before Revenue Offsets	147.2	125.0	126.5	139.6
21	Less: Revenue Offsets	(9.0)	(5.6)	(4.5)	(4.6)
22	**Total Sanitary Utility Revenue Requirement**	**138.2**	**119.4**	**122.0**	**135.0**

193. Table 4.0-2 provides a breakdown of the cost components comprising EWSI's stormwater utility revenue requirements based on the forecast costs for the 2022-2024 term with the 2021 Forecast costs provided for comparison. Separate revenue requirements are shown for the stormwater utility excluding SIRP, SIRP, and the total stormwater utility.

194. Similar to the Sanitary Utility, a key factor contributing to the difference between the Stormwater 2021 forecast revenue requirement and the 2022 forecast revenue requirement relates to the rate of return portion of the rate base financed by equity. Approximately $23.8 million of the $25.0 million increase in revenue requirements results from the difference between the achieved rate of return in the 2021 forecast and the 5.50% rate of return in the 2022 forecast. The remainder of the difference in revenue requirements is described in sections 6, 8, 10 and 11.

195. In the 2021 forecast, the achieved rates of return are 10.84% for the sanitary utility and -2.03% for the stormwater utility, which result in a combined rate of return on equity for Drainage Services of 4.38%.

196. The forecast stormwater utility revenue requirement reflected on line 21 of Table 4.0-2 forms the basis for determining EWSI's PBR stormwater utility rates for the 2022-2024 PBR term. These rates include the 2022-2024 special rate adjustments for SIRP developed from the SIRP revenue requirements on line 13 of Table 4.0-2.

Table 4.0-2
Financial Schedule 3-2
Stormwater Utility Revenue Requirement
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
	Stormwater Utility excluding SIRP				
1	Operating Costs	50.9	47.8	48.5	49.1
2	Property Taxes	0.9	1.0	1.0	1.0
3	Depreciation and Amortization	20.4	21.9	22.3	23.4
4	Return on Rate Base Financed by Debt	11.6	15.4	15.3	16.4
5	Return on Rate Base Financed by Equity	(5.8)	17.0	21.5	26.6
6	Revenue Requirement before Revenue Offsets	77.9	102.9	108.6	116.4
7	Less: Revenue Offsets	(0.7)	(0.7)	(0.7)	(0.7)
8	**Stormwater Utility Revenue Requirement, excluding SIRP**	**77.2**	**102.2**	**107.8**	**115.7**
	SIRP				
9	Operating Costs	4.1	6.6	7.4	7.8
10	Depreciation and Amortization	-	1.7	4.1	6.3
11	Return on Rate Base Financed by Debt	-	1.2	2.7	4.0
12	Return on Rate Base Financed by Equity	-	2.4	5.6	8.3
13	**Revenue Requirement - SIRP**	**4.1**	**12.0**	**19.8**	**26.4**
	Stormwater Utility				
14	Operating Costs	55.0	54.4	55.9	56.9
15	Property Taxes	0.9	1.0	1.0	1.0
16	Depreciation and Amortization	20.4	23.6	26.4	29.7
17	Return on Rate Base Financed by Debt	11.6	16.6	18.0	20.3
18	Return on Rate Base Financed by Equity	(5.8)	19.4	27.1	34.9
19	Revenue Requirement before Revenue Offsets	82.0	114.9	128.3	142.8
20	Less: Revenue Offsets	(0.7)	(0.7)	(0.7)	(0.7)
21	**Total Stormwater Utility Revenue Requirement**	**81.3**	**114.2**	**127.6**	**142.0**

197. In Part A of this Drainage Rate Application, EWSI describes the methodology and assumptions used to determine the forecast revenue requirement and presents the forecast revenue requirement by component. Since EWSI's regulated operating and capital costs are

managed and reported for the total system, costs for the total system are presented and discussed in sections 6.0 (Operations and Maintenance), 7.0 (Capital Expenditures), 8.0 (Depreciation and Amortization), 9.0 (Rate Base), 10.0 (Return on Rate Base), and 11.0 (Revenue Offsets). The return on rate base presented in section 9.0 is calculated based on the portions of rate base allocated to EWSI's sanitary utility excluding CORe, CORe, the stormwater utility excluding SIRP, and SIRP.

5.0 METHODOLOGY AND KEY ASSUMPTIONS

198. The following is an overview of the methods and key assumptions used in deriving EWSI's 2022-2024 revenue requirement. Section 5.1 provides an overview of accounting policies. Section 5.2 describes EWSI's cost forecasting process. Section 5.3 describes the methodology for determining the cost of capital. Section 5.4 describes the methodology for determining depreciation and amortization. Section 5.5 provides an overview of contributions in aid of construction. Section 5.6 provides the capital overhead methodology. Section 5.7 summarizes EWSI's inter-affiliate transactions. Finally, Section 5.8 provides the consumption volume and customer count forecast methodology.

5.1 Accounting Policies

199. Since January 1, 2011, EPCOR Utilities Inc. (EUI) has prepared its corporate financial information in accordance with International Financial Reporting Standards (IFRS) as required for Canadian publicly accountable enterprises. Following the transfer from the City in 2017, these standards apply to all parts of EWSI, including Drainage. While Drainage has implemented IFRS to support the public external financial reporting requirements of its parent company, EUI, there are certain IFRS requirements which are not consistent with the accounting treatment historically applied for rate-making and rate-regulated reporting requirements (referred to herein as "regulatory accounting").

200. In 2009, the AUC issued Rule 026 "Rule Regarding Regulatory Account Procedures Pertaining to the Implementation of the International Financial Reporting Standards" (AUC Rule 026) to provide guidance to AUC-regulated utilities transitioning to IFRS. In preparing its regulatory applications, EWSI has looked to existing regulatory accounting practices as well as guidance from AUC Rule 026 to assess IFRS requirements that may be applied for rate-making purposes. Though EWSI's sanitary and stormwater rates are not regulated by the AUC, EWSI considers AUC Rule 026 as a source for guidance to ensure relative consistency in practice with other regulated utilities in Alberta.

201. For Drainage, the most significant differences between IFRS and regulatory accounting relate to property, plant and equipment and associated accounts. Key differences between IFRS and regulatory accounting for EWSI are described in Table 5.1-1 below.

Table 5.1-1
Regulatory vs. IFRS Accounting Treatment

	A **Accounting Policy Item**	B **IFRS Accounting Treatment**	C **Regulatory Accounting Treatment used by EWSI**
1	**Capitalized Interest** – this item relates to financing related charges which are included in the capital cost for projects during construction.	For IFRS accounting, EWSI uses Interest During Construction (IDC). IDC is charged to capital projects lasting longer than 6 months and only has a debt component to the charge.	For regulatory accounting prior to 2022, EWSI used IDC as a proxy for AFUDC as there was no approved equity component to be applied to its capital projects. From 2022 onwards EWSI uses Allowance for Funds Used During Construction (AFUDC). AFUDC is charged to capital projects lasting longer than 12 months and has both debt and equity components to the charge.
2	**Abandonments** – this item relates to the treatment of expenses incurred to abandon, demolish, or decommission an asset which is no longer in use.	For IFRS accounting, EWSI expenses abandonments as incurred.	For regulatory accounting, EWSI charges abandonment costs to capital as incurred.
3	**Retirements** – this relates to losses incurred when an asset with remaining net book value is taken out of service and proceeds when assets are sold.	For IFRS accounting, EWSI records gains and losses on retirement as net expense in the period the retirement occurs.	For regulatory accounting, depending on the nature of the transaction, EWSI may charge gains and losses on retirement to capital and amortize the gain/loss over the remaining life of the asset at the time of disposal.
4	**Leases –** this item relates to the use of assets held under rental or lease agreements where control of the asset for the lease term resides with the lessee	For IFRS accounting, unless the lease is a short term rental, EWSI records a right of use asset and a related obligation to the lessor and depreciates the right over the period of the lease term	For regulatory accounting, no right of use asset or obligation is recognized and the lease cost continues to be treated as an operating expense.

5.2 Cost Forecasting Process

202. To determine rates for the 2022-2024 PBR term under Drainage's PBR structure, Drainage first develops a forecast of its revenue requirement for 2022-2024 for the total regulated Edmonton drainage system, excluding costs related to any of EWSI's commercial operations. The revenue requirement is based on bottom-up forecasts of operating costs and capital expenditures prepared by managers in each of Drainage's operating areas for 2022, 2023 and

2024. These forecasts are initially prepared in 2022 dollars. The operating cost and capital expenditure forecasts are then escalated at "i-x" (weighted average inflation factor of 2.33% less the productivity factor of 0.25%) to arrive at the forecast costs in nominal dollars for 2023 and 2024. The weighted average inflation factor is calculated based on a weighting of 40% Alberta CPI for the non-labour component and 60% Alberta Hourly Earnings Index for the labour component as further described in Section 5.2.1. Refer to Financial Schedules 5.2 and 15.5 for a summary of Drainage's annual operating and capital cost forecasts.

203. As part of its operating cost forecast process, EWSI initially prepares a bottom-up forecast of its operating costs for 2022 based on the best available information in respect of expected work activity and cost levels for 2022. To develop its operating cost forecast for 2023 and 2024, operating cost variances from 2022 amounts are limited to inflation less the efficiency factor (2.04% per year) with the following exceptions:

- forecast cost increases or decreases that are largely outside EWSI's control including customer growth (customer billing and metering), the carbon levy increase, regulatory costs charged by the City of Edmonton, franchise fees (calculated as a percentage of revenues) and electricity distribution and transmission charges;
- forecast operating cost savings associated with new capital projects including the Real Estate Consolidation Project and Water Services' Advanced Metering Infrastructure (AMI) project which will lower metering costs allocated to Drainage Services; and
- forecast costs associated with key strategic initiatives to align with City-driven goals and objectives including EUI's Green Power Initiative to purchase green energy on behalf of its subsidiaries and EWSI's implementation of the SIRP and CORe Strategies. Refer to section 5 for details.

204. EWSI forecasts capital expenditures for each of 2022, 2023 and 2024 based on its planned capital projects and programs for each year. Capital planning is normally completed to align with PBR renewals and is completed under a comprehensive and well-defined capital management process described below. A three-year capital plan was developed for the 2022-2024 PBR term.

205. EWSI then calculates the forecast revenue requirement for 2022 to 2024 based on (i) forecast operating costs, (ii) calculated depreciation expenses related to both existing assets and forecast capital additions, and (iii) financing costs (cost of debt and equity). EWSI's financing costs (cost of capital) are based on its forecast of the cost of debt (interest rates) and cost of equity (or return on equity). Forecast interest rates and return on equity for the 2022-2024 PBR

term are based on EWSI's forecast rate base (cost of utility assets) multiplied by its deemed capital structure (proportion of debt and equity), weighted average cost of debt and proposed return on equity respectively. EWSI's interest rate on new debt issuances is fixed over the 3-year PBR term. Similarly, EWSI's return on equity is fixed for the 3-year PBR term.

206. By setting rates in this manner, it ensures that EWSI will collect sufficient revenues to support its capital infrastructure investment for the upcoming PBR period. Other than the exceptions to operating cost increases noted above, EWSI bears the risk of any other cost increases above inflation such as those related to power, natural gas, chemicals, labour and materials and other input price increases. Similarly, fixing interest rates on new debt issuances at 2022 rates and by fixing its return on equity for the 2022-2024 PBR term, ensures that EWSI bears the risk of variations in its cost of debt and equity during the three year period. Customers benefit from having stable rates and are shielded from any rate impacts associated with higher input prices (above inflation) and any increases in Drainage's cost of debt and equity.

207. Section 5.2.1 describes the inflation factor methodology and forecast. Section 5.2.2 summarizes EWSI's operating cost forecast process. Section 5.2.3 summarizes Drainage's capital cost forecast process.

5.2.1 Inflation Factor

208. The inflation factor is calculated as a composite between two Statistics Canada series:

- CANSIM Series V1808689: Annual Growth in Average Hourly Earnings (AHE), Alberta, Industrial Aggregate (excluding unclassified businesses).
- CANSIM Series V41694625: Annual Growth in Consumer Price Index (CPI), All Items, Alberta.

209. For the 2022-2024 PBR term, EWSI is proposing a weighting of 40% CPI (non-labour component) and 60% AHE (labour component), based on Drainage Services forecast cost structure. For the 2022-2024 and 2022-2026 PBR Applications EWSI has applied separate weight factors for Water Services, Wastewater Treatment, and Drainage Services, based on each operations proportion of labour costs relative to all other costs over the PBR term.

210. EWSI purchased a forecast for the two data series from the Conference Board of Canada in November 2020. The values and calculations are shown below in Table 5.2.1-1. As the Drainage Services Application covers the 2022-2024 period, EWSI has used the Conference Board's 2022-2024 forecast to calculate the Drainage Services forecast escalator.

Table 5.2.1-1
Drainage Services Inflation Factor Forecast
(%)

		A **CPI**	B **AHE**	C **Total**
1	2022	2.3	1.5	
2	2023	2.0	2.8	
3	2024	2.2	3.0	
4	Average	2.2	2.4	
5	Weighting	0.40	0.60	
6	Result	0.9	1.5	**2.33**

211. Consequently, EWSI has used 2.33% for the forecast escalator for each year in the Drainage Services Application.

212. In accordance with Schedule 3 of the *EPCOR Drainage Services and Wastewater Treatment Bylaw*, each year, the inflation factor will be updated based upon a forecast of the rate of inflation supported by the Conference Board of Canada's forecast inflation for the upcoming year. Once the calendar year is complete and the actual rate of inflation is known, the charges for the subsequent year will include an adjustment to correct for the difference between the forecast and actual rate of inflation for the calendar year. As the index utilized for the actual Labour Cost component may not be available for the complete calendar year, the consecutive 12 month period for which the index utilized for the Labour Cost component is most recently available is used as a substitute for the calendar year for purposes of the Labour Cost component inflation adjustment.

5.2.2 Operating Cost Forecast Process

213. The following summarizes the operating forecast process for some of EWSI's major operating cost categories:

Staff Costs and Employee Benefits

214. This category represents approximately 54% of Drainage's total operating costs and is comprised of direct salaries, employee benefits, overtime and incentive and is partially offset by labour recoveries for employee time spent on capital and commercial projects. EWSI's structure for compensating its management employees includes a base level of compensation (including benefits) and an incentive component which is paid when specified financial, safety, customer, operational and individual performance targets are met. Salaries for non-bargaining unit staff

are reviewed annually and adjusted based on market assessments. Wages for union staff are determined based on the provisions of current collective bargaining agreements.

215. EWSI developed its 2022 salaries and benefits cost forecast initially in 2022 dollars based on its best estimates of work levels in 2022. EWSI then applies the inflation factor to obtain a forecast of salaries and benefits costs in nominal dollars for 2022-2024. Beyond 2022, there are no increases in operating costs related to additional staff. However, EWSI operating cost forecasts for 2023 and 2024 reflect reductions in staff costs for both Water and Drainage with the implementation of the Real Estate Consolidation Project.

216. Under the PBR structure, EWSI bears the risk of staff costs and employee benefits increasing at a rate higher than the inflation factor. For example, salaries and wages for EWSI union staff are determined based on negotiated collective bargaining agreements with the International Brotherhood of Electrical Workers Local 1007 employees, Civic Service Union 52 and Canadian Union of Public Employees Local 30 employees with two of three agreements set to expire on December 19, 2020 and the third agreement set to expire December 18, 2021. EWSI will bear the risk if the new collective agreements contain salary and wage increases higher than the rate of inflation as calculated based on the inflation factor.

Contractors and Consultants

217. Contractor and consultant costs, materials and supplies and vehicle costs together represent approximately 12% of Drainage's total regulated operating costs over the 2022 to 2024 period. Contractor and consultant costs include biosolids treatment costs (up to the effective date of the transfer to Wastewater in April 1, 2022), hydrovac services, paving services, utility locating costs, barricading services, planning services provided by the City of Edmonton, lab testing and system support costs from Water Services and Wastewater Treatment Services, facility costs and contracted services to provide specific skills that are either not available within EWSI or when workloads increase beyond the capacity of internal resources.

218. Beyond 2022, EWSI has assumed contractor and consultant costs increase at the inflation factor for 2023 and 2024 with the exception of contractor and consultant costs for biosolids management which decrease in 2022 due to the transfer of the program to Wastewater services and changes in CORe spending due to the timing of inspections.

5.2.3 Capital Cost Forecast Process

219. EWSI's 2022-2024 capital cost forecasts are established based on a capital management process which governs the identification, evaluation, approval, execution and monitoring of capital projects. Ongoing capital management oversight is provided by the Capital Steering Committee, the Project Management Office, and the Financial Review Council consisting of members of EPCOR executive leadership.

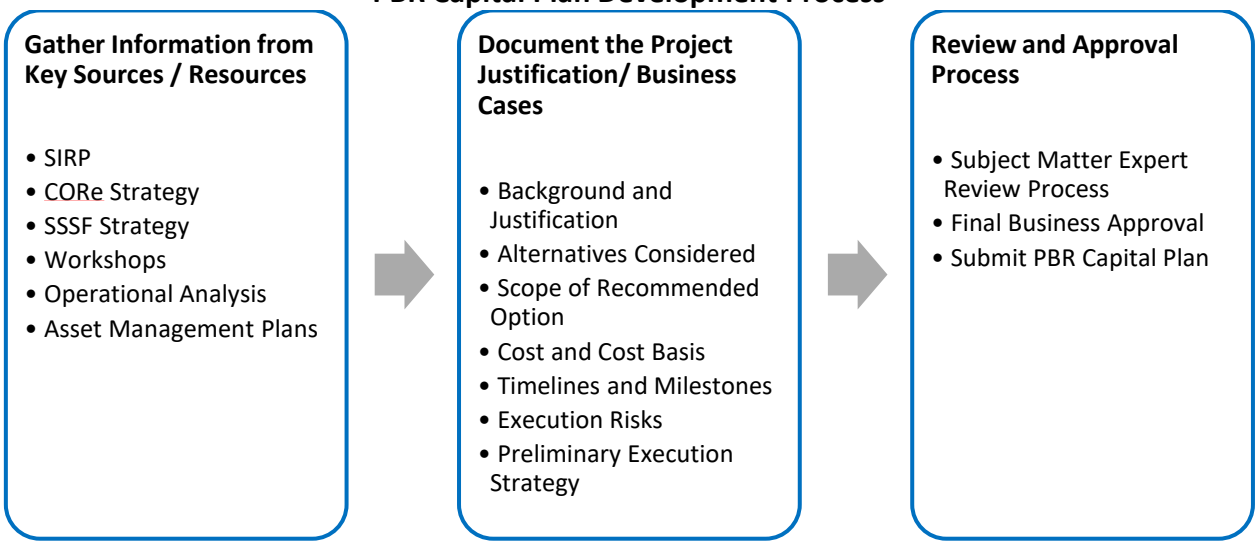
220. An organizational project management initiative with representatives of each EPCOR business unit was also started to help align, develop and share project management best practices across the organization. One of the results of this initiative was the design and implementation of a standardized Capital Delivery Model. Adjustments to EWSI mapped processes were made to align with the developed Model. At a high level, the Capital Delivery Model is a standardized yet flexible model that clarifies how Capital Projects and Programs are delivered at EPCOR. Aligned with industry best practices, it divides projects and programs into four major phases: initiate, plan, execute and closeout, that are further broken down into up to 7 stages, such as Investment Justification, Detailed Design or Construction, depending on a project scope complexity and requirements. Accordingly, through a project lifecycle, projects will move through Stage Gates by completing defined requirements to demonstrate operational readiness before moving to the next stage. The model was developed with scalability in mind to ensure that the appropriate level of governance is applied to different project types. Therefore, although minimum gate requirements have been established, not all projects and programs will need to complete the same (or any) requirements at each stage gate. Through this initiative, tools and templates are also being developed or improved. For example, once a standardized structure is established to manage standard project documents, forms and workflows can then be used to automate the creation or dissemination of information. Similarly, by using standardized Work and Cost Breakdown Structures, performance data can then be compared and analyzed to identify additional efficiency opportunities. Other tools are also being aligned and improved to support scheduling, estimating, cost control and reporting. Together, the objective of these initiatives are to improve clarity, efficiency and risk reduction for the delivery of capital projects, while also improving predictability, resources management and reducing project costs.

221. The sections below describe the following processes: (i) PBR capital plan development process and (ii) the internal capital governance and management processes used to manage capital projects to the PBR capital plan.

5.2.3.1 PBR Capital Plan Development Process

222. EWSI utilizes a three step approach for the preparation of the capital program for the three year PBR period. This approach is illustrated in the process diagram in Figure 5.2.3.1-1 and discussed further below.

Figure 5.2.3.1-1
PBR Capital Plan Development Process



Step 1: Gather Information from Key Information Sources

223. While PBR submissions generally occur only once every five years, EWSI continually assesses its operations and assets, maintaining a detailed understanding of its upcoming priorities and challenges. The following external processes and sources of information help form the foundation of this work:

- **City of Edmonton** - EWSI collaborates with the City of Edmonton at the working level on an ongoing basis, including through the City of Edmonton / EPCOR Capital Working Committee, the City of Edmonton/EPCOR Strategic Planning Committee and through three Sanitary Servicing Strategy Fund (SSSF) committees: the SSSF Oversight Committee, SSSF Finance and Audit Committee and SSSF Planning and Management Committee. One Water Planning staff are engaged with individuals from the City of Edmonton Urban planning group to ensure incorporation of the City of Edmonton Strategic documents into the IRP plans developed for EWSI. This includes the City Plan, the Infill Strategy, Industrial Servicing Strategy, Climate Change adaptation and the City Rezoning initiative. Multiple discussions continue and joint efforts continue

to ensure alignment with the City of Edmonton's growth projections and strategic objectives.

- **External expert resources** – External engagements such as engineering studies, risk mitigation analyses and inspections are performed on EWSI's assets and incorporated into EWSI's capital plans.
- **Industry** – EWSI monitors trends occurring within the industry and collaborates frequently with other Canadian municipalities to address common challenges through research projects and active industry working group participation. EWSI is represented on the Board of the Canadian Water Network and is an active participant in the Canadian Water Network municipal consortium leadership group that meets regularly to collaborate on programs to improve the operation of the major utilities across Canada. Recent examples include the COVID-19 response initiatives and the multiple research programs conducted jointly with the Insurance Bureau of Canada and CWN to address the risks of flooding due to Climate Change. Through the SIRP initiative EWSI has also been an active participant and case study on numerous reports from the Intact Center on Climate Adaptation and the National Research Council of Canada, highlighting best practices in flood water management. EWSI is also a member of the Water Research Foundation where it collaborates with other municipalities to share best practices and participate in research initiatives for the water, wastewater and drainage systems. EWSI is also an active participant with the Canadian and American Water Works Association (CWWA/AWWA) with one employee serving as President of CWWA in 2020. EWSI also participates in the Canadian National Benchmarking initiative across the water, wastewater and drainage system as do many other municipalities across Canada.

224. Internally, EWSI regularly engages its staff from all areas to participate and contribute towards the development of the PBR capital plan through its Capital Planning Workshops. Through these workshops, EWSI staff collectively review each project's goals, rate its priority based on risk and justification, help determine viable alternatives, and recommend optimum timing for the project's execution.

225. EWSI documents the new priorities and challenges identified through a number of reports and plans, including the following:

- **Stormwater Integrated Resource Plan (SIRP**) – Following the transfer of Drainage Services to EPCOR in 2017, EWSI developed the SIRP strategy to meet its

commitments to City Council to address flood mitigation risks in the city of Edmonton. Under SIRP, EWSI has ranked the current risk exposure of the individual stormwater sub-basins throughout Edmonton. This is based on a multitude of engineering studies, stormwater and climate models, and historical flooding and maintenance records considering a wide range of storm scenarios. EWSI will continue to update SIRP Strategy and risk framework going forward as additional information about particular sub-basins is collected. A summary of the SIRP Strategy is provided in Appendix I-1 to the Application.

- **Corrosion and Odour Reduction (CORe) Strategy –** EWSI initiated the Corrosion and Odour Reduction (CORe) Strategy in 2019 to understand, mitigate and prevent sewer odour issues across the city of Edmonton using a combination of capital and operational interventions. Different approaches are proposed for each region to ensure that causes of the odour are fully understood and to ensure that capital projects will provide sustainable relief. EWSI will continue to update CORe Strategy based on experience gained with the various approaches to mitigation of corrosion and odour issues in the drainage system. A summary of the CORe Strategy is provided in Appendix I-2 to the Application.
- **Operational and Engineering Analysis** – Operational analysis includes conducting system analysis and performance evaluation. Modeling tools are also utilized in the analysis to help identify any significant deficiencies as well as opportunities for improving efficiency. Much of the capital work is also related to lifecycle replacement or rehabilitation of aging assets. Aging assets are assessed through inspection or engineering analysis to determine the optimum timing of rehabilitation or replacement work.
- **Asset Management Approach and Plans** – EWSI's asset management planning approach is a systematic process to:
  - structure and document asset inventory;
  - measure, monitor and maintain asset performance;
  - minimize exposure to risk;
  - guide and optimize the sustainable investment of funds.
  - The general asset management methodology, developed by the United States Environmental Protection Agency consists of five core questions:

1. What is the current state of my assets?
2. What is my required level of service?
3. Which assets are critical to sustained performance?
4. What are my best operating and capital improvement plan investment strategies?
5. What is my best long-term funding strategy?

226. The asset management approach is the mechanism that can address and answer these questions.

227. The overall objective of asset management is to optimize whole life costs of the asset while minimizing asset related risks that have the potential to impact business objectives. In essence, asset management imposes a risk based approach to determining the cost and benefits of extending an asset's life through continued maintenance versus replacing that asset. Each asset is assessed to determine its potential to impact operating permit requirements, health and safety of employees, public health, environment, capacity requirements and finances. This approach has led to the identification and ranking of the most critical assets. These critical assets are given higher priority in projects/programs so that sustained performance can be maintained at all times (an example is the Pump Station Rehabilitation Program). This asset management approach has also identified systems that upon failure would create significant downtime and loss of service for an extended period (an example is the Drill Drop Manhole Program).

228. EWSI pursues continual improvement to its asset management approach. Relative to the 2017-2021 PBR capital plan, there has been an improvement to the ability to deliver on the objectives of the asset management approach. This includes an enhanced focus on the creation of Asset Management Plans, which enables better anticipation of required spending and timelines, better understanding of the risks associated with asset failures in order to determine the best mitigation strategies, and the focusing of maintenance time on higher-criticality assets. Moreover, EWSI will continue to seek improvements to its asset management approach by identifying new tools and processes to support the capital decision making process.

229. These many sources of information, supplemental additional PBR specific assessments as well as internal and external expert resources, are brought together when a PBR submission for capital is prepared. This approach facilitates a consolidated perspective of the entire system's requirements.

Step 2: Project and Program Categorization and Business Case Preparation

230. EWSI categorizes capital projects and programs to assist with the prioritization, justification and analysis process. For the 2018-2021 period, EWSI Drainage Services used the following ten Drainage Program categories to classify its projects and programs. The first seven of these categories are for "base" capital programs and projects funded through base sanitary and stormwater rates (rates escalated at 3% as set out in Bylaw 18100). The remaining three "NRA" (Non-Routine Adjustment) categories are for programs and projects funded through approved NRA adjustments to rates for the period 2020-2021.

- **Drainage Neighbourhood Renewal** – a program required to renew aging sanitary and stormwater infrastructure in mature neighbourhoods in alignment with the City of Edmonton's Building Great Neighbourhood Program;
- **Drainage System Expansion** – projects and programs required to build new infrastructure to support growth and customer requirements;
- **Drainage System Rehabilitation** – projects and programs required to rehabilitate or replace existing assets at the end of their useful life, to improve reliability and to ensure acceptable risk levels are maintained;
- **Environmental Quality Enhancement** – projects and programs required to address current and upcoming regulatory requirements from regulatory bodies such as Alberta Environment and Parks;
- **Flood Mitigation** – projects and programs required to update and new add new infrastructure to provide an appropriate level of flood protection for the neighbourhoods. These projects were originally included in the City's long-term plan prior to the Drainage transfer to EPCOR and have been incorporated into the SIRP for this upcoming PBR;
- **Sanitary Servicing Strategy Fund (SSSF)** – projects and programs required to build new sanitary trunks within the city to support growth, funded by customer contributions through the City-administered SSSF;
- **Real Estate** – projects required to manage facility requirements, including a project to develop a new property on Aurum Road to consolidate Water Services and Drainage Services operations to provide long-term synergies and operational efficiencies across the two organizations;

- **SIRP NRA** - projects and programs required as part of the SIRP Strategy to address flood risks but were not included in the City's LTP and funded through an NRA application approved by City Council in 2019;
- **CORe NRA** - projects and programs required as part of the CORe Strategy to invest in proactive measures to reduce corrosion and odour issues in specific areas of the city which are funded through a NRA application approved by City Council in 2019; and
- **LRT Relocates NRA** – a program required to relocate drainage infrastructure in accordance with the Drainage Services Franchise Agreement in order to facilitate the City's planned LRT expansion, funded by a NRA application approved by City Council in 2019.

231. Moving forward to the 2022-2024 PBR term, Drainage Services projects and programs will be categorized under the following seven Drainage program categories: Drainage Neighbourhood Renewal, Drainage System Expansion, Drainage System Rehabilitation, SIRP, LRT Relocations, CORe and SSSF. The Flood Mitigation category is removed beginning in 2022, because the NRA's expire at the end of the 2028-2021 PBR term and going forward, all new flood mitigation expenditures will be under the SIRP category. The Environmental Quality Enhancement category is removed beginning in 2022 as projects included in this category will be included within the SIRP category going forward. The Real Estate Category is removed beginning in 2022 as this project is expected to be in-service in 2021.

232. In addition to these Drainage Program categories, EWSI also categorizes its capital projects and programs by the following regulatory categories based on the justification.

- **Regulatory and Health, Safety and Environment** – Projects which address current and upcoming regulatory requirements from operational regulatory bodies, and/or specifically address health, safety and environment considerations of employees and the public;
- **Growth / Customer Requirements** – Projects which address growth in franchise area, increased customer requirements, specific requests from customers or to meet required service level standards;
- **Reliability or Life-Cycle** – Projects to replace assets reaching the end of their life or otherwise ensuring asset reliability; and
- **Efficiency/Performance Improvement** – projects which result in operational efficiency.

233. Following the extensive review, analysis, and establishment of capital priorities, EWSI documents every proposed project and program using a project charter and detailed costing spreadsheet. For projects and programs that exceed $10 million, a formal business case is also prepared for the PBR Application. EWSI applies a rigorous and consistent approach to the documentation of each project and program, which is underpinned with various tools and guidelines to support cost estimation and other critical components of project justification. Drainage Services project and program business cases are provided in Appendix H.

234. The key components of the business cases include (i) project/program background and justification; (ii) project/program description; (iii) project justification; (iv) alternatives analysis, where applicable; (v) cost forecast; and (vi) risk mitigation.

i. Project/Program Background and Justification
   - History and background, including identification of the problem
   - Justification based on how the project or program addresses key risks

ii. Project/Program Description
   - problem or opportunity identification
   - proposed project/program scope and out of scope items
   - goals - anticipated outcomes and benefits

iii. Alternatives Analysis
   - analysis of viable alternatives
   - rationale behind the proposed solution
   - discussion of costs and benefits of each alternative
   - financial analysis (net present value analysis) where cost is the major factor to decide between alternatives

iv. Cost Forecast
   - annual capital expenditure forecasts including direct and indirect cost and contingency;
   - costing assumptions;

v. Risk Mitigation
   - Identification of the key risks associated with project or program execution
   - Steps EWSI will take to mitigate the identified risks identified.

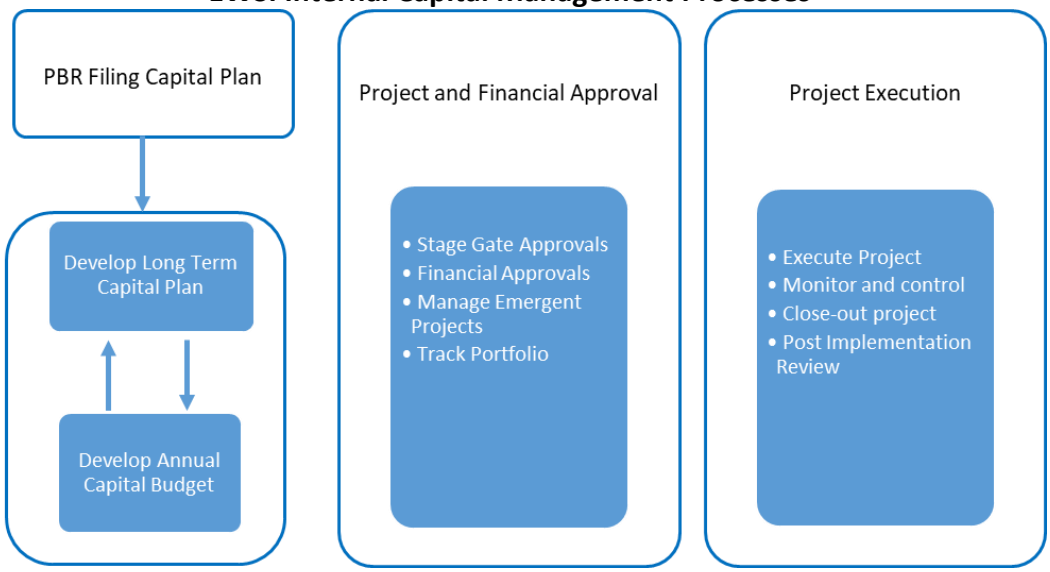
Step 3: Review and Approval Process

235. A prioritized review of the project charter, detailed costing spreadsheet and risk matrix (for projects) is performed by operations, finance and regulatory staff to ensure accuracy, provide guidance on the application of corporate contingency guidelines and to identify any impacts between interdependent projects and programs. Senior reviews occur on a prioritized basis at the project and program level, as well as at the consolidated level to ensure a consistent risk-based approach is applied across operational areas. Final approval of the PBR capital plan is given by EWSI Executive leadership based on review and discussion with operations, finance and regulatory. The review ensures a clear understanding of the risks associated both with delivering the project or program, and mitigated by its delivery.

5.2.3.2 Capital Management and Governance Processes (Managing to the PBR Plan)

236. EWSI's capital management processes provide the governance and gating (approval) stages through which project execution occurs. These processes also include the annual budgeting of capital projects. The capital management processes are well-established and are illustrated in Figure 5.2.3.2-1.

Figure 5.2.3.2-1
EWSI Internal Capital Management Processes



- **PBR Plan** – EWSI prepares a capital plan for the five year PBR term, as detailed above. This plan is ultimately approved by EWSI's regulator, Edmonton City Council, and, as a result, it establishes the baseline against which all capital activities are determined and measured.

- **Annual Capital Budget -–** The PBR capital plan provides the starting point for the annual capital budget. An extensive process is undertaken where all projects identified for that year are reviewed, project justifications updated, and each project is vetted and prioritized by the Capital Steering Committee before inclusion in the annual budget. Prior to any project identified in the PBR plan commencing, the cost estimate is updated using the most current understanding of the scope and work breakdown and using the most current labour and material costs. The project is also assessed to ensure it remains viable from both technical and priority perspectives. Once approved by the EWSI executive, the annual capital budget is then reviewed by EUI executive (Financial Review Council). Once approved by EUI executive, the annual budget is submitted for approval to EUI's Board of Directors. Any projects that were not identified in the PBR plan (referred to as unbudgeted projects) are occasionally required due to unforeseen circumstances or occurrences such as equipment failures, emergencies, safety hazards or process changes. These projects are identified through the annual capital budget process where the need for the project is evaluated and considered for approval. Unbudgeted projects over $2 million require additional review and approval at EUI executive level.
- **Long Term Plan –** EWSI prepares a 10-year plan for capital expenditures on an annual basis as part of EUI's Long Term Plan (LTP) development. The LTP provides a longer term review of the PBR Capital Plan and takes into account any major changes from that original plan. It also forms some of the basis for capital expenditures to be considered for inclusion in the next PBR renewal application.
- **Project and Financial Approvals** – In this process, the projects are approved through the stage gate process. The project justifications prepared during the annual budget are updated for any new information and a formal request is sent to approvers to review for financial approval to execute the projects. The approvers include members of the Capital Steering Committee.
- **Project Execution and Monitoring –** At this stage, it is the project manager's responsibility to execute the project. Monitoring, control, quality and safety are critical aspects of this phase. Oversight of the execution is maintained by both the Project Management Office and the Capital Steering Committee. The Capital Steering Committee meets monthly to review the status of projects, including review of budget variances. The Controller, Drainage Finance, is responsible for ensuring appropriate internal controls around capital financial accounting and reporting. Project close-out

includes formal approval from asset owners and operations that the assets can be turned over to Operations to operate and maintain. Depreciation of the assets commences. PIRs are undertaken for projects over $5 million where the variance between the final completion costs and the originally approved budget is more than 20%. At a minimum, the documentation will include:

- Actual Capital Expenditures versus the original budget
- Preliminary scope versus final scope
- Timing of completion
- Actual benefits realized versus expected
- Process improvements/corrective action identified during the project that may be incorporated in future capital projects (i.e., learnings from the project)

5.3 Capital Structure and Cost of Capital

237. The cost of capital is comprised of EWSI's cost of debt, cost of equity (return on equity) and its capital structure or proportion of debt and equity financing. EWSI is applying for a deemed capital structure of 60% debt and 40% equity for the 2022-2024 PBR term. This is consistent with EWSI`s historical actual capital structure. EWSI's methodologies for determining its return on equity and cost of debt are described below. Calculations of EWSI`s weighted average cost of capital and return on rate base are provided in section 9.

5.3.1 Rate of Return on Equity

238. To establish its proposed return on equity, EWSI recommends that an update of Grant Thornton's 2016 analysis (used to set the Water and Wastewater 2017-2021 PBR term's common equity return) be used to establish the 2022–2024 PBR common equity rate of return for all three utilities. A formulaic extension of this prior methodology is seen as the most straightforward approach under current economic conditions. The current turmoil in financial markets resulting from the COVID-19 global pandemic and the resulting fiscal and monetary policy initiatives used by governments and central banks to diminish economic devastation has impacted the viability of traditional approaches to determine equity rates of return. A formulaic extension eliminates these concerns and also best aligns with the City's desire to determine a risk premium to the AUC's generic cost of capital to derive the allowed rate of return on equity for EWSI.

239. EWSI has prepared a Memorandum with the assistance of an industry recognized expert to provide a detailed review of the proposed methodology and the specific adjustments required to update the Grant Thornton 2016 approach. This analysis, entitled the Return on Equity Memorandum, is provided in Appendix D. In Section 9.2 to the Application, EWSI provides a summary of the specific updates required to adjust the Grant Thornton approach as well as commentary on the differences in the risk profile of EWSI's businesses in relation to those regulated by the AUC in order to justify the risk premium over the generic allowed return on equity. Based that analysis, EWSI is proposing a rate of return on common equity of 9.95 % for the 2022-2026 PBR term. The analysis also proposes the continuation of the current capital structure of 60% debt and 40% equity.

240. The proposed return on equity for the SIRP and CORe revenue requirements is 9.95%. EWSI is proposing 9.95% return on equity for these major strategic initiatives which will require significant capital expenditures for which EWSI must receive a fair return and be in a financial position to obtain debt financing at reasonable terms. In an effort to moderate Drainage rate increases for the 2022-2024 PBR term, EWSI proposes that the equity rate of return for sanitary excluding CORe and stormwater excluding SIRP revenue requirements be reduced from the fair rate of return of 9.95%. This reduced rate of return will be established at 5.50% for 2022 and "ramped up" to 9.95% in a linear fashion over a five-year period from 2022 to 2026. EWSI recognizes the current economic climate is creating financial hardship for many customers and is voluntarily reducing the applied-for rate of return for Drainage Services in this Application.

241. Based on this proposal, the average rate of return for EWSI's Sanitary excluding CORe and Stormwater excluding SIRP operations is 6.61% for the 2022-2024 PBR term as indicated in Table 5.3.1-1 below. This average return for the 2022-0224 PBR is materially less than the 9.95% rate of return from its Return on Equity Memorandum (Appendix D). As a result of ramping up the return on equity for the "Base" operations, EWSI has reduced costs to ratepayers by over $66 million for the 2022-2024 PBR term by accepting a return on equity that is far lower than a fair rate of return.

Table 5.3.1-1
EWSI Forecast Return on Equity for
"Base"* Sanitary and Stormwater Utilities
2022-2024
(%)

	A **2022D**	B **2023D**	C **2024F**	D **Average**
1 Return on Equity	5.50%	6.61%	7.73%	6.61%

*Excludes SIRP and CORe

242. The proposed return on equity for the SIRP and CORe components of EWSI's Drainage revenue requirements is shown in Table 5.3.1-2.

Table 5.3.1-2
EWSI Forecast Return on Equity for
SIRP and CORe Investments
2022-2024
(%)

	A **2022D**	B **2023D**	C **2024F**	D **Average**
1 Return on Equity	9.95%	9.95%	9.95%	9.95%

5.3.2 Cost of Debt

243. EWSI reflects new debt issuances from its parent company, EUI, through deemed inter-company loans. Consistent with other regulated business units within the EUI group of companies, debt rates on long-term inter-corporate loans issued by EUI to EWSI are based on EWSI's regulated services on a stand-alone basis. On September 3, 2020, Dominion Bond Rating Service issued a one-time private rating advising EWSI that its private rating is A (low) (equivalent to S&P rating of A-). EUI currently has an A (low) rating from DBRS and A- rating from S&P.

244. EWSI forecasts its cost of new issues of inter-company debt based on published Government of Canada long-term bond yield forecasts and indicative credit spreads from major Canadian banks. For the 2022-2024 PBR term, EWSI is proposing to fix the forecast cost of new debt issuances at the 2022 forecast cost of debt for EWSI of 3.50% as shown in Table 5.3.2-1. This reflects a 1.32% decline in EWSI's approved cost of debt of 4.2% in the 2017-2021 PBR term.

245. Under EWSI's PBR Framework, the risk of interest rate fluctuations is entirely borne by EWSI and is not passed on to its customers. Acceptance of the interest rate risk is another significant risk factor that differentiates EWSI's PBR approach from the AUC PBR approach. Under the AUC PBR, Alberta electric and gas utilities pass on interest rate risk to their customers

through rate adjustments. As such, this risk factor represents another component of the EWSI risk premium above the AUC's Generic Cost of Capital as further discussed in Appendix D to the Application.

Table 5.3.2-1
EWSI Forecast Cost of New Debt Issues
2022-2024
(%)

		A **2022 F**	B **2023 F**	C **2024 F**
1	Cost of Debt for New Debt Issues	3.50%	3.50%	3.50%

246. This 2022 forecast cost of debt for EWSI is determined as follows:

- the 2022 average yield on 30-year[18] Government of Canada bonds of 1.83% based on the average forecasts from three Canadian banks published in October 2020; plus
- EUI's indicative 30-year credit spread of 1.62% based on the average forecasts from six Canadian banks published Q4 2020; plus
- a 0% risk premium for EWSI over EUI's cost of debt reflecting that EWSI and EUI have the same credit rating; plus
- a transaction cost of 0.05%.

247. EWSI also reviewed the Consensus Economics Forecasts (October 2020 Report) to confirm its proposed stand-alone cost of new debt issuances. This report confirmed the reasonability of the proposed 3.5% cost of debt for EWSI.

5.4 Depreciation and Amortization

248. Utility assets are depreciated over the shorter of the assets' physical, technological, commercial or legal lives. Depreciation and amortization of EWSI's capital assets are determined on a straight-line basis over the estimated service lives. When the asset is no longer used or useful, the assets are retired. Assets that are similar in the way they function and have similar useful lives are grouped together and depreciated (referred to as "group asset"). When a group asset is retired or disposed of, its original costs are charged to accumulated depreciation with no

[18] Historically EWSI's cost of new debt calculation relied on 20-year Government of Canada bond yields and 20-year EUI credit spreads. For this PBR term, EWSI has adjusted the methodology to use the 30-year yields to calculate the stand-alone cost of debt which is more appropriate given that its long-term debt is used to fund assets with lives that generally far exceed 30 years. As indicated in Table 5.4.1 below, the composite average asset life for all of EWSI's Drainage assets is 53 years.

loss or gain reflected in income. Gains or losses on the retirement of other assets such as buildings and vehicles are reflected in income. Depreciation rates and asset lives by asset category are provided in Table 5.4-1, comparing the rates and lives for the 2018-2021 PBR term to the 2022-2024 PBR term. EWSI's depreciation expense for 2022-2024 is provided in detail in section 7 of the Application.

Table 5.4-1
Annual Depreciation Rates
Financial Schedule 12-2

		A	B	C	D
		2018-2021		**2022-2024**	
	Asset Category	**Annual Depreciation Rate**	**Service Life (years)**	**Annual Depreciation Rate**	**Service Life (years)**
1	Sanitary, stormwater and combined pipes	1.33%	75.0	1.33%	75.0
2	Catchbasins & Manholes	1.33%	75.0	1.33%	75.0
3	Stormwater Management Facilities & Structures	1.33%	75.0	1.33%	75.0
4	Lagoons	1.33%	75.0	1.33%	75.0
5	Service Connections	1.33%	75.0	1.33%	75.0
6	Storage Tanks	1.33%	75.0	1.33%	75.0
7	Outfalls	1.33%	75.0	1.33%	75.0
8	Culverts	1.33%	75.0	1.33%	75.0
9	Inlets / Outlets	1.33%	75.0	1.33%	75.0
10	Low Impact Development – Engineered Soil	4.0%	25.0	4.0%	25.0
11	Ventilation units	6.67%	15.0	6.67%	15.0
12	Process control systems / SCADA	10.0%	10.0	10.0%	10.0
13	Computer Equipment - Hardware	20.0%	5.0	20.0%	5.0
14	Laboratory Equipment	20.00%	5.0	20.00%	5.0
15	Construction equipment and tools	10.00%	10.0	10.00%	10.0
16	Construction equipment and tools - TBM	Variable – usage based		16.67%	6.0
17	Pump Station Equipment Enhancements	5.0%	20.0	5.0%	20.0
18	Office Furniture and Equipment	16.67%	6.0	16.67%	6.0
19	Software Intangibles	20.00%	5.0	20.00%	5.0
20	Buildings – office / pump stations	2.27%	44.0	2.27%	44.0
21	Buildings – trailers / warehouse	10.0%	10.0	10.0%	10.0
22	Buildings – leasehold improvements	10.0%	10.0	10.0%	10.0
23	Vehicles - cars	14.29%	7.0	14.29%	7.0
24	Vehicles – others	10.0%	10.0	10.0%	10.0
25	**EWSI Composite Rate**	**2.00%**	**50.0**	**1.89%**	**53.0**

249. EWSI has not completed a depreciation study for this Application. Other than the few exceptions noted below for new asset types, EWSI will continue to apply the same depreciation rates since Drainage was under the City. In order to complete a depreciation study for the next

PBR term, EWSI is collecting data on the impact of its SIRP and CORe Strategies and operational practices on average service lives.

250. A new asset category is added for the SIRP LID Program which includes vegetative assets and engineered soil to slow stormwater flows into the drainage system. As these are new assets, a new category (row 10 of Table 5.4-1) has been created to recognize that soil will need replacing on a more regular basis than the other concrete structures used for LID installations.

251. The CORe Strategy identified pump station equipment enhancements and treatments and ventilation units as separate asset categories in the NRA Application. As a result, these asset categories have been added in rows 11 and 17 above for completeness.

252. Tunnel Boring Machine (TBM) construction equipment is not anticipated to be used after 2021 in alignment with EWSI's Drainage Construction Strategy (as discussed in section 2.3.5.1 of the Application). In 2019, based on a comprehensive risk, safety and market assessment, EWSI determined that it should transition away from using in-house resources to complete new tunnel construction. Furthermore, historically TBM assets were depreciated on a usage basis which has resulted in under-recovery of these costs. Beginning in 2022, EWSI will accelerate the depreciation on these assets to adjust for this historical under-recovery by depreciating the remaining net book value of $14.8 million over six years ($2.5 million per year). A six-year remaining useful life is based on applying a 10-year life to TBM assets from the date of the Drainage transition in late 2017. A 10-year life is equivalent to other similar construction equipment.

5.5 Contributions in Aid of Construction

253. Certain EWSI assets may be acquired or constructed with funding referred to as contributions in aid of construction (CIAC) from developers or customers. Contributions are provided under the following categories: (i) Contributions from Developer-Built Assets; (ii) Contributions from the Sanitary Servicing Strategy Fund (SSSF), (iii) Contributions from Government grants, and (iv) Other Contributions from Customers.

5.5.1 Contributions from Developer-Built Assets

254. Certain EWSI infrastructure, referred to as private installations, are built and financed by property developers under a development servicing agreement between the developers and the City of Edmonton. Under the provisions of the servicing agreement and upon issuance of a construction final acceptance certificate, the developers will transfer ownership and title of

private installations to the City of Edmonton. In accordance with private installation provisions under a franchise agreement between the City of Edmonton and EWSI, the City of Edmonton will then transfer ownership of the private installation assets related to the public utility and EWSI will record the transferred assets at cost with an equal offsetting entry to contributed assets. These private installations include those assets related to sanitary and stormwater pipes, stormwater management facilities and associated appurtenances such as manholes, catch basins and other infrastructure.

5.5.2 Contributions from Sanitary Servicing Strategy Fund (SSSF)

255. Certain Drainage sanitary trunk lines and related infrastructure are constructed specifically to meet the future growth needs of the City of Edmonton. The SSSF committee, comprised of membership from the developer community, the City of Edmonton and EPCOR approve projects for funding through the SSSF and provide governance over projects as they progress through construction. SSSF funding is provided by a combination of assessment and permit fees from builders and developers and the utility provider contribution from Drainage, and is administered by the City of Edmonton. Where a project receives SSSF approval, all costs incurred are covered by the SSSF.

5.5.3 Contributions from Government Grants

256. Certain EWSI infrastructure relating to stormwater pipes, stormwater management facilities and other related infrastructure are eligible for contribution recoveries provided by the Provincial and Federal Governments under the Alberta Community Resilience Program (ACRP), New Building Canada Fund (NBCF) and Disaster Mitigation Adaptation Fund (DMAF) grant programs. Under these arrangements, while the contribution arrangement is between the City of Edmonton and the Government, EWSI is a signatory to the related Ultimate Recipient Agreement and retains responsibility for construction and maintenance of the associated assets. As such EWSI recognizes and receives grants based on the identified eligible costs in line with the specific requirements of each grant.

5.5.4 Other Contributions from Customers

257. EWSI charges fees to customers to install new sanitary and stormwater service connections from the main trunk to the private property line, and to inspect private developer service connections. The application process is managed centrally within EWSI on behalf of both Drainage and Water as customers apply for both water and sewer servicing at the same time.

5.6 Capitalized Overhead Methodology

258. Capitalized overhead includes the cost of certain supporting functions which are charged to capital projects (capitalized). These functions include, among others, project governance, accounting, supply chain, and dedicated health and safety resources. Capitalized overhead recoveries reflect a transfer from EWSI's operating expenses to capital projects as indirect costs. The proportion of EWSI's direct labour costs charged to a particular project establishes the proportion of capital overhead charged to that project.

5.7 Inter-Affiliate Transactions Summary

259. As a member of the EPCOR group of corporations, EWSI obtains corporate services from its parent corporation, EUI. Corporate Shared Services are comprised of activities that are centrally managed within the EPCOR group due to their nature and/or for the purpose of realizing economies of scale and scope. EWSI receives certain services from, and provides certain services to, other members of the EPCOR group.

260. For ease of reference, EWSI refers to the services provided by EUI to EWSI as "Corporate Shared Services", and the services provided by EWSI to other affiliates and services provided by other affiliates to EWSI as "Affiliate Services". Revenues received by EWSI for Affiliate Services provided by EWSI are included in the cost recoveries in EWSI's regulated operating costs. Costs charged to EWSI for Affiliate Services provided by EWSI's affiliates are also included in EWSI's regulated operating costs and certain regulated capital projects.

261. Corporate Shared Services costs are recovered by EUI from EWSI through either the direct assignment of the costs to EWSI or through an allocation process. The costs associated with Affiliate Services provided by EWSI to other corporations are recovered by EWSI through either the direct assignment or invoicing of the costs to the affiliate or using an appropriate cost allocation method. EWSI has in the past received, and continues to receive, the same scope of Corporate Shared Services from EUI as EDTI and EEA. The allocation methods used by EUI to determine the charges for those services are common across all EUI subsidiaries. Tariff Applications filed by AUC-regulated members of the EPCOR group (including EPCOR Distribution and Transmission Inc. (EDTI) and EPCOR Energy Alberta Limited Partnership (EEA)) over the past decade have provided detailed explanations of the Corporate Shared Services provided by EUI, their associated costs and the allocation methods used to determine the charges for those services to each EUI subsidiary. In that context, the scope of the Corporate Shared Services, EUI's cost allocation methods and the resulting charges have been carefully scrutinized by the AUC.

With only a few exceptions over the years, the AUC has approved the recovery of Corporate Shared Services charges as applied-for in the forecast revenue requirements of EPCOR's AUC-regulated entities. Each year, EUI undertakes a rigorous review of these costs and the cost allocation process to ensure that the charges for Corporate Shared Services to its subsidiaries are reasonable.

262. Table 5.7-1 provides a summary of Drainage Services transactions with affiliates including EUI, Water Services, EPCOR Distribution and Transmission Inc. (EDTI), EPCOR Energy Services (EEA), EPCOR Technologies Inc. (ETECH), EPCOR Commercial Services and the City of Edmonton.

Table 5.7-1
Financial Schedule 18-1
Forecast Affiliate Transactions
($ millions)

	Affiliate and Service	A 2018 A	B 2019 A	C 2020 F	D 2021 F
	Revenues from the provision of services to the City of Edmonton				
1	Utility Revenue	3.5	3.6	3.6	3.7
2	Other Services	0.1	0.1	0.1	0.1
3	Total	3.6	3.7	3.8	3.8
	Services provided by (recovered from):				
	City of Edmonton				
4	Franchise Fees	9.8	10.2	10.5	11.4
5	Property Taxes	1.4	1.6	1.6	1.6
6	Other Services		0.2	0.1	0.2
7	Total	11.2	11.9	12.2	13.3
	EPCOR Utilities Inc.				
8	Corporate Shared Service Costs	16.3	16.3	16.6	17.0
9	Interest on Intercompany Loans	25.2	35.4	36.4	41.4
10	Interest on Short-term debt	1.0	0.9	0.9	0.8
11	Total	42.5	52.5	53.9	59.2
	Other Affiliate				
12	EPCOR Technologies Inc.	(0.2)	(0.2)	(0.2)	(0.2)
13	EPCOR Commercial Services Inc.	0.3	0.3	0.3	0.3
14	EPCOR Water Services	1.6	1.7	1.7	1.8
15	EPCOR Distribution and Transmission Inc.	0.1	0.1	0.1	0.1
16	EPCOR Energy Services	4.1	4.2	4.3	4.4
17	Total	6.0	6.1	6.2	6.3
	Expenditures on capital projects arising from services provided by:				
18	City of Edmonton	(25.8)	(18.6)	(2.0)	(1.2)
19	EPCOR Technologies Inc.	3.5	3.3	3.3	3.3
20	EPCOR Utilities Inc.		0.3	0.3	0.1
21	EPCOR Water Services	(2.1)	(2.1)	(2.1)	(2.1)
22	Total	(24.4)	(17.1)	(0.6)	(0.0)

5.8 Drainage Volume and Customer Count Forecast Methodology

263. EWSI forecasts its revenues for the 2022-2024 PBR term based on its forecast of water consumption and customer counts for the next six year period from 2021 to 2024. EWSI's sanitary rate structure includes both monthly charges per cubic metre of metered water consumption ("variable" or "consumption" charge) and a flat monthly service charges per customer ("fixed" charge), while stormwater rate structure includes a stormwater utility charges per square metre adjusted for a development intensity factor and a runoff coefficient based on the zoning of the premises.

264. Assumptions regarding customer growth and consumption per customer are described further below.

5.8.1 Impacts of the COVID-19 Pandemic

265. EWSI's forecast anticipates a general return to pre-pandemic trends by 2023, as supported by external forecasts. The City of Edmonton predicts a return to pre-pandemic levels of output by 2022[19] or 2023, while the Government of Alberta and ATB Financial predict a return to pre-pandemic levels of output by 2023[20].

266. As further described in the sections below, EWSI is forecasting a return to long term trends in customer count and consumption per customer for all rate classes by 2023. The exception is commercial consumption per customer, which is forecast to return to the long term trend line by 2024.

5.8.2 Customer Count Forecasting Process

267. EWSI prepares its forecasts of customer growth separately for its residential, multi-residential and commercial customer classes. The Sanitary and Stormwater Utilities provide services to the same customer base except for about 0.2% of customers who are only connected to a single utility. Accordingly, assumptions and methodologies for customer count forecast are the same for both the Sanitary and Stormwater Utilities.

[19] https://www.edmonton.ca/business_economy/documents/Fall_2020_Forecast_Update.pdf
[20] https://www.atb.com/siteassets/pdf/company/insights/outlook/alberta-economic-outlook-october-2020.pdf https://www.alberta.ca/economic-outlook.aspx (retrieved February 12, 2021)

Residential Customer Count Forecast

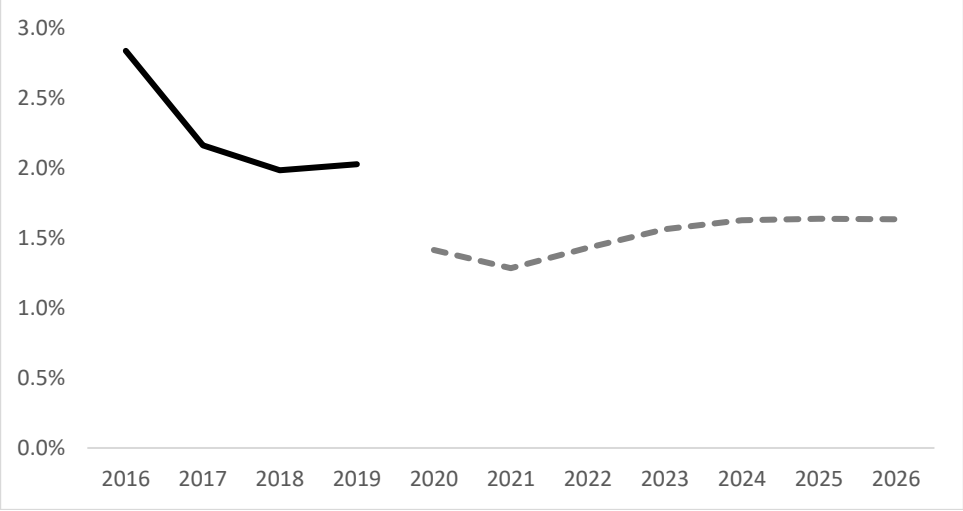
268. The residential customer category accounts for the 55% of total consumption, 64% of sanitary utility revenues, 53% of stormwater utility revenues and 93% of total customer accounts.

269. Customer growth rate assumptions in Water Services' 2017-2021 PBR Application were based on a review of historical customer growth trends, and a review of third party forecasts of Edmonton population growth and judgement. With the objective of improving the accuracy of the forecast and ensuring alignment across EPCOR, EWSI has adopted a new forecast methodology for residential customer count. This methodology is very similar to that approved by the AUC for Energy Services' 2016-2017 Regulated Rate Application.

270. The revised methodology utilizes forecasts of housing starts from three independent sources: the City of Edmonton, the Conference Board of Canada and the Canada Mortgage and Housing Corporation (CMHC). The City of Edmonton provides a housing starts forecast for the Edmonton census subdivision (a subset of the metropolitan area), while CMHC and the Conference Board of Canada provide housing starts forecasts for the Edmonton census metropolitan area. The City of Edmonton forecast data is adjusted upward based on the observed historical percentage difference.

271. Figure 5.8.2-1 displays the historical annual growth in Edmonton housing starts from 2016-2019, as well as the average forecast across the three external sources. Slower population growth is anticipated due to the combined impacts of the COVID-19 pandemic and depressed energy prices.

Figure 5.8.2-1
Housing Starts Growth Rate (2016-2026)



272. The results are based on a regression, with the monthly change in EWSI residential Active Customer Counts as the dependent variable and monthly housing starts as the explanatory variable. The constant is set equal to zero. The results of the t-test for significance of the explanatory variable and the results of the F-test for overall significance of the model are all significant at the 99% confidence level. The R-squared of 0.7356 is reasonably high for a model with just a single explanatory variable. The coefficient on the explanatory variable is 0.408.

273. The average of the three housing starts forecasts was calculated for each future month, and multiplied by the coefficient of 0.408 to develop the forecast of growth in EWSI's residential site count.

Multi-Residential Customer Count Forecast

274. Generally multi-residential customer counts are forecast based on historical trending. However, EWSI anticipates that the economic trends dampening growth of residential sites over the next few years will extend to growth in multi-residential sites as well. Over the 2018-2019 period, growth in this customer class averaged 0.36%. A slow start to the recovery is forecast for 2021 and 2022, with 0.20% growth annually. Growth in the years 2023 and beyond is expected to return to near-historical levels, forecast at 0.30%.

Commercial Customer Count Forecast

275. Two major changes to the forecast methodology for commercial customers have been incorporated. First, separate forecasts were developed for regular commercial customers and for the University of Alberta. The University of Alberta functions as an In-City bulk water customer, similar to regional water customers and, and in addition to accounting for approximately 11% of commercial consumption, has consumption characteristics that differ from all other commercial customers. Therefore, developing separate forecasts leads to more consistent and reliable trending.

276. The second change to the methodology for the Commercial class forecast relates specifically to incorporating expectations of the COVID-19 pandemic impact, which resulted in the need for more weight placed on judgement about the future rather than historical trending.

277. Historically Commercial Growth has been increasing at a rate of 1.14% annually. EWSI is forecasting 0.03% growth in Commercial Customer Count for 2021 and 0.47% increase for 2022. From 2023 and beyond, EWSI is forecasting 0.91% growth in Commercial Customer Count, which

is slightly lower than the 1.14% historical average due to global economic uncertainty and a decline in the energy sector in Alberta.

278. During the implementation of its new billing system in 2020, EWSI identified a difference in the determination of average monthly customer counts between the old and new billing systems. This difference relates to customer moves. When a customer moves out and another customer moves into the same premises during the month, the old billing system counts two customers for that month, whereas the new billing system correctly counts one customer in that month. The new billing system correctly bases the number of customers on the number of sites. Implementation testing showed that the difference in the determination of customer counts meant that customer counts in the old billing system were inflated by approximately 1,000 customers per year. Beginning with the 2020 forecast, EWSI has applied an adjustment to its forecast customer counts for each of the three rate classes.

279. Table 5.8.2-1 provides EWSI's forecast of Sanitary Utility customer count by class for 2022 to 2024. The 2018 and 2019 customer counts are based on the old billing system's methodology, whereas 2020 and 2021 are based on the new billing system's methodology. EWSI estimates that, had the new methodology been used, average monthly customer counts in Column A, would be approximately 1,000 less than shown.

Table 5.8.2-1
Financial Schedule 4-1
Average Monthly Sanitary Utility Customer Count
(2018-2021 Average and 2022-2024)

		A **2018-2021 Average**	B **2022 F**	C **2023 F**	D **2024 F**
1	Residential	270,123	278,868	283,230	287,839
2	% annual avg. growth	1.31%	1.43%	1.56%	1.63%
3	Multi-Residential	3,775	3,789	3,800	3,811
4	% annual avg. growth	0.14%	0.20%	0.30%	0.30%
5	Commercial	16,970	3,789	3,800	3,811
6	% annual avg. growth	0.28%	0.50%	1.00%	1.00%
7	Total Average Monthly Customers	290,867	299,726	304,271	309,064

280. The stormwater customer count forecasting methodology is essentially the same as for sanitary customer counts and uses the same customer growth factors. The primary differences relate to how stormwater revenues are calculated. Briefly, stormwater revenues are determined by multiplying the number of customers in each class by the stormwater rate, the area of the

premises, a development intensity factor and a runoff coefficient based on zoning of the premises. Therefore, as part of the forecast process, EWSI determines an average "stormwater billing determinant" per customer factor for each customer class. The stormwater billing determinant is the product of (i) the area of the premises, (ii) the development intensity factor and (iii) the runoff coefficient based on the zoning of the premises, for the average customer in each customer class.

281. In preparing forecasts for 2021 to 2024, EWSI found that stormwater billing determinants per customer tend to be stable over time and that year over year changes are a function of the type of new customers entering the system and, as such, are not readily predictable. Accordingly, the 2021 to 2024 forecast billing determinants per customer are held constant at the 2020 level, the most recent year with actual results. In addition, in the commercial customer class, EWSI has adjusted total stormwater billing determinants to account recovery of a portion of stormwater revenue leakage, as described in Section 1.

282. Table 5.8.2-2 provides EWSI's forecast of average monthly stormwater customer counts by class for 2022 to 2024, together with the monthly stormwater billing equivalents per customer and total annual stormwater billing determinants.

Table 5.8.2-2
Financial Schedule 4-1
Average Monthly Sanitary Utility Customer Count
(2018-2021 Average and 2022-2024)

		A **2018-2021 Average**	B **2022 F**	C **2023 F**	D **2024 F**
	Average Monthly Customer Count				
1	Residential	270,518	279,674	284,049	288,672
2	% annual avg. growth	1.41%	1.43%	1.56%	1.63%
3	Multi-Residential	3,759	3,757	3,768	3,780
4	% annual avg. growth	-0.13%	0.20%	0.30%	0.30%
5	Commercial	16,890	16,909	17,078	17,249
6	% annual avg. growth	-0.03%	0.50%	1.00%	1.00%
7	Total	291,166	300,340	304,895	309,700
	Stormwater Billing Determinants per Customer per Month				
8	Residential	263	263	263	263
9	Multi-Residential	2,009	2,057	2,057	2,057
10	Commercial	3,166	3,259	3,259	3,259
	Annual Stormwater Equivalents (000s)				
11	Residential	852,584	881,719	895,512	910,086
12	Multi-Residential	90,629	92,746	93,024	93,303
13	Commercial	641,617	661,204	667,816	674,494
14	Commercial - Leakage	3,778	26,249	35,511	43,868
15	Total	1,588,607	1,661,918	1,691,863	1,721,752

5.8.3 Volume per Customer Forecasting Process

283. The sanitary volumes are related to the water consumption volumes and follow the customer count and consumption per customer forecast assumptions established for water.

284. **Residential Consumption per Customer Forecast -** A declining trend in residential consumption is prevalent across North America, as validated in the 2016 Water Research Foundation Residential End Uses of Water, Version 2 (DeOreo, B. & Mayer, P., 2016). As indicated by the study, the reductions per residential customer have primarily been due to water savings as customers have installed water efficient appliances and fixtures (primarily toilets and washing machines) that require no behavioral changes to reduce water consumption.

285. A declining trend of water consumption per residential customer is observed in Edmonton over the past four decades. Residential per service consumption in Edmonton reached a high in 2002 of 21.4 m^3/month. Since this time, this number has fallen to 13.8 m^3/month in 2019 (a

reduction of 36%). Water reductions per customer are anticipated to continue into the future due to passive water savings.

286. Prior to 2017, EWSI aggregated all Edmonton-wide residential users into one per-service consumption forecast value and multiplied by an aggregate city growth value for PBR renewal terms. Beginning in 2017, in an effort to more accurately forecast residential consumption, EWSI started using a disaggregated geographic-based approach. This approach recognizes that per-service consumption trends are different for different neighbourhoods. Through its analysis, EWSI has determined that the age of neighbourhood tends to correlate with extent of installation of water efficient fixtures. EWSI's methodology uses age of the home as a proxy for the presence of water efficient appliances and fixtures and the predicted rate of future renovations.

287. The revised residential consumption per customer forecast methodology provided a three-year forecast for each of the core, mature, established, and developing neighbourhood classification areas. The forecast accuracy of this revised consumption per customer forecast demonstrated significant improvement over the 2017-2021 period. Over this period, the mean percentage error of the forecast was -2.63% compared to -5.77% over the 2012-2016 period. This reduced to just -0.9% over the 2017-2019 period. Based on the performance of the new methodology, EWSI decided to utilize the same approach to forecast residential consumption per customer for the 2022-2024 PBR Application. The disaggregated forecasts for the four classification areas are broken out into base and seasonal consumption, then aggregated to obtain a total consumption per customer forecast. As a validation, a theoretically low base consumption is estimated as described in Appendix M. The results of that validation analysis confirm the validity of this approach.

288. Although residential consumption per customer is higher during the COVID-19 pandemic as Edmontonians spend more time in their residences, EWSI is predicting a return to normal once the restrictions are lifted. As EWSI expects the pandemic restrictions to be fully lifted by April 2022, no COVID-19 impacts were incorporated into the forecast of residential consumption per customer.

289. **Multi-Residential Consumption per Customer Forecast -** Due to differences in the different sizes of multi-residential properties, it has been determined that a more appropriate approach is to forecast multi-residential consumption based on historical trending for the entire rate class. As a result, the forecast is developed based on historical trending of total consumption for this rate class. Historically over the years 2014-2019 total consumption has declined 0.18% for this customer class. As a result, EWSI is forecasting a decline of 0.18% from 2023 and beyond.

The validation study presented in Appendix M provides similar results, thus improving EWSI's confidence in this forecast. Consumption per customer for the multi-residential rate class is thus calculated by dividing the total consumption forecast by the customer count forecast.

290. **Commercial Consumption per Customer Forecast –** Historically over the years 2009-2019 commercial consumption per customer has been declining at a rate of 3.10% annually. Based on observations of the impact of the COVID-19 pandemic on EWSI's commercial customer base, EWSI's forecast reflects a decline in 2020 of 24.05% in commercial consumption per customer. .

291. EWSI is forecasting 0% change in commercial consumption per customer for 2021, 5.00% increase for 2022 and 5.00% increase for 2023. From 2024 and beyond, EWSI is forecasting a return to the long term trend line for commercial consumption per customer. EWSI has forecast an extended recovery for commercial consumption per customer due to the macroeconomic challenges in Alberta that existed prior to the pandemic, including low energy prices. EWSI forecasts total consumption for the University of Alberta to decline by 11.00% in 2020, with activity beginning to slowly resume in 2021 at 3.00%. An additional recovery of 5.00% is forecast for 2022, with total consumption generally returning to the historically observed 1.00% decline thereafter.

292. Table 5.8.3-1 provides EWSI's forecast monthly consumption per customer for each customer class for 2022-2024 compared to historical trends since 2018, when Drainage Services transitioned to EWSI.

Table 5.8.3-1
Average Monthly Consumption per Customer
2018-2021 Average and 2022-2024
(m^3 per customer per month)

		A **2018-2021 F Average**	B **2022 F**	C **2023 F**	D **2024 F**
1	Residential	14.5	13.4	13.2	12.9
2	% change	(0.5%)	(10.0%)	(1.7%)	(1.8%)
3	Multi-Residential	400.8	388.4	386.6	384.7
4	% change	0.0%	(5.3%)	(0.5%)	(0.5%)
5	Commercial	101.6	87.3	87.6	91.9
6	% change	(7.1%)	5.3%	4.3%	2.6%

5.8.4 Consumption Volume Forecast

293. The consumption volume forecast is a product of the forecast customer count and the forecast consumption per customer for the residential and commercial customer classes. EWSI has developed the consumption forecast for the multi-residential customer class on a total consumption basis.

294. EWSI's consumption volume forecast is provided in Table 5.8.4-1, which shows forecasted volumes for the full three year PBR period based on the consumption per customer and customer count forecasts. EWSI expects consumption for the PBR term to decrease moderately as customer growth is insufficient to fully offset the trend of declining consumption per customer.

Table 5.8.4-1
Total Consumption Volume by Customer Class
2021-2024
(ML)

		A **2021 F**	B **2022 F**	C **2023 F**	D **2024 F**
1	Residential	48,418.9	49,140.9	44,852.6	44,766.4
2	Multi-Residential	18,574.8	18,604.9	17,658.3	17,626.8
3	Commercial, except large wholesale	15,973.8	15,973.8	16,856.3	17,876.1
4	Commercial, large wholesale	1,814.9	1,869.3	1,962.8	1,948.4
5	Commercial Sub-total	17,843.1	18,819.1	19,824.6	20,423.1
6	**Total Consumption**	**85,588.9**	**81,330.0**	**82,217.8**	**82,712.9**
7	% Change		(5.0%)	1.1%	0.6%

6.0 OPERATING COSTS

295. This section describes total regulated operating costs for Drainage Services for the 2022-2024 PBR term. This section provides two different views of Drainage's regulated operating costs for purposes of explaining year-over-year variances: (i) by cost category (Section 6.1) and (ii) by operational function (Section 6.2).

296. In Section 6.1, Drainage's total regulated operating costs are categorized and explained based on the following nine cost categories:

- Staff Costs and Employee Benefits;
- Contractors and Consultants;
- Materials and Supplies;
- Customer Billing and Collections;
- Meter Reading Services;
- Corporate Shared Services;
- Vehicles;
- EWSI Shared Services Allocation; and
- Other.

297. Section 6.1 provides Drainage's operating costs by cost category, a discussion of the proportion of Drainage's total operating costs represented by each cost category and the cost drivers unique to each cost category which explain the annual variations.

298. In Section 6.2, Drainage's operating costs are categorized and explained based on the following eight operational functions:

1. Drainage Operations;
2. One Water Planning and Project Support;
3. Operational Support Services;
4. Billing, Meters and Customer Service;
5. Drainage Services Administration;
6. Corporate Shared Services;
7. SIRP; and
8. CORe

299. These eight operational functions can be further broken down into responsibility centres. It is at the responsibility centre level where authority and accountability for the management of costs takes place and is overseen at the senior manager level or higher. While EWSI manages the

operations of its drainage system through several responsibility centres and develops forecast costs at this level, for purposes of this section, certain responsibility centres have been grouped together based on the operational function.

300. Section 6.2 provides a description of each of the responsibility centres within each operational function and year-over-year variance explanations. Drainage's forecast operating costs by operational function are provided for 2022-2024. Drainage prepares its forecast operating costs according to the methodologies described in Section 5.2, which incorporates the inflation factor. For additional information on Drainage's actual operating costs for the years 2018 through 2019, refer to the Annual PBR Progress Reports (Appendices E-2 and E-3).

6.1 Operating Costs by Cost Category

301. Table 6.1-1 provides Drainage's total regulated operating costs by cost category forecast for 2022-2024. The 2021 forecast amounts are provided for comparison. Drainage operating costs are allocated between the Sanitary and Stormwater Utilities in accordance with the cost allocation methodologies described in section 12.

Table 6.1-1
Financial Schedule 5-2
Operating Costs by Cost Category
2021-2024
($ millions)

	Cost Category	A 2021F	B 2022F	C 2023F	D 2024F
1	Staff Costs and Employee Benefits	58.4	57.6	57.8	58.9
2	Contractors and Consultants*	31.1	15.9	10.5	11.7
3	Materials and Supplies	7.6	7.3	7.5	7.7
4	Customer Billing and Collections	4.8	4.9	5.0	5.1
5	Meter Reading Services	2.5	2.8	2.7	2.4
6	Corporate Shared Services	16.3	16.3	16.6	17.0
7	Vehicles	(4.9)	(5.7)	(5.8)	(5.9)
8	EWSI Shared Services Allocation	3.9	3.5	3.6	3.7
9	Other	8.1	8.0	7.7	7.9
10	**Total**	**127.7**	**110.6**	**105.6**	**108.4**
	Allocated to:				
11	Sanitary Utility, excluding CORe	68.5	50.9	45.7	45.9
12	CORe	4.1	5.4	4.1	5.5
13	Total Sanitary Utility	72.7	56.3	49.7	51.4
14	Stormwater Utility, excluding SIRP	50.9	47.8	48.5	49.1
15	SIRP	4.1	6.6	7.4	7.8
16	Total Stormwater Utility	55.0	54.4	55.9	56.9
17	**Total**	**127.7**	**110.6**	**105.6**	**108.4**

*Reflects transfer of the Biosolids Management Program to Wastewater Treatment on April 1, 2022.

302. Staff costs and employee benefits reflect wages, salaries and benefits including incentive compensation and overtime for employees. These costs represent approximately 54% of Drainage's total regulated operating costs over the 2022 to 2024 period. The salaries and benefits amounts above are reported net of salary recoveries for the employee time spent on capital projects, as well as capitalized overhead. Time spent for work on capital projects is directly charged to the capital project. Capitalized overhead represents the cost of certain functions required to support capital projects such as senior management oversight and project governance. Capitalized overhead recoveries vary from year to year based on the amount of capital expenditures and the direct labour charged to capital projects.

303. Drainage has two broad categories of employees: unionized and non-unionized. Unionized employees make up approximately 80% of the total Drainage workforce while non-unionized employees make up the remaining 20%. For both unionized and non-unionized employees, the compensation structure includes a base level of compensation, including benefits, and an incentive component which is paid when performance targets are met. Salaries and wages for union staff are determined based on negotiated collective bargaining agreements with the International Brotherhood of Electrical Workers Local 1007 employees, Civic Service Union 52 and Canadian Union of Public Employees Local 30 employees. Salaries for non-union staff are determined based on job-related skills, experience and market competitiveness.

304. Year over year changes to salaries and benefits (net of labour recoveries) are primarily influenced by annual salary and wage escalations and the changes in the number of employees depending on workload. Variations from year to year in salaries and benefits are also influenced by overtime requirements related to fluctuations in operational activities resulting from factors such as flooding and emergency repairs. Occasionally, internal organizational changes may also influence changes in salaries and benefits.

305. Contractor and consultant costs, materials and supplies and vehicle costs together represent approximately 12% of Drainage's total regulated operating costs over the 2022 to 2024 period. Contractor and consultant costs include the Biosolids Management Program costs in 2021 and from January 1, 2022 to March 31, 2022. The transfer of the Biosolids Management Program to Wastewater Treatment is effective April 1, 2022. Contractor and consultant costs also includes hydrovac services, paving services, utility locating costs, barricading services, planning services provided by the City of Edmonton, lab testing and system support costs from Wastewater Treatment, facility costs and contracted services to provide specific skills that are

either not available within EWSI or when workloads increase beyond the capacity of internal resources.

306. Customer billing and collections services costs represent approximately 5% of Drainage's total regulated operating costs over the 2022 to 2024 period. These costs are comprised of services provided by EWSI's affiliate, EPCOR Energy Alberta Inc. (EEA), as well as bad debt expense. EEA provides Drainage with billing and customer care services for Drainage customers. These billing and customer care services costs include:

- Customer service management;
- Call centre;
- Billing;
- Collections; and
- Information systems.

307. EEA charges EWSI for these services based on a unit price applied to the number of site counts (customers) served by EEA. These costs and the allocation to EWSI are approved by the Alberta Utilities Commission (AUC) through EEA's rate filings to the AUC.

308. Meter reading services costs represent approximately 2% of Drainage's total regulated operating costs over the 2022 to 2024 period. Meter reading services costs are comprised of inter-affiliate charges from Water Services to Drainage for water meter operations, meter reading and customer services.

309. Corporate Shared Services represent approximately 15% of Drainage's total regulated operating costs over the 2022 to 2024 period and are comprised of costs associated with corporate shared services provided to Drainage by its parent company, EUI.

310. EWSI Shared Services Allocation represents approximately 3% of Drainage's total regulated operating costs over the 2022 to 2024 period and is comprised of EWSI's shared services costs allocated to Drainage in the areas of supply chain management, operational excellence and oversight and governance of those functions.

311. Other costs represent approximately 7% of Drainage's total regulated operating costs over the 2022 to 2024 period and are comprised of backwater valve subsidy program costs, information services from EUI, software licenses, insurance, building rental charges, third party claims, telecommunication charges and other miscellaneous items.

6.2 Operating Costs by Function

312. Table 6.2-1 provides an overview of Drainage's total regulated operating costs by operational function for the 2022-2024 PBR term. The 2021 forecast amounts are provided for comparison. Drainage operating costs are allocated between the Sanitary and Stormwater Utilities in accordance with the cost allocation methodologies described in section 11.

Table 6.2-1
Financial Schedule 5-1
Operating Costs by Function
2021-2024
($ millions)

	Operational Function	A 2021F	B 2022F	C 2023F	D 2024F
1	Drainage Operations*	56.3	43.1	38.6	39.4
2	One Water Planning and Project Support	17.0	16.9	17.1	17.5
3	Operational Support Services	3.9	0.4	(0.1)	(0.1)
4	Billing, Meters and Customer Service	7.3	7.7	7.7	7.5
5	Drainage Services Administration	18.6	18.6	18.9	19.5
6	Corporate Shared Services	16.3	16.3	16.6	17.0
7	SIRP	4.1	4.3	4.5	4.6
8	CORe	4.1	3.3	2.2	3.1
9	**Total**	**127.7**	**110.6**	**105.6**	**108.4**
	Allocated to:				
10	Sanitary Utility, excluding CORe	68.5	50.9	45.7	45.9
11	CORe	4.1	5.4	4.1	5.5
12	Total Sanitary Utility	72.7	56.3	49.7	51.4
13	Stormwater Utility, excluding SIRP	50.9	47.8	48.5	49.1
14	SIRP	4.1	6.6	7.4	7.8
15	Total Stormwater Utility	55.0	54.4	55.9	56.9
16	**Total**	**127.7**	**110.6**	**105.6**	**108.4**

*Reflects transfer of the Biosolids Management Program to Wastewater Treatment on April 1, 2022.

2021 Forecast to 2022 Forecast

313. For 2021 forecast to 2022 forecast, operating costs decreased by $17.1 million primarily due to:

- A $13.2 million decrease in Drainage Operations resulting from a $12.4 million decrease in the Biosolids Management Program due to its transfer to Wastewater Treatment Services effective April 1, 2022 (explained in detail in Section 6.2.1), and a $0.9 million decrease in Pipeline Maintenance reflecting higher than average levels of pipeline maintenance work completed in 2021 to address a backlog, offset by $0.1 million in inflation costs;

- A $3.5 million decrease in Operational Support Services primarily as a result of a $2.7 million decrease in facility costs due to the Real Estate Consolidation Project (Appendix F-5) and a $0.6 million increase in Fleet and Equipment recoveries due to an increase in Fleet and Equipment depreciation;
- A $0.8 million decrease in costs relating to CORe as a result of lower than forecast activity level in odour containment, trunk inspection and cleaning. This lower activity level reflects a delay in odour containment work due to the need to complete access construction prior to inspection and cleaning.; These decreases are partially offset by:
- A $0.4 million increase in Customer Billing and Meter Services costs relating to the AMI Deployment Project (Appendix F-3).

2022 Forecast to 2024 Forecast

314. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor. However there are a few exceptions described below:

- A $4.9 million decrease in Drainage Operations in 2023 primarily due to a $4.5 million decrease in Biosolids Management Program due to the transfer of the program to Wastewater Services effective April 1, 2022 and a $0.4 million decrease in Pipeline Maintenance driven by operational synergies gained by Water Services and Drainage operating out of a shared facility, as discussed in the Real Estate Consolidation Project (Appendix F-5).
- A $0.5 million decrease in 2023 in Operational Support Services driven by operational synergies gained by Water Services and Drainage operating out of a shared facility, as discussed in the Real Estate Consolidation Project business case.
- A $0.2 million decrease in Meter Services costs in 2024 as the Advanced Metering Infrastructure (“AMI”) Deployment Project is implemented (Appendix F-3).
- A $1.1 million decrease in CORe in 2023 due to the completion of spot monitoring and lower labour costs for the locations that are planned for maintenance in 2023. This is slightly offset by an increase in pump station treatment and optimization costs to support work at the Cloverdale and Walterdale pumpstations.
- A $0.9 million increase in CORe in 2024 primarily due to trunk inspection and cleaning costs as more sites become available for inspection as a result of the completion of access points.

315. For purposes of explaining Drainage's total operating costs and the year-over-year variances, operating costs have been grouped into the eight operational functions shown in Table 6.2-1, consistent with the organizational structure in which Drainage operates. Each operational function is subsequently broken down by each responsibility centre (where applicable) and their costs are described in greater detail in the following sections.

6.2.1 Drainage Operations

316. Drainage Operations is comprised of five responsibility centres:

1. Biosolids Management Program;
2. Pipeline Maintenance;
3. Flow Control Facilities;
4. Monitoring and Compliance; and
5. General Maintenance.

Biosolids Management Program

317. As explained in section 1.5, the Biosolids Management Program will be transferred to Wastewater Treatment from Drainage Services effective April 1, 2022. This transfer recognizes that biosolids management is an essential component of wastewater treatment processes. For the 2022-2024 PBR Application, transfer of the biosolids management program has been reflected in full in EWSI's financial submission. This includes the transfer of Clover Bar biosolids management assets with a net book value of $24.0 million, annual operating costs of approximately $17 million from Drainage Services to Wastewater Treatment Services.

Pipeline Maintenance

318. Pipeline Maintenance consists of preventative maintenance and inspection activities, above ground and surface repair of infrastructure as well as customer trouble call, investigation and response. This team also supports the CORe-Prevent strategy through cleaning of trunks and pumpstations.

319. Preventative maintenance activities include high pressure flushing, hydro-mechanized cleaning activities, and pipeline cleaning activities. Additional preventative maintenance activities include proactive inspections of linear pipeline assets and their appurtenances (manholes, catch basins, etc.), and structural assets (storage tanks, etc.). Work is performed with specialized combination sewer cleaner units, using high pressure flushing and hydro-mechanized

cleaning activities. These vehicles are designed to flush sanitary, storm, and combined mainlines, and pump debris from catch basins, manholes, and pump wells.

320. Above ground and surface repair activities include the repair and/or replacement of damaged or end of life assets from the surface and without the need for shoring. This includes catch basin frame and covers, manhole frame and covers, and chamber and vault structures.

321. Customer trouble call, investigation and response activities include trouble call support and investigation activities, field level trouble call investigation and resolution where possible.

Flow Control Facilities

322. The Flow Control Facilities team is responsible for the maintenance and operations of approximately 117 wastewater pump stations, 75 mechanical flow control structures, 220 stormwater management facilities, and associated systems. This team also supports the CORe-Optimize, CORe-Monitor and SIRP-Predict strategies. Maintenance activities for lift stations and controls structures includes pump, piping and valve repair and replacements, as well as mechanical, electrical and control system capital upgrades. Flow Control Facilities also provides engineering oversight and field staff for lift station and flow control operations, and provides technical support and field resources for bypass pumping.

323. Maintenance of stormwater management facilities includes shoreline and water body litter control, aquatic weed control and safety signage maintenance. Operation of stormwater management facilities includes storm response and water level monitoring, responding to public inquires and complaints, and activities promoting public safety.

324. Flow Control Facilities is also responsible for the supervisory control and data acquisition (SCADA) system utilized by Drainage to monitor mechanical facilities and stormwater management facilities. This includes integrating new and upgraded facilities into SCADA, maintenance of SCADA servers and associated hardware, and cybersecurity for operational technology.

325. The Environmental Inspection group inspects and maintains outfalls, interconnections and odour flaps; provides spill and sewage release response, odour complaint response, and sampling and bacteriological testing; and supports environmental aspects of drainage collection systems such as cross-connection investigation (smoke tests and dye tests).

Monitoring and Compliance

326. The Monitoring and Compliance team is organized into System Monitoring, Compliance, and Environmental Management System. This team also supports the SIRP-Predict and CORE-Monitor strategies.

327. The System Monitoring group is responsible for sanitary, storm and combined sewer water quality and quantity monitoring and data management in support of Drainage Services span of functions (planning, design, construction, evaluation, modelling, studies, and operations), billing and regulatory reporting requirements. This includes the installation of flow monitors, air monitors, rainfall measurement, auto samplers and coordination of associated contractor work. This group also installs and maintain auto samplers to measure industrial, commercial and institutional facilities' water quality which put over strength wastewater into the sanitary/combined sewer in order to recover the cost of treatment. This also includes monitoring and management of wastewater transfer stations, which serve vacuum truck customers to empty loads into the collections and treatment system.

328. The Compliance group inspects Industrial, Commercial, and Institutional customers to ensure compliance with the EPCOR Drainage Services Bylaw. These inspections include a detailed look at customer processes and/or sampling of wastewater being discharged by customers. This group responds to reports of spills and releases to the storm and sanitary collection systems that plays a key role in protecting public health, EWSI's assets, and the environment. This team also responds to issues reported from other areas of EWSI that may have been caused by customer misuse of the system.

329. The Environmental Management System group manages and maintains the environmental management system for Drainage Services. This includes the planning and support to meet the requirements of ISO 14001:2015; including development and implementation of internal and external third party auditing programs and system maintenance activities. This group also provides support for regulatory and compliance activity including interpretation of legislation, impact assessments, review and author regulatory communication for Drainage Services and assist in the coordination of response to significant environmental incidents.

General Maintenance

330. General Maintenance costs primarily consist of costs related to utility line locates which are paid to a third party.

331. Drainage Operations operating costs forecast for 2022-2024 are summarized in Table 6.2.1-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.1-1
Financial Schedule 7-1
Drainage Operations
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	Biosolids Management Program	16.9	4.5	-	-
2	Pipeline Maintenance	19.6	18.7	18.3	18.7
3	Flow Control Facilities	11.6	11.7	12.0	12.2
4	Monitoring and Compliance	6.3	6.2	6.3	6.4
5	General Maintenance	1.9	2.0	2.0	2.1
6	**Total**	**56.3**	**43.1**	**38.6**	**39.4**

2021 Forecast to 2022 Forecast

332. The $13.2 million decrease in Drainage Operations operating costs from the 2021 forecast to 2022 forecast is primarily due to:

- A $12.4 million decrease in the Biosolids Management costs following the transfer of the program to Wastewater Services on April 1, 2022; and
- A $0.9 million decrease in Pipeline Maintenance in 2022 reflecting higher than average levels of pipeline maintenance work completed in 2021 to address a backlog.

2022 Forecast to 2024 Forecast

333. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor, except for the following:

- A $4.5 million decrease in Biosolids Management Program in 2023 due to the transfer of the program to Wastewater Treatment on April 1, 2022.
- A $0.4 million decrease in Pipeline Maintenance operating costs in 2023 driven by operational synergies gained by Water Services and Drainage operating out of a shared facility, as discussed in the Real Estate Consolidation Project business case (Appendix F-5).

6.2.2 One Water Planning and Project Support

334. One Water Planning and Project Support is organized into six functional groups:

1. One Water Planning;
2. Engineering;
3. Project Management;
4. Rehabilitation Construction;
5. Customer Construction; and
6. Construction Management and Support.

One Water Planning

335. The One Water Planning group leads the creation of strategic plans for the entire water cycle and plans for all of EPCOR's Water related assets, integrating the existing strategic plans for Water Services and Wastewater Treatment with the newer integrated resource plans for Drainage (SIRP which is summarized in Appendix I-1 and Sanitary Integrated Resource Plan which is under development). There are four key functional groups:

1. Asset Management and Sanitary Planning;
2. Stormwater Planning and Growth Coordination;
3. Operational Strategies; and
4. Data Strategies.

336. The Asset Management and Sanitary Planning group is responsible for longer term planning of sanitary systems and assessment. This function includes condition analysis, risk assessments and concept development of drainage assets. They are also responsible for sanitary servicing, the CORe-Prevent and CORe-Control aspects of the CORe Strategy, planning and coordinating LRT and transportation initiatives with the City of Edmonton, and technical and planning support to the Sanitary Servicing Strategy Fund.

337. The Stormwater Planning and Growth Coordination group is responsible for development of the Integrated Resource plans, leads the implementation of the SIRP strategies and focuses on the execution of the SIRP-Slow and SIRP-Move aspects of the SIRP plan, regional planning and watershed management as part of the Integrated Watershed Management Strategy with Water Services, and coordinates the approval of growth and infill development in conjunction with the City of Edmonton Urban Form Planning group.

338. The Operational Strategies group supports hydraulic modelling and pump station and storage optimization for both the water and drainage systems, system monitoring, inflow and

infiltration reduction. This team leads the development of the SIRP-Secure and SIRP-Predict strategies and the CORe-Optimize and CORe-Monitor strategies (refer to Appendices I-1 and I-2 for the SIRP and CORe Strategies).

339. The Data Strategies group develops the strategic plans for the utilization of data for both the water and drainage utilities and leads the delivery and training of users across the utility on the use of GIS tools across both business units.

Engineering

340. The Engineering group consists of professionals who provides technical and engineering design support for drainage activities. The team primarily focuses on designing and drafting local sewer rehabilitation programs such as neighborhood renewal, arterial road drainage rehabilitation, local sewer rehabilitation, SIRP related rehabilitation, outfall rehabilitation, overland drainage, and trunk sewer rehabilitation. The group also includes a Survey Services team that supports capital and operational projects.

341. Other duties include:

- Supporting project managers with the review of third party design drawings and assisting with the planning, tendering and construction phases of drainage projects,
- Assisting with emergency repairs through hazard identification and risk assessment analysis for various projects,
- Managing CCTV inspection contracts and performing CCTV assessments for capital and operational projects to understand asset conditions and rehabilitation scope,
- Supporting estimators with the preparation of cost estimates, and
- Maintaining and interpreting drainage design and construction standards and specifications.

342. A drafting team also supports engineers by generating drawings for in-house designed projects and managing drawings from creation to as-built status. This team records all Drainage infrastructure information submitted by private developers, City Of Edmonton transportation, LRT, and in-house into a database. In addition, the drafting team provides Utility Line Assignment responses, datasets and database information to consultants or other EPCOR business units.

343. The Survey Services team is responsible for the layout, checks and the transfer of survey information on all drainage projects. They are involved in projects from pre-design to

completion, and work closely with designers, project managers, inspectors and the construction group. A large part of drainage surveying is quality assurance and quality control which involves reviewing design plans for inconsistencies, making sure the construction is following the design plans, and communicating with the project managers on their respective projects. After construction, the team also provides survey data to complete as-built drawings for CCC.

Project Management

344. The Project Management group is organized into two functional groups: (i) project management; and (ii) inspection services.

345. The Project Management group is accountable for effectively and efficiently delivering projects. Project managers lead project teams, which plan and execute the design, construction and commissioning of drainage infrastructure improvements, in a manner that meets quality requirements, is cost effective, timely and collaborative.

346. Project Managers' accountabilities include:

- Developing, monitoring, forecasting and reporting of project budgets and schedules to meet the required project scope and stakeholder needs.
- Leading the project team in the appropriate management of risks, changes, issues or other emerging situations that can happen throughout a project's life.
- Ensuring compliance to policies, standards, safety and regulatory requirements, developing procurement strategies, completing bid evaluation, administering contracts and engaging stakeholders.
- Obtaining required permits, easements or other agreements required for construction or maintenance (crossing agreements, conflicting utilities relocation, tree removal, etc.).
- Completing project closeout activities such as documenting and sharing lessons learned, closing purchase orders, completing as-built documents and providing all required information to Drainage Operations for continued operation of the assets.

347. The Inspection Services Group is responsible for making sure that Drainage capital construction projects are constructed as per design and construction standards by conducting all necessary site inspections during the construction phase. The construction-related activities include quality assurance, safety and environmental inspections, tracking construction milestones, and completing the documentation review to process construction completion and

Final Acceptance Certificates. The inspection group supports project managers by providing regular updates on projects progress, providing change order opinion or recommendations and conducting joint measurements to verify invoice quantities. The group also frequently engages with various stakeholders such as the City of Edmonton Transportation group, private developers or other Drainage areas to confirm Drainage assets' adequacy before they get handed over to Drainage Operations.

Rehabilitation Construction

348. The Rehabilitation group is responsible for new and rehabilitative trunk sewer construction work, construction of access shafts and odour control shafts, and rehabilitation of existing sewers using sliplining and other rehabilitation techniques. They also provide support on a number of other capital programs such as Mature Neighbourhoods, Local Sewer Rehabilitation, and Sewer Separation.

Customer Construction

349. The Customer Construction group provides shallow construction support to Drainage Services. This group performs unplanned or emergent work, which consists of repairing drainage infrastructure such as service connections, mainlines, manholes, and catch basins that have either failed or are about to fail. This includes providing 24/7 standby support for emergency response. Customer Construction also connects and installs new drainage and water services for customers within the city of Edmonton.

Construction Management and Support

350. The Construction Management and Support group is responsible for coordinating the requirements of other groups including Project Management, One Water Planning, Engineering and Construction groups through the various stages of projects. The group also provides equipment engineering support, provides feedback on constructability and explores options to adopt new technologies.

351. The One Water Planning and Project Support operating costs forecast for 2022-2024 are summarized in Table 6.2.2-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.2-1
Financial Schedule 7-1
One Water Planning and Project Support Costs
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	One Water Planning	7.0	6.8	6.8	6.9
2	Engineering	2.2	2.2	2.3	2.3
3	Project Management	2.8	2.9	3.0	3.0
4	Open Cut Services	2.0	2.1	2.1	2.2
5	In House Tunneling	1.9	1.9	1.9	2.0
6	Construction Management	1.1	1.0	1.1	1.1
7	**Total**	**17.0**	**16.9**	**17.1**	**17.5**

2021 Forecast to 2022 Forecast

352. The $0.1 million decrease in One Water Planning and Project Support costs from 2021 forecast to 2022 forecast is primarily due to a decrease in contractors offset by inflation.

2022 Forecast to 2024 Forecast

353. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor.

6.2.3 Operational Support Services

354. Operational Support Services is organized into three functional groups:

- Facility Operations;
- Supply Chain Management; and
- Fleet and Equipment.

Facility Operations

355. Facility Operations is responsible for all building related costs such as operations, maintenance, utilities, and lease costs. Facilities also includes a cost allocation from EWSI Shared Services to Drainage Services as described in Appendix L-2.

Supply Chain Management

356. Supply Chain Management includes security, inventory management and contract management costs. The Inventory management group is responsible for the warehousing, inventory and reverse logistics functions. Reverse logistics functions refers to the recovery of

salvage value of assets at the end of their useful life through such things as disposal, reuse, recycle and donation. The Contract Management group is responsible for the management of the purchasing function for the acquisition of goods or services from outside vendors. Contract Management also includes a cost allocation from EWSI Shared Services to Drainage Services as described in appendix L-2.

Fleet and Equipment

357. Fleet and Equipment is responsible for:

- repairs and maintenance on trucks, hydrovac trucks, backhoes and other construction related equipment;
- manufacture and rebuild of equipment components; and
- jobsite equipment maintenance and commissioning.

358. The Operational Support Services costs forecast for 2022-2024 are summarized in Table 6.2.3-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.3-1
Financial Schedule 7-1
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Operational Support Services Costs
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	Facility Operations	6.5	3.8	3.5	3.6
2	Supply Chain Management	1.4	1.4	1.3	1.3
3	Fleet and Equipment	(4.0)	(4.8)	(4.9)	(5.0)
4	**Total**	**3.9**	**0.4**	**(0.1)**	**(0.1)**

2021 Forecast to 2022 Forecast

359. The $3.5 million decrease in Operational Support Services costs from 2021 forecast to 2022 forecast is primarily due to:

- A $2.7 million decrease in Facility Operations driven by a $2.0 million decrease in Drainage Facilities due to lower vacant building carrying costs as a result of the Real Estate Consolidation Project (Appendix F-5), a $0.4 million decrease in facilities costs due to not renewing the Edmiston lease in 2022 as a result of the Real Estate

Consolidation Project and a $0.3 million decrease in facilities costs related to the one-time move costs in 2021 partially offset by an increase in operating costs associated with the Real Estate Consolidation Project.

- A $0.8 million increase in Fleet and Equipment recovery primarily due to an increase in Fleet and Equipment depreciation. Fleet and equipment recovery shown above reflects the net of fleet operating costs (excluding depreciation) less fleet recoveries from fleet rates that are charged to both operational areas and to capital. Fleet rates include both operating expenses and depreciation on vehicles.

2022 Forecast to 2024 Forecast

360. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor with the following exceptions:

- A $0.5 million decrease in 2023 due to operational synergies gained by Water Services and Drainage operating out of a shared facility, as discussed in the Real Estate Consolidation Project business case.

6.2.4 Customer Billing and Meter Reading Services

361. Customer billing and meter reading services is comprised of the following two functional groups: customer billing services and meter reading services. Customer Billing Services costs are comprised of services, which are regulated by the AUC, provided by Drainage's affiliate EEA. Meter Reading Services costs are comprised of inter-affiliate charges to Drainage for water meter operations, meter reading and customer services provided by Water Services.

362. The Customer Billing and Meter Reading Services costs forecast for 2022-2024 are summarized in Table 6.2.4.-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.4-1
Financial Schedule 8-1
Customer Billing and Meter Reading Services 2021-2024
($ millions)

	Category	A 2021F	B 2022F	C 2023F	D 2024F
1	Customer Billing Services	4.8	4.9	5.0	5.1
2	Meter Services	2.5	2.8	2.7	2.4
3	**Total**	**7.3**	**7.7**	**7.7**	**7.5**

2021 Forecast to 2022 Forecast

363. The $0.4 million increase in Customer Billing and Meter Reading Services costs from the 2021 forecast to 2022 forecast is primarily due to a $0.2 million increase in Meter Services costs relating to the AMI Deployment Project (Appendix F-3) and annual inflation.

2022 Forecast to 2024 Forecast

364. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor. The one exception in Meter Services relates to a $0.3 million decrease in Meter Services costs in 2024 as the AMI Deployment Project is implemented over the 2022-2026 period.

6.2.5 Drainage Services Administration

1. Drainage Services Administration includes the following ten functions:
2. Information services;
3. Health, Safety and Environment;
4. Technical Training;
5. Financial Services;
6. Public and Government Affairs;
7. Human Resources;
8. Executive Administration;
9. Regulatory and Operational Excellence;
10. Incentive Compensation; and
11. Divisional Vice President Drainage Services.

Information Services

365. Information Services includes charges related to Drainage's unique applications as well as costs associated with desktops, printers and network support. Specific functions include:

- application support;
- relationship management; and
- license fees, desktop support and server support.

Health, Safety and Environment

366. Health, Safety and Environment includes costs associated with ensuring that Drainage operations maintains appropriate health and safety practices that are in compliance with legislation. Specific functions include:

- ensuring that existing Health and Safety practices and procedures are well designed and in compliance with legislation and compatible with Service Provider Safety Management Policies;
- business services including internal loss management, safety and training and related support staff; Health, Safety and Environment Audit and Inspections;
- Environmental Issues Management; and
- Health, Safety, Environment and Training, Legal Compliance and Reporting.

Technical Training

367. Technical Training includes the costs to design, develop and deliver technical training to operations staff and monitor that the operating staff are compliant with regulatory requirements to maintain continuous and current health, safety and technical training.

Financial Services

368. Financial Services includes the compensation related to the Drainage Controller and resources required to provide financial oversight and accounting services. Financial Services includes the following functions:

- financial oversight;
- preparation of financial reports and analysis;
- administration of the financial reporting services;
- asset accounting administration;
- budget administration and development and maintenance of corporate accounting policies and procedures;
- financial support for regulatory applications; and
- Project Management Office

369. The Project Management Office includes development, documenting and delivering of annual and long term capital plans, project and portfolio related processes, templates and tools in order to bring consistency to the project management function. Providing training and support to the project and program managers and providing annual capital program oversight are also key components of the PMO's deliverables.

Public and Government Affairs

370. Public and Government Affairs includes charges related to the stakeholder and public consultation requirements. Specific functions include:

- Customer and emergency issues management and customer service improvement processes;
- stakeholder engagement and public consultation services;
- internal communications (related to business unit matters);
- external communications (includes coordination of business unit communications such as public safety notices, performance reports, public addresses and presentations, print collateral, marketing campaigns related to operational issues, and operational issues management); and
- management of the Backwater Valve Rebate Program.

Human Resources

371. Human Resources, which includes human resources management; human resources consulting, talent management, facilitating the management of return to work scenarios for short-term disability, long-term disability as well as Workers' Compensation Board and non-supported claims management.

Executive Administration

372. Executive Administration includes compensation of the Senior Vice President (SVP) of Drainage together with associated ancillary costs. Executive Administration services includes general management and operational and business related oversight.

Regulatory and Operational Excellence

373. Regulatory and Operational Excellence includes costs related to the City of Edmonton Water, Wastewater treatment and Drainage operation's regulatory applications and associated

requirements. These costs are allocated to Drainage as described in Appendix L-2. Specific functions include:

- Applications development: regulatory proceeding participation, relationship management, and regulatory research;
- Development and co-ordination of business unit strategic plans on behalf of the Senior Vice President Drainage Services;
- Monitoring and coordinating responses to regulatory and policy activities or initiatives within various government ministries, departments and/or agencies which may affect the business;
- Managing regulatory interfaces with government, regulatory and market agencies, and other industry participants;
- Managing and coordinating tariff and facility applications with business units;
- Facilitating and managing process improvement projects to drive operational efficiencies and achieve strategic objectives;
- Ensuring the equitable and accurate application of the stormwater utility to all properties in Edmonton;
- Coordinating and managing the Management of Change program for Drainage Services; and
- Tracking, coordinating and reporting on PBR, short-term incentive plan and shareholder and operational metrics.

Incentive Compensation

374. Incentive is paid to Drainage employees based on individual performance ratings and overall annual corporate targets. The EPCOR group's structure for compensating its non-union employees has four components: base compensation (annual salary), employer paid benefits, short-term incentive, and mid-term incentive for participating Directors, Vice Presidents and Executives. EPCOR's structure for compensating unionized employees has three components: base compensation (hourly wages / annual salaries), employer paid benefits and short-term incentive. The compensation was designed to bring employee total compensation to a level which is at par with comparable positions in the market from which EPCOR must draw employees (i.e., to market value).

Divisional Vice President Drainage Services

375. The Divisional Vice President (DVP) Drainage Services includes compensation of the DVP Drainage Services, and Directors as well as an allocation of costs associated with the DVP of Water Services. DVP Drainage Services includes general management and operational and business related oversight. The DVP of Water Services provides oversight of the embedded shared services within Drainage Services that provide support to Drainage Services. These costs are allocated to Drainage Services as described in Appendix L-2.

376. Drainage Services Administration forecast for 2022-2024 are summarized in Table 6.2.5-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.5-1
Financial Schedule 9-1
Drainage Services Administration Costs
2021-2024
($ millions)

	Category	A 2021F	B 2022F	C 2023F	D 2024F
1	Information Services	3.7	3.9	4.0	4.0
2	Health, Safety & Loss Prevention	1.5	1.5	1.6	1.6
3	Technical Training	1.6	1.6	1.7	1.7
4	Financial Services	1.7	1.7	1.7	1.9
5	Public & Government Affairs	2.4	2.4	2.4	2.5
6	Human Resources	0.7	0.7	0.8	0.8
7	Executive Administration	1.5	1.5	1.6	1.6
8	Operational Excellence	1.4	1.3	1.4	1.4
9	Incentive Compensation	2.6	2.4	2.4	2.5
10	DVP Drainage Services	1.4	1.5	1.5	1.5
11	**Total**	**18.6**	**18.6**	**18.9**	**19.5**

2021 Forecast to 2022 Forecast

377. 2022 Forecast is unchanged from the 2021 Forecast primarily due to a decrease in Incentive Compensation offset by inflation on other costs.

2022 Forecast to 2024 Forecast

378. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor with the exception of Financial Services. A $0.2 million increase from 2023 to 2024 in Financial Services primarily due to higher than forecasted costs for City PBR consulting fees and audit fees.

6.2.6 Corporate Shared Services

379. Corporate Shared Services are comprised of allocated charges to Drainage for corporate services provided by EUI. The services provided and the allocation methods used to determine the Corporate Shared Services charges to Drainage Services are described in Appendix L-1.

380. The Corporate Shared Services charges forecast for 2022-2024 are summarized in Table 6.2.6-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.6-1
Financial Schedule 10-1
Corporate Shared Services Costs Allocated to Drainage Services
2021-2024
($ millions)

	Shared Service Unit	A 2021F	B 2022F	C 2023F	D 2024F
1	Board and Executive	1.2	1.2	1.2	1.2
2	Corporate Finance	0.9	0.9	0.9	0.9
3	Treasury	0.7	0.7	0.7	0.7
4	Risk Assurance & Advisory Services	0.8	0.8	0.8	0.8
5	Human Resources	2.3	2.3	2.3	2.4
6	Information Services	2.2	2.2	2.3	2.3
7	Supply Chain Management	1.8	1.9	1.9	2.0
8	Public and Government Affairs	0.7	0.8	0.8	0.9
9	Legal Services	0.6	0.6	0.6	0.6
10	Health, Safety & Environment	0.2	0.2	0.2	0.2
11	At-Risk Compensation	1.3	1.3	1.3	1.3
12	Other Corporate Services	(0.2)	(0.2)	(0.3)	(0.3)
13	**Sub-total**	**12.4**	**12.6**	**12.9**	**13.1**
14	Asset Usage Fees	3.9	3.7	3.7	3.8
15	**Total Corporate Shared Services Costs**	**16.3**	**16.3**	**16.6**	**17.0**

2021 Forecast to 2022 Forecast

381. 2022 Forecast costs are unchanged from the 2021 Forecast primarily due to a $0.2 million decrease in several Corporate Shared Service groups offset by inflation.

2022 Forecast to 2024 Forecast

382. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor.

6.2.7 Stormwater Integrated Resource Plan (SIRP)

383. The SIRP involves the following five activities:

- Concept design and community engagement requirements for dry ponds, LID, monitoring and controls and building flood proofing initiatives;
- LID, monitoring and controls, emergency response and building flood proofing analysis;
- Operations of overland drainage including LID and ditches and swales maintenance;
- Mechanical, electrical and controls maintenance for the new outfall gates and additional monitoring and controls; and
- Backwater valve subsidy program.

384. The SIRP operating cost forecast for 2022-2024 is summarized in Table 6.2.7-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.7-1
Financial Schedule 7-1
SIRP
2021-2024
($ millions)

	Category	A 2021F	B 2022F	C 2023F	D 2024F
1	SIRP	4.1	4.3	4.5	4.6
2	**Total**	**4.1**	**4.3**	**4.5**	**4.6**

2021 Forecast to 2022 Forecast

385. For the 2021 to 2022 forecast period, year over year cost increases are due to inflation.

2022 Forecast to 2024 Forecast

386. For the 2022 to 2024 forecast period, year over year cost increases are based on the inflation factor. During this time period, EWSI is planning to increase flood proofing inspections and the level of LID implementation as it expands rollout of these programs which involve some operating costs. However, EWSI is forecasting these costs to increase with inflation as it anticipates further efficiencies will be achieved over time.

6.2.8 Corrosion and Odour Reduction (CORe)

387. The CORe Strategy (Appendix I-2) has four themes including: prevent, control, optimize and monitor. The main operating activities which support these focus areas are monitoring, initial inspections and identification of trunks to rehabilitate, pump station treatment and optimization, odour containment and trunk inspection and cleaning.

388. The CORe operating cost forecast for 2022-2024 is summarized in Table 6.2.8-1. The 2021 forecast amounts are provided for comparison.

Table 6.2.8-1
Financial Schedule 7-1
CORe
2021-2024
($ millions)

	Category	A 2021F	B 2022F	C 2023F	D 2024F
1	CORe	4.1	3.3	2.2	3.1
2	**Total**	**4.1**	**3.3**	**2.2**	**3.1**

2021 Forecast to 2022 Forecast

389. For the 2021 to 2022 forecast period, the $0.8 million decrease in CORe costs are primarily related to a $0.9 million decrease in trunk inspection and cleaning costs based on the number of available trunks that can be accessed year and a $0.2 million reduction in odour containment costs.

2022 Forecast to 2023 Forecast

390. The $1.1 million decrease in costs from 2022 forecast to 2023 forecast are primarily due to:

- A decrease in monitoring of $1.2 million in 2023 because spot monitoring will be complete in 2022, and monitoring in 2023 will be at locations which do not need as much labour to maintain;
- An increase in pump station treatment and optimization of $0.4 million in 2023 to support work at the Cloverdale and Walterdale pumpstations; and
- A decrease in trunk inspection and cleaning costs of $0.2 million in 2023 to reflect fewer trunks for which we have access and are able to inspect.

2023 Forecast to 2024 Forecast

391. The $0.9 million increase in costs from the 2023 forecast to the 2024 forecast is primarily due to:

- An increase in trunk inspection and cleaning costs of $0.5 million in 2024 because most of the construction of access points will be complete so more sites will be available for inspection.
- An increase in odour containment costs of $0.2 million in 2024 as odour containment work will be deferred until completion of structural changes in the network in 2023; and
- An increase in monitoring of $0.1 million in 2024 to support additional modelling work based on monitoring data accumulated.

6.2.9 Franchise Fees and Property Taxes

392. In accordance with the Franchise Fee Agreement, Drainage Services pays the City of Edmonton a franchise fee for the exclusive rights to provide drainage services within the City boundaries, based on 8.0% of total Drainage Services revenue, less the municipal portion of property taxes.

393. Property taxes include property and business taxes assessed by, and payable to the City of Edmonton with respect to the various properties owned by Drainage.

394. The Franchise Fees and Property Taxes costs forecast for 2022-2024 are summarized in Table 6.2.9-1. The 2021 forecast amounts are provided for comparison. Franchise fees and Property Taxes are allocated between the Sanitary and Stormwater Utilities in accordance with the cost allocation methodologies described in section 11.

Table 6.2.9-1
Financial Schedule 11-1
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2021-2024
($ millions)

		A **2021 Forecast**	B **2022 Forecast**	C **2023 Forecast**	D **2024 Forecast**
1	Franchise fees	9.8	10.2	10.5	11.4
2	Property and business taxes	1.4	1.6	1.6	1.6
3	**Total Franchise Fees and Property Taxes**	**11.2**	**11.8**	**12.1**	**13.1**
4	**Allocated to:**				
5	Sanitary Utility, excluding CORe	9.9	9.6	9.9	10.4
6	CORe	0.5	1.1	1.2	1.6
7	Sanitary Utility*	10.3	10.8	11.2	12.1
8	Stormwater Utility	0.9	1.0	1.0	1.0
9	**Total Franchise Fees and Property Taxes**	11.2	11.8	12.1	13.1

*Franchise fees are only applicable to the sanitary utility.

2021 Forecast to 2022 Forecast

395. The $0.6 million increase in Franchise Fees and Property Taxes is primarily due to forecast increases in Drainage revenues.

2022 Forecast to 2024 Forecast

396. The year over year increases in Franchise Fees are due to forecast increases in Drainage revenues. For the 2022 to 2024 forecast period, the year over year increases in Property Taxes are based on the inflation factor.

7.0 CAPITAL EXPENDITURES

397. Capital expenditures for Drainage Services reflect both capital projects and programs to support ongoing operations to meet reliability, safety and efficiency objectives and to meet customer growth and regulatory requirements. Section 7.1 provides an explanation of EWSI's capital expenditures over the 2018-2021 PBR term relative to the approved amounts. Capital expenditures are presented net of contributions including grant funding. EWSI has successfully acquired federal and provincial grant funding to offset some of the SIRP capital expenditures in both the current PBR term ($29.3 million) and in the 2022-2024 PBR term ($41.3 million) and continues to diligently pursue additional grant funding to further reduce the overall costs of flood mitigation to ratepayers.

398. The approved capital expenditures for 2018-2021 includes both the forecast capital expenditures in the City's 2017/2018 Rates Application that EPCOR used as the basis for its 2018-2021 PBR Plan (the "City LTP") plus the forecast Non-Routine Adjustment (NRA) capital expenditures for SIRP, CORe and Drainage LRT Relocations based on the three NRA Applications approved by City Council and NRAs were added to rates beginning in 2020. The sum of the City LTP forecasts plus the NRA forecasts represent the "approved" capital expenditures in the absence of a previously approved PBR forecast prior to the Drainage transfer.

399. The City LTP forecast was based on a budget developed prior to the transfer of Drainage Services to EPCOR. Following the transfer, EWSI undertook a review of Drainage Services' operational and capital plans, including all of the proposed projects in the City LTP in terms of project scope, cost and risk based on EWSI's risk-based approach[21] to evaluating and prioritizing capital. At the same time, EWSI also developed the SIRP and CORe Strategies (refer to Appendices I-1 and I-2), which provided an additional lens from which to review the City LTP projects to determine whether the projects were still required or should be postponed or cancelled and replaced with new projects and programs necessary to implement the SIRP and CORe Strategies. This review process has resulted in EWSI's revised capital and operating plans and associated cost forecasts for the remainder of the 2018-2021 PBR term. Some of the additional costs in 2018-2021 were eligible for funding through NRAs including the SIRP, CORe and Drainage LRT Relocation programs. Approximately $121 million in funding to cover the cost

[21] The risk-based approach provides EWSI with a tool to ensure its capital plans are prudent and cost-effective by prioritizing and scoping projects and programs based on a risk analysis. The business cases attached in Appendices H-2 to H-17 present detailed examples of how the risk-based approach is applied within each of the capital programs for 2022-2024 PBR term.

of these programs for the 2018-2021 PBR term was provided through three approved NRAs applied to rates in 2020.

400. As will be explained below, EWSI's revised capital expenditure forecast for 2018-2021 PBR term is approximately $53 million (or 7%) lower than the total $789 million City LTP budget plus the approved NRA funding. This $53 million decrease in capital expenditures is primarily driven by delays in construction of a number of dry ponds projects associated with: (i) completing the Open Spaces review process to ensure site suitability and complete consultations; (ii) ensuring sufficient time between the City's transportation renewal projects and pond construction to minimize disruptions in neighbourhoods; and (iii) having to pause pond construction several times due to ongoing wet weather. EWSI brought forward 31 dry ponds identified under its SIRP Strategy to the City's Open Spaces Phase 1 review process and no further siting conflicts are expected as the remaining ponds move forward in the SIRP Strategy. The SIRP LID Program capital expenditures were also lower than forecast due to additional time required to work with the City to finalize the design and construction standards for LID infrastructure which is a new technology for the city of Edmonton.

401. Capital expenditures for other SIRP programs, such as the Home Flood Proofing Program, were lower than forecast due to delays in implementation due to the COVID-19 Pandemic. Other category capital expenditure decreases related to a number of projects that were delivered at costs substantially below the City LTP forecast. Some of these decreases can be attributed to EWSI's further evaluation of non-SIRP projects and programs in conjunction with the SIRP Strategy to identify optimal solutions to provide the best value for ratepayers. A good example of the benefits of these efforts is the Servicing for Downtown Intensification Project/105 Avenue Sewer Lateral Project. This project initially required a deep trunk line at a high cost of $17.7 million. Upon further evaluation of the Project, EWSI determined that it could incorporate LID as part of the solution, which would allow for re-routing of the trunk line to facilitate shallow trench alternative at a much lower cost of $11.5 million. Largely offsetting the decreases in capital expenditures are increased costs that EWSI incurred to address an unusual number of unplanned failures and emergencies, a greater number of high priority replacements projects, additional costs to address corrosion of large trunks caused by H_2S in the sewer system and significantly higher costs for one major project, the Groat Road Trunk Rehabilitation Project, relative to the City LTP.

402. Section 7.2 provides EWSI's capital plan for Drainage Services for the 2022-2024 PBR term. For the 2022-2024 PBR, EWSI plans to spend $754 million to maintain and upgrade existing

Drainage infrastructure and continue to implement the SIRP and CORe Strategies. The SIRP and CORe strategies represent approximately half of the overall spending.

7.1 Capital Expenditures 2018-2021 PBR Term

403. EWSI's baseline plan for the 2018 – 2021 PBR term was based on the City's LTP forecast capital expenditures provided to EWSI at the time of transition. Table 7.1-1 provides a comparison of EWSI's total actual/forecast capital expenditures for 2018-2021 PBR compared to the City's LTP plus NRAs. The approved projects/programs over $10 million are separated into the following ten Drainage program categories: Drainage Neighbourhood Renewal, Drainage System Expansion, Drainage System Rehabilitation, Environmental Quality Enhancement, Flood Mitigation, Sanitary Servicing Strategy Fund (SSSF) Projects, Real Estate Project, SIRP NRA, Drainage LRT Relocations NRA and CORe NRA. The first seven of these categories are for capital programs and projects which were included in the City's LTP and funded through the sanitary and stormwater rates (rates escalated at 3% as set out in Bylaw 18100). The remaining three NRA capital categories are funded through approved NRAs added to sanitary and stormwater rates for the period 2020-2021.

404. In its SIRP NRA Application, EWSI proposed to allocate a portion of the City LTP Flood Mitigation capital funding to complete new SIRP projects and programs. As such, EWSI's SIRP NRA Application indicated that the total forecast SIRP capital expenditures for 2020 and 2021 were only $7.2 million greater than the City LTP Flood Mitigation capital expenditures for the same period. Ultimately, the SIRP NRA only included recovery of SIRP operating expenses and did not include any incremental capital cost recovery beyond what was provided in the City LTP Flood Mitigation budget[22].

[22] The explanation for this is provided in EWSI's response to the City's information request COE-EWSI-SIRP-007 as part of the SIRP NRA Application process.

Table 7.1-1
Financial Schedule 15.5
Total Capital Expenditures (Net of Contributions) by Drainage Program Category
2018-2021
($ millions)

	Drainage Program Category	A 2018-2021 City LTP and Approved NRAs	B 2018-2021 Actual/Forecast	C 2018-2021 Variance
1	**Drainage Neighbourhood Renewal**	**175.8**	**122.2**	**(53.6)**
	Drainage System Expansion			
2	105 Avenue Sewer Lateral / Servicing for Downtown	17.7	10.2	(7.5)
3	Private Development Construction Coordination	8.8	13.6	4.8
4	Projects < $10 million	(2.4)	44.2	46.6
5	**Sub-total: Drainage System Expansion**	**24.1**	**68.0**	**43.9**
	Drainage System Rehabilitation			
6	Groat Road Trunk	0.0	33.9	33.9
7	High Priority Replacement Program	54.2	69.2	15.0
8	Projects < $10 million	65.0	111.5	46.5
9	**Sub-total: Drainage System Rehabilitation**	**119.2**	**214.7**	**95.4**
	Environmental Quality Enhancement			
10	Clover Bar Cell 1-4	14.0	11.8	2.2
11	Projects < $10 million	86.8	12.7	(74.1)
12	**Subtotal: Environmental Quality Enhancement**	**100.8**	**24.5**	**(76.3)**
13	**SSSF**	**0.0**	**7.1**	**7.1**
14	**Real Estate**	**0.0**	**33.1**	**33.1**
15	**Flood Mitigation[23]**	**247.5**	**47.0**	**(200.5)**
16	**Sub-Total City LTP Capital Expenditures Net of Contributions**	**667.4**	**516.6**	**(150.8)**
17	**NRA – SIRP[3]**	**7.2**	**67.5**	**60.3**
	NRA – LRT			
18	West Valley Line LRT Sewer Relocation	55.4	45.5	(9.9)
19	Metro LRT Sewer Relocation	5.5	8.7	3.2
20	**Sub-total: LRT NRA**	**60.9**	**54.2**	**(6.7)**
	NRA – CORe			
21	Large Trunk Rehabilitation	0.0	66.5	66.5
22	CORe Access Manhole Program	20.0	13.8	(6.2)
23	CORe Drop Structure Modification Program	19.4	10.2	(9.2)
24	CORe Projects < $10 million	14.3	7.6	(6.7)
25	**Sub-total: CORe NRA**	**53.7**	**98.1**	**44.4**
26	**Sub-Total NRAs**	**121.8**	**219.8**	**98.0**
27	**Total Capital Expenditures Net of Contributions (row 16+26)**	**789.2**	**736.4**	**(52.8)**

[23] Both Flood Mitigation and SIRP categories include capital projects and programs to address flood mitigation. The Flood Mitigation category includes projects and program identified in the City LTP; whereas the SIRP category

405. As illustrated in Table 7.1-1, approximately 30% of the actual/forecast capital program expenditures relate to projects and programs associated with NRAs. These include:

- SIRP construction projects to continue to meet commitments on accelerated flood mitigation plans in accordance with the SIRP Strategy;
- CORe proactive monitoring and rehabilitation programs to prevent future corrosion and odour impacts on the system and renewal of large trunks in emerging odour areas which are failing due to high levels of corrosion; and
- relocation of transmission and distribution mains as requested by the City to accommodate LRT expansion.

406. The remaining 70% of EWSI's capital program includes projects and programs needed to:

- address current and upcoming regulatory requirements;
- meet health and safety requirements;
- maintain reliability and manage risk by rehabilitating or replacing existing assets at the end of their useful lives;
- improve operational efficiency and lower future costs; and
- upgrade key facilities used by EWSI operations staff.

407. For the 2018-2021 PBR term, EWSI is forecasting capital expenditures will be $52.8 million lower than the total $789.2 million City LTP plus approved NRA capital expenditures. The primary drivers for this variance in capital expenditures include the following:

- $140.2 million decrease in capital expenditures for flood mitigation and SIRP projects, primarily due to delays in implementing SIRP due to rescheduling of four large dry ponds projects and associated trunk and sewer separation work for reasons explained below and delays in starting the new SIRP LID Program to complete work with the City to ensure appropriate LID design and construction standards are in place.
- A $76.3 million decrease in capital expenditures for environmental quality enhancement projects due to cancellation of some projects in this category where the

includes additional new projects and programs identified in the SIRP Strategy. Amounts included in column B row 15 of Table 7.1-1 include cost for projects originally identified in the City Plan (such as the Malcolm Tweddle & Edith Rogers Dry Pond) which EWSI still plans to complete during 2018-2021. Amounts included in column A row 17 reflects the SIRP – NRA forecast of the incremental SIRP costs in excess of the City LTP Flood Mitigation budget. Table 7.1-2 below further explains these two categories on a combined basis.

focus was only on improving stormwater quality at the outfall discharge location and not also addressing stormwater volumes at the source. EWSI determined it could achieve the same environmental quality objectives at a lower cost by focusing on capturing peak stormwater volumes at the source using green infrastructure (LID and dry ponds) which reduces volumes of water at the outfalls and also provides water quality improvements.

- a $53.6 million decrease in Drainage Neighbourhood Renewal capital expenditures. The City initially planned most of these expenditures to reduce flooding risks by increasing sewer size while completing neighborhood renewal work. This work was cancelled and is being replaced with lower costs SIRP initiatives such as capturing peak stormwater volumes at the source using green infrastructure (LID and dry ponds) or proactive relining of pipes and manholes to reduce inflow and infiltration.

408. These decreases in capital expenditures are partially offset by:

- a $95.4 million increase in Drainage System Rehabilitation capital expenditures to address aging infrastructure and to address a number of unplanned emergency rehabilitation work to avoid more costly rehabilitation in the future;
- a $44.4 million increase in CORe capital expenditures to replace infrastructure such as large trunks that are failing due to corrosion caused by H_2S in the system and emergency rehabilitation work;
- a $43.9 million increase in Drainage System Expansion capital expenditures primarily due to lower forecast contributions from Local Area Improvement funding (which remained with the City) and higher net costs relating to Service Connections due to a freeze in the increase to the service connection fees since 2015;

409. The following provides more detailed explanations of the capital expenditure variances for 2018-2021 by each of the ten Drainage Program categories shown in Table 7.1-1.

Drainage Neighbourhood Renewal Program

410. The Drainage Neighbourhood Renewal Program includes a program required to renew aging sanitary and stormwater infrastructure in mature neighbourhoods in alignment with the City of Edmonton's Building Great Neighbourhood Program and so project timing is largely driven by the City of Edmonton's neighbourhood renewal schedules, combined with ongoing prioritization of asset replacements in other neighbourhoods based on asset condition. Over the 2018-2021 PBR term, EWSI expects capital expenditures within the Drainage Neighbourhood

Renewal Program category to be $53.6 million lower than the City's LTP forecast amount of $175.8 million. This forecast decrease in capital expenditures is primarily due to a reduction in sewer upgrading costs of $45.4 million based on reprioritization to more efficiently complete this work by including it into individual neighbourhood renewal projects where required or by using lower cost SIRP Strategy options such as capturing peak stormwater volumes at the source by using green infrastructure (LID and dry ponds) or by proactive relining of pipes and manholes to reduce inflow and infiltration. EWSI has updated its prioritization of this work based on the risk-based approach using new information from CCTV inspection data along with its further understanding of impacts of failures on customers. The remaining decrease in capital expenditures of $8.2 million reflects the latest City timelines along with a partial deferral of some neighbourhoods into 2022, due to a reflection of the impact of COVID-19 on schedules in 2020 and 2021. Additionally the forecasts also reflect favourable pricing achieved on open cut and relining contracts.

Drainage System Expansion

411. The Drainage System Expansion category includes projects and programs required to build new infrastructure to support growth and customer requirements such as implementing new drainage services. This category also includes additions or expansions to EWSI's building, additional vehicles and other equipment to support growth in the network. A large portion of the infrastructure is funded by customer contributions. EWSI expects capital expenditures on the Drainage System Expansion Program category to be $43.9 million higher than the City's LTP forecast amount of $24.1 million (net of contributions) for 2018-2021. The forecast increase in capital expenditures is primarily due to the following:

- a $45.0 million reduction in the level of customer contributions primarily from local area improvements relative to the City LTP forecast of $45.0 million as these contributions remained with the City following the Drainage transfer. City driven local improvements were funded through levies included in the City's property taxes. Under the City LTP forecast, a portion of the local area improvement levies was allocated to Drainage. Following the Drainage transfer to EPCOR, Drainage Services no longer receives this funding.
- a $9.3 million increase in the Service Connections Program (net of contributions) relative to the City LTP forecast of $0.0 million. Contributions from service fees do not currently match the costs for providing this service. Actual service connection costs have been higher than what is recovered by the service connection fees because the service connection fees were last updated in 2015 and there has been no increase in

the fees since that time. In the City LTP, the Service Connections Program was included as a net capital expenditure of zero as all costs were anticipated to be recovered through service connection fees charged to customers. The increase in net capital expenditures is also due to higher forecast average costs per service connection as more non-standard (higher cost) connections have been constructed, which have not been matched by increased customer contributions from service connection fees. For the 2022-2024 PBR term, the Drainage Services and Wastewater Treatment Bylaw 18100 reflects a move towards a cost-based approach to service connection fees rather than a fee schedule approach.

- a $4.8 million increase in the Private Development Construction Coordination Program (net of contributions) over the City LTP forecast of $8.8 million due to the capitalization of costs of City of Edmonton staff involved in the drawing review of development applications. Under the City LTP forecast these costs were expensed.

412. These increases in capital expenditures were partially offset by:

- a $7.5 million decrease in the Servicing for Downtown Intensification project / 105 Avenue (116 St to 107 St) Sewer Lateral project relative to the City LTP forecast of $17.7 million. This project was originally forecast to be complete in 2022 and is now expected to be completed in 2023 due to schedule change required to revisit the project design due to utility conflicts at the 109st intersection requiring extra relocations of adjacent utilities and a deeper tunnel. The original design scope was revised to remove the requirement of the deep trunk connection across 109 Street and achieve the project goals through a combination of shallow trunks and LID installation along the 105 Avenue alignment allowing this project to also align with the SIRP objectives. A reduced scope is planned to improve the drainage between 108 and 107 Street.
- a $7.7 million decrease in capital expenditures on smaller projects that are individually less than $10 million including a $7.1 million decrease associated with a reclassification of the Fleet and Vehicles Program from the Drainage System Expansion category to the Drainage System Rehabilitation category. This category change reflects that focus of this program is on maintaining vehicles assets through ongoing life cycle replacements.

Drainage System Rehabilitation

413. The Drainage System Rehabilitation category includes projects and programs required to rehabilitate or replace existing assets at the end of their useful life, to improve reliability and to ensure acceptable risk levels are maintained. EWSI expects capital expenditures within the Drainage System Rehabilitation category to be $95.4 million higher than the City's LTP forecast amount of $119.2 million for 2018-2021. The forecast increase in capital expenditures is primarily due to the following:

- a $33.9 million increase in capital expenditures for the Groat Road Trunk Rehabilitation Project. This project was not included in the City's LTP forecast for 2018-2021 as it was originally anticipated to be completed in 2017 at a total forecast cost of $19.3 million based on early conceptual plans. Due to the size of the project (3.9 km of corrugated metal plate storm trunk of 1.7m to 2.3m in diameter) and being the first of its type, the design and procurement of the contractor took longer than expected with more than thirty options considered, refined to eight for further review and four that could be considered viable. The updated forecast of $33.9 million for this project reflects the awarded contractor price for the rehabilitation work.
- a $15.0 million increase in capital expenditures on the High Priority Replacement Program over the original City LTP forecast of $54.2 million due to an increased volume of locations that have failed or with a high likelihood of failure. Candidates are included in the program if they meet the criteria of services identified as in poor condition, cannot be relined and is considered likely to require replacement within a year. EWSI has achieved reductions in per location costs through pre-work planning processes and reduced crew sizes for less complex locations.
- a $46.6 million increase in capital expenditures for other projects and programs which were each individually less than $10 million including:
- a $12.1 million increase associated with sewer rehabilitation projects, including the arterial roadway co-ordination program, the local sewer rehabilitation program (the scope of which was also increased to include catch basin leads and service connections) and the new manhole catch basin replacement programs based on asset condition assessments;
- a $10.7 million increase in emergency projects requiring immediate rehabilitation including Whitemud Trail and 170 St Replacement ($3.7 million), Calgary Trail and Allendale Replacement ($3.5 million) and Westridge Subsidence ($2.3 million);

- a $7.1 million increase due to the Fleet and Vehicles Program, which was reclassified from the Drainage System Expansion category to the Drainage System Rehabilitation Category. This category change reflects that focus of this program is on maintaining vehicles assets through ongoing life cycle replacements.
- a $5.8 million increase due to a new Service Relining Project in order to proactively reline service laterals in the Ritchie neighbourhood to minimize the risk of future, more expensive, open cut replacement. Service laterals were replaced only at failure within the neighbourhood renewal program, but due to the high concentration of sewer obstructions within this area it was considered prudent to proactively address laterals in poorer condition prior to failure. The learnings from this project have been used as a basis for the scope of the new Proactive Services Renewal project proposed for the 2022 – 2024 PBR term.
- a $5.4 million increase in capital expenditures associated with the completion of the West Jasper Place Phase 1 Project which was originally planned to be completed in 2017 before the Drainage transfer and was completed in 2018 due to additional rehabilitation identified as the project progressed.
- a $5.4 million increase in capital expenditures for other structural rehabilitation projects such as the Pump Station Rehabilitation Program due to the impact of corrosion and to address health and safety concerns with existing infrastructure.

Environmental Quality Enhancement

414. The Environmental Quality Enhancement category includes projects and programs required to address current and upcoming regulatory requirements from regulatory bodies such as Alberta Environment and Parks. This category includes projects required to mitigate the impacts of the drainage system on the environment, including prevention of sewer overflows and reduction in solids loadings to the North Saskatchewan River. The SIRP Strategy has incorporated these environmental quality objectives which resulted in a reassessment of the capital projects and programs completed in this category. Additionally, this category includes capital expenditures associated with the Clover Bar Biosolids Recycling Facility, which will be transferred to EWSI's Wastewater Treatment Operations beginning with the 2022-2024 PBR term. EWSI expects expenditures within the Environmental Quality Enhancement category to be $76.3 million lower than the City's LTP forecast of $100.8 million for 2018-2021. This decrease in capital expenditures is primarily due to the following:

- A $60.1 million decrease due to cancellation of three projects in the City LTP (River for Life: $39.8 million; Fat, Oil and Grease Facility: $14.1 million; and Mill Creek End of Pipe Facility: $2.3 million) and deferral of the Quesnell Basin Loading Reduction Project ($3.9 million decrease) due to revisions to Drainage's Total Loadings Plan to focus on stormwater volumes as well as water quality. Prior to 2019, projects in this category focused on water quality improvements through an "end of pipe" treatment approach that ensures stormwater is treated at the outfall discharge location prior to reaching the North Saskatchewan River. This approach did not manage total loadings or meet total loadings (total suspended solids) objectives. Under this historical approach, high volume of stormwater runoff continued to be a major source of loadings. Going forward, EWSI's SIRP Strategy will incorporate green infrastructure including LID and stormwater management facilities (dry ponds and other small storage) to reduce the stormwater volumes reaching collection system. Use of this new green infrastructure will ultimately improve quality of stormwater and therefore there is no longer a requirement to implement the end of pipe treatment that was previously proposed under the City LTP. Furthermore, in 2020 EWSI has begun work on an Integrated Watershed Management Strategy which will manage total loadings to the North Saskatchewan River and the tributaries and urban creeks within Edmonton and will reduce in stormwater volumes, creating space in the collection system and leading to a reduction in combined sewer overflow discharges.
- a $11.8 million decrease in sewer separation projects primarily due to the reclassification of the Kinnaird Sewer Separation Project from the Environmental Quality Enhancement Category to the SIRP category. While the SIRP NRA Application in 2019 only included sewer separation projects associated with new dry ponds, EWSI re-evaluated the Kinnaird sewer separation project and determined that it meets the SIRP MOVE criteria and is integral to support future dry pond operations in this area of the City as part of the SIRP Strategy as such has reclassified this project to SIRP.
- a $2.2 million decrease in the Clover Bar Biosolids Recycling Facility Cell 1-4 Project from the original forecast of $14.0 million due to the reduction in scope to focus on Cell 3E in the 2018-2021 period. The remaining Clover Bar cell lining work will be completed by EWSI Wastewater Treatment Operations.

Flood Mitigation and SIRP Combined

415. The Flood Mitigation and SIRP NRA categories of capital expenditures both include projects and programs to address flood mitigation risk in the city of Edmonton. The Flood

Mitigation category refers to the projects and programs to address flood mitigation that were included in the original City LTP, whereas the SIRP NRA category includes additional flood mitigation projects and programs included in EWSI's SIRP Strategy. As such, for the 2018-2021 PBR term, it is useful to consider the Flood Mitigation and SIRP capital expenditures on a combined basis as shown in Table 7.1-2. Going forward into the 2022-2024 PBR term, all flood mitigation projects and programs will be under the SIRP category and there will no longer be a Flood Mitigation category.

416. As indicated in Table 7.1-2, for the 2018-2021 PBR term, the City LTP determined in 2017 included a budget of $247.5 million in Flood Mitigation capital expenditures (row 12, column A of Table 7.1-2). In July 2019, following the presentation of its overall SIRP Strategy to Utility Committee, EWSI filed a NRA Application presenting its forecast SIRP capital expenditures of $254.7 million (rows 1-10 of column A of Table 7.1-2). The $7.2 million difference reflects the incremental SIRP NRA capital expenditures during the 2019-2021 period, which ultimately did not require recovery through the SIRP NRA and only the incremental operating costs were recovered through the SIRP NRA. EWSI's latest forecast for SIRP and Flood Mitigation capital expenditures is $114.5 million (rows 1-10, column B of Table 7.1-2). This includes $47.0 million of projects and programs originally included in the City LTP which EWSI plans to complete plus an additional $67.5 million of new projects and programs identified in EWSI's SIRP Strategy.

Table 7.1-2
Flood Mitigation and SIRP Capital Expenditures
SIRP NRA Forecast compared to Current Forecast
(Net of Contributions)
2018-2021
($ millions)

	Drainage Program Category	A 2018-2021 Approved NRA Forecast	B 2018-2021 Actual/Forecast	C 2018-2021 Variance
1	Tweddle Place	20.1	20.3	0.2
2	Dry Pond Program	100.5	53.1	(47.4)
3	Trunk and Sewer Separation Program	45.2	12.7	(32.5)
4	SIRP LID Program	26.6	10.3	(16.3)
5	Projects < $10 million	88.0	47.4	(40.6)
6	Less: Grants for Dry Pond Program	(24.6)	(26.1)	(1.5)
7	Less: Grants for Projects < $10 million	(1.1)	(3.2)	(2.1)
8	**Total Flood Mitigation and SIRP Capital Expenditures**	**254.7**	**114.5**	**(140.2)**
9	Less: City LTP Flood Mitigation	(247.5)	(47.0)	(200.5)
10	**Incremental SIRP Capital Expenditures**	**7.2**	**67.5**	**60.3**

417. Overall, Table 7.1-2 indicates that the total forecast capital expenditures for projects and programs associated with flood mitigation are expected to decrease by $140.2 million to $114.5 million compared to the $254.7 million total City LTP plus the SIRP NRA due to the following:

- A $48.9 million decrease in capital expenditures for the Dry Pond Program from the $75.9 million NRA forecast, primarily due to delays to the construction of four pond projects. Construction of one pond project was delayed to 2024 due to ensure sufficient time in between the City's transportation renewal construction in the area and dry pond construction to minimize neighbourhood disruptions. Another dry pond was delayed to 2024 because the City's Open Spaces phase 1 review identified a conflict with the original location request due to a recent park project in the same area. An alternate location has been identified but is not available for construction within this planned period. Construction of the Kenilworth Dry Pond was delayed from 2020 to 2022 to enable increased stakeholder consultation, following the introduction of the new City Open Spaces review process to engage all stakeholders related to land acquisition. Progress on the Malcolm Tweddle & Edith Rogers Dry pond was delayed due to ongoing weather which forced several pauses in construction and delays on the City's Valley Line LRT Project in 2020 affected major sewer installations which has led to completion of this pond being deferred from 2023 to 2024.

- a $32.5 million decrease in capital expenditures from the approved NRA forecast of $45.2 million on the Trunks and Sewer Separation Program, primarily due to a $37.7 million reduction in capital expenditures because of delay in dry ponds noted above that also include trunk and sewer separation work. This decrease is partially offset by increased capital expenditures of $5.1 million for the latest forecast on the Kinnaird Sewer Separation project, which was previously budgeted at $11.8 million within the Environmental Quality Enhancement category but was reclassified as Base Flood Mitigation at the time of the NRA Application.
- a $16.3 million decrease in capital expenditures on the SIRP LID Program expenditures from the approved NRA forecast of $26.6 million due to additional time required to developed the design standards for LID with City departments and confirm construction practices to align with the City's Building Great Neighbourhoods schedule.
- a $10.6 million decrease in capital expenditures on inflow and infiltration program from the total NRA approved forecast of $25.5 million due to a delayed start to the SIRP Proactive Manhole Relining and SIRP Proactive Pipe Relining Programs to complete operational inspections and testing in order to prioritize locations and to complete detailed design to identify suitable segments for relining.
- A $12.3 million decrease in capital expenditures on the Initial Phase Downtown Stormwater Drainage Servicing project from the updated NRA forecast of $12.3 million as cost recoveries from the Community Revitalization Levy were not forecast within the Base Flood Mitigation project at the time of the NRA Application.
- $4.3 million decrease in capital expenditures on emergency response equipment from the total NRA approved forecast of $5.7 million. Analysis of the emergency response protocols started prior to the COVID-19 Pandemic but has been delayed due to delays associated with EWSI's resources being focused on the COVID-19 Pandemic response. As a result, this program is now anticipated to start in 2021 and will ramp up over the 2022 – 2024 PBR term.
- a $15.3 million decrease in capital expenditures on other projects from the total NRA approved forecast of $63.5 million, including Home Flood Proofing Program. The impact of the COVID-19 Pandemic has led to a pause in the inspection program during provincial mandated reduced contact directives in order to limit interactions with residential home-owners. This has led to a delay in the start to this program.

418. While the variance in the SIRP and Flood Mitigation categories is $114.5 million lower than forecast, EWSI considers that the SIRP program is on track to achieving the EPCOR's commitments to the City on flood mitigation. Achievements to date are listed under the SIRP Strategy in Appendix I-1 to the Application. Much of the decreases in capital expenditures relative to the SIRP NRA forecast relates to delays in construction of large and costly dry pond projects for various reasons. These dry pond projects are expected to be completed within the 2022-2024 PBR term. Other cost decreases are related to additional time required to carefully implement brand new programs with new technology such as the SIRP-SLOW LID Program. During 2018-2021, EWSI also had to address a number of failures and emergencies which caused cost overruns in other capital categories such as Drainage Program Rehabilitation. These offsetting capital expenditure variances have resulted in an overall variance of only 7% ($53 million) lower than the total $789 million City LTP budget.

SSSF

419. The Sanitary Servicing Strategy Fund (SSSF) category includes projects and programs required to build major new sanitary trunks within the city to service new development areas. These projects are funded by customer contributions through the City-administered SSSF. EWSI works closely with the City's SSSF Management Committee to coordinate the design and construction schedules and budgets for various projects. EWSI expects capital expenditures within the SSSF category to be $7.1 million higher than the City LTP forecast of $0.00 million (net of contributions). The City LTP forecast assumed that all costs of SSSF capital projects were fully funded through contributions from the SSSF. EWSI's forecast of $7.1 million reflects its contribution into the SSSF, which is in accordance with the City's approval in March 2006 of an annual EWSI contribution of $1.3 million.

Real Estate

420. The Real Estate category includes the Real Estate Consolidation project to develop a new property on Aurum Road to consolidate Water Services and Drainage Services operations to provide long-term synergies and operational efficiencies across the two organizations. The cost of the project is being shared across Water and Drainage based on headcount with Drainage's share of the project being 60%. EWSI expects capital expenditures within the Real Estate category to be $33.1 million higher for Drainage as a result of its share of the cost of this project which was not included in the City LTP. Following the transfer of Drainage Services to EPCOR, EPCOR completed a company-wide real estate review to identify and evaluate alternatives for consolidating the many physical locations occupied by Water Services operations and Drainage

Services operations. The objective of this review was to identify the alternative which would maximize cost savings and efficiencies which were commitments made as part of the Drainage transfer.

421. The review concluded that a consolidated solution for EWSI's Water Services and Drainage Services would provide long-term synergies and operational efficiencies that would outweigh its additional capital costs. In August 2020, EWSI finalized the purchase of a developed property on Aurum Road in North East Edmonton, which is ideally suited to its long term needs. Site renovations will be required before large scale moves can occur in late 2021 and are included within the projected capital expenditure overage for this project. Further details around this evaluation of alternatives and the Real Estate Consolidation Project are provided in Appendix F-5 to the Water Application and the impact on operating cost savings in the 2022-2024 PBR term are discussed in Section 6.3.3.

NRA - LRT

422. This category includes a program required to relocate drainage infrastructure in accordance with the Drainage Services Franchise Agreement to facilitate the City's planned LRT expansion. City Council approved a non-routine adjustment for the EWSI's Drainage LRT Relocates Program in 2019 to allow EWSI to recover costs for utility relocations required to facilitate the City's planned LRT expansion on the Metro and West Valley LRT lines. EWSI expects capital expenditures within the NRA – LRT program category to be $6.7 million lower than the approved NRA forecast of $60.9 million, primarily due to the following:

- a $9.9 million decrease in capital expenditures on the West Valley LRT project due to changes in the schedule for the project which occurred subsequent to the NRA filing. At the time of the Drainage LRT NRA Application, EWSI planned to begin priority area 2 relocation work in early 2020 and complete prior to the 2022-2024 PBR application[24]. However, the received bids were significantly higher than expected due to a limited number of bidders and project complexity created by tight timelines and conflicting utilities. As a result, there was a delay in procurement while EWSI held further negotiations in an effort to negotiate lower contract prices and obtained its internal approvals for increased costs. Additionally a conflict with another utility delayed the start of a section of the Project for several months. The original City plan did not include a schedule for each of the utilities and so the initial plan was developed before communication with the other utilities involved.

[24] Refer to Appendix 2 of the Drainage LRT NRA Application, dated July 30, 2019.

- This decrease is partially offset by a $3.2 million increase in forecast capital expenditures on the Metro LRT line due to: (i) a 120 meter increase in the length of the sewer to align with the latest LRT platform design and Blatchford Airport Neighbourhood design; (ii) an increase in the sewer pipe size from 1200 mm diameter to 1,350 mm diameter to accommodate pipe grade variations; (iii) additional scope to remove existing and abandoned airport runway and utilities within the construction perimeter; and (iv) additional rehabilitation to address a void that was discovered in a section of pipe.

NRA - CORe

423. This category includes projects and programs that are required as part of the CORe Strategy to invest in proactive measures to reduce corrosion and odour issues in specific areas of the city. These projects and programs are funded through a NRAs which were added to sanitary rates beginning in 2020. EWSI expects expenditures within the NRA – CORe program category to be $44.4 million higher than the approved NRA forecast of $53.7 million, due to the following:

- a $66.5 million increase for EWSI's new CORe Large Trunk Rehabilitation Program. The large trunk projects are now included under the CORe because these projects target rehabilitation of large trunks with high levels of corrosion in emerging odour areas in the network. The CORe Large Trunk Rehabilitation Program includes projects such as the large trunk project at 151 Street and 99 Avenue forecast at $26.8 million which is phase 2 of the West Jasper Place project. Phase 1 of the project was included in the previous City LTP and was completed in 2018 under the Drainage System Rehabilitation category. However, phase 2 had not yet been approved at the time of Drainage transition and, as such, is not included in the 2018-2021 City LTP amounts. Other significant projects in the CORe Large Trunk Rehabilitation Program include the Clareview Sanitary Rehabilitation Project ($7.5 million), the Gold Bar Utilidor Rehabilitation Project ($7.3 million), NL1 Chamber Rehabilitation Project ($4.8 million), Lauderdale Project ($6.5 million) and unplanned reactive emergency projects at San 11, Rhatigan Road and Trestle 7 ($4.1 million).

424. These increases are partially offset by:

- a $6.2 million decrease in the CORe Access Manhole Program primarily due to efficiencies realized by utilizing internal resources leading to the achievement of lower than forecast construction unit costs.

- a $9.2 million decrease in the CORe Drop Structure Modification program due to efficiencies realized by utilizing internal resources with a corresponding reduction in contingency costs.
- a $6.7 million decrease on other projects individually under $10 million within the 2018-2021 period, primarily due to a $5.1 million reduction for the CORe Duggan Tunnel Project due to a combination of deferral of community engagement activities and social distancing requirements and gathering restrictions due to the COVID-19 Pandemic. In addition, further delays have arisen due to longer design time to resolve utility conflicts and to co-ordinate with the emergency rehabilitation requirements of the separate Duggan Pump Station upgrade project.

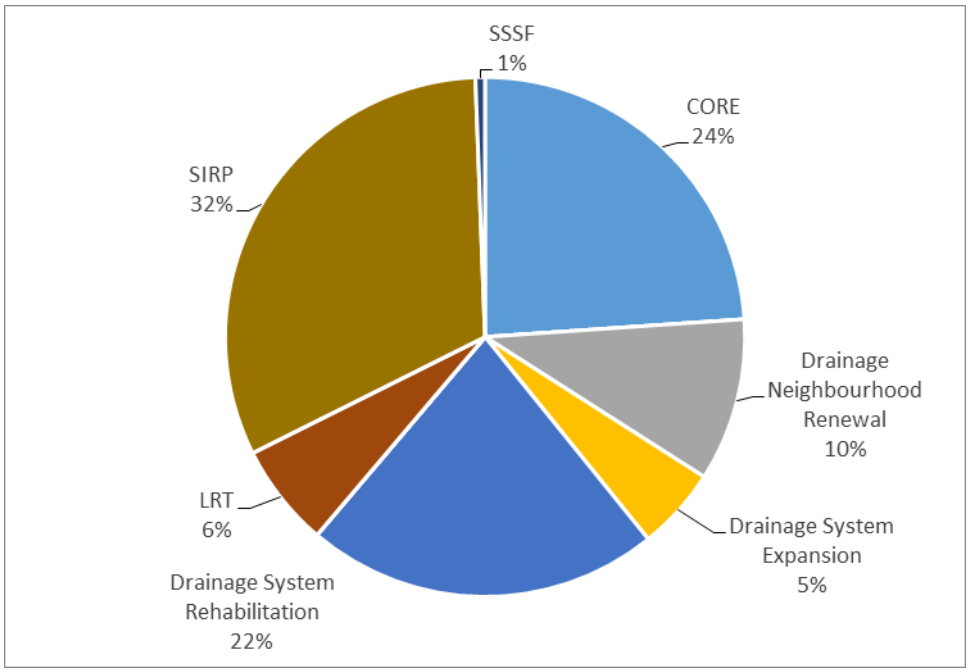
7.2 Forecast Capital Expenditures 2022-2024 PBR Term

425. EWSI has developed its three-year capital plan based on the methodologies described in section 5.2.2. EWSI is forecasting capital expenditures of $754.3 million net of contributions for 2022-2024 PBR term. Compared to the 2018-2021 PBR term, this forecast reflects a significant increase in capital expenditures. Due to the different lengths of these PBR terms, it is useful to compare the capital expenditures on an annual average basis. EWSI is expecting that annual average capital expenditures will increase by $67.3 million per year from $184.1 million per year during the 2018-2021 PBR term to $251.4 million per year for the 2022-2024 PBR term. A portion of this increase is due to inflation, contributing $14 million per year towards the average annual increase.

426. Moving forward to the 2022-2024 PBR term, projects and programs will be categorized under the following seven Drainage program categories: Drainage Neighbourhood Renewal, Drainage System Expansion, Drainage System Rehabilitation, SIRP, LRT Relocates, CORe and SSSF. The Flood Mitigation category is removed beginning in 2022, because the NRA's expire at the end of the 2028-2021 PBR term and, as such, there is no longer a need to distinguish between "Base" flood mitigation capital expenditures and SIRP capital expenditures. The Environmental Quality Enhancement category is removed beginning in 2022 as projects included in this category will be included within the SIRP category going forward and all costs associated with the Clover Bar Biosolids Recycling Facility are transferred to Wastewater Treatment operations beginning in 2022. The Real Estate Category is removed beginning in 2022 as this project is expected to be in-service in 2021.

427. For the 2022-2024 PBR term, EWSI is placing significant focus on executing projects and programs related to its SIRP and CORe strategies. As illustrated in Figure 7.2-1, investments in SIRP and CORe strategies represent over 51% of planned spending over the PBR term. Investment in reliability and life cycle replacements through Drainage System Rehabilitation and Drainage Neighbourhood Renewal projects represents a further 32% of planned spending.

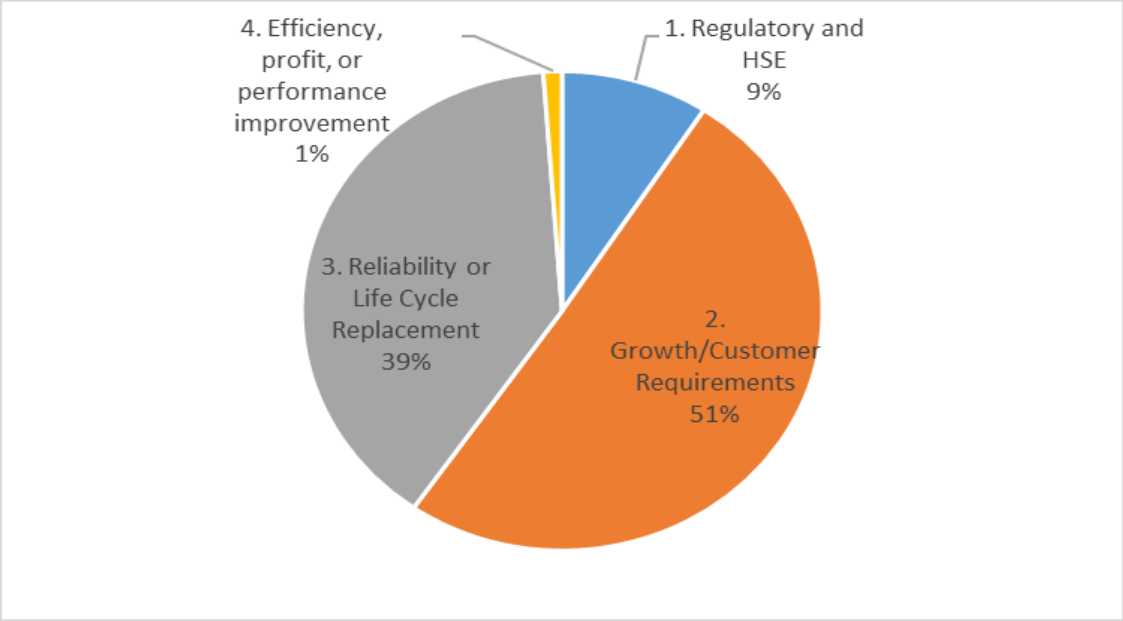
Figure 7.2-1
Net Capital Expenditure* Percentages by Drainage Program Category
2022-2024



***Capital Expenditures are net of contributions.**

428. Figure 7.2-2 shows the 2022-2024 PBR capital expenditure forecast by regulatory categories. Full details by program are included in Table 7.2-2. As Figure 7.2-2 indicates, the Growth/Customer requirements category represents the majority of EWSI's planned investment at 51%, driven by the investment in the SIRP Dry Pond Program and the SIRP Low Impact Development Program, followed by Reliability/Life-Cycle replacements at 39%, which include investment in the CORE Large Trunk Rehabilitation program as well as the High Priority Replacement Programs.

Figure 7.2-2
Total Capital Expenditure Percentages by Regulatory Category
2022-2024



429. Table 7.2-1 provides the total forecast capital expenditures by Drainage program category for the 2022-2024 PBR term compared to the most recent 3-year period 2019-2021. Projects equal to or greater than $10 million (net of contributions) in total and programs equal to or greater than $10 million for the 2022-2024 PBR term are separately identified. Additional details for each of these projects and programs over $10 million are provided in the business cases in Appendices H-02 to H-18. The entire list of projects and programs with forecasted costs for the PBR term 2022-2024 is provided in Appendix H-01. As indicated in Table 7.2-1, the majority of the increases in capital expenditures relates to implementation of programs under the SIRP and CORe strategies. In all other categories there are decreases in capital spending compared to the prior 3-year periods.

430. For planning purposes and depending on priorities, it is expected that in certain years over the PBR term, EWSI's annual capital spending may be higher than the average annual value of $251.4 million but offset by lower spending in other years to manage to the total of $754.3 million forecast for the three-year term.

Table 7.2-1
Total (Net) Forecast Capital Expenditures by Drainage Program Category
2022-2024
($ millions)

	Category	A 2019-2021 Actual / Forecast	B 2022-2024 PBR Plan	C Variance
1	**Drainage Neighbourhood Renewal**	**96.2**	**76.5**	**(19.7)**
	Drainage System Expansion			
2	Private Development Construction Coordination		11.3	
3	Projects < $10 million		27.5	
4	**Sub-total: Drainage System Expansion**	**56.9**	**38.8**	**(18.1)**
	Drainage System Rehabilitation			
5	High Priority Replacement Program		52.1	
6	Small Trunk Rehabilitation Program		18.8	
7	Vehicles and Fleet Program		13.2	
8	Pump Station Rehabilitation Program		15.5	
9	Proactive Service Renewal Program		10.3	
10	Drill Drop Manholes Program		13.1	
11	Projects < $10 million		43.0	
12	**Sub-total: Drainage System Rehabilitation**	**172.8**	**166.0**	**(6.8)**
13	**Environmental Quality Enhancements**	**17.9**	**-**	**(17.9)**
	SIRP			
14	SIRP Low Impact Development Program		53.1	
15	SIRP Dry Pond Program[25]		93.1	
16	SIRP Proactive Manhole Relining Program		18.7	
17	SIRP Proactive Pipe Relining Program		22.9	
18	SIRP Projects < $10 million[26]		51.8	
19	**Sub-total: SIRP**	**100.9**	**239.6**	**138.7**
20	**SSSF**	**4.6**	**4.5**	**(0.1)**
21	**Real Estate**	**33.1**	**-**	**(33.1)**
22	**LRT Relocates Program**	**53.7**	**48.5**	**(5.2)**
	CORe			
23	CORe Large Trunk Rehabilitation Program		79.0	
24	CORe Duggan Tunnel Project		56.3	
25	CORe Drop Structure Modification Program		22.0	
26	CORe Access Manhole Program		17.9	
27	CORe Projects < $10 million		5.2	
28	**Sub-total: CORe**	**96.4**	**180.4**	**84.0**
29	**Total Capital Expenditures Net of Contributions**	**632.5**	**754.3**	**121.8**

431. Table 7.2-2 provides the capital expenditure forecast for 2022-2024 PBR term by regulatory category compared to the most recent three-year period 2019-2021.

[25] $32.7 million of the SIRP Dry Pond Program capital expenditures (net of grants) during 2022-2024 is for completion of the Malcolm Tweddle and Edith Rogers Dry Pond Project. This project was included in the City LTP and is therefore is included in the "Stormwater Utility Excluding SIRP" Rate Base in Financial Schedule 15-1 and is not in the SIRP SRA

Table 7.2-2
Total (Net) Forecast Capital Expenditures by Regulatory Category
2022-2024 Net of Contributions
($ millions)

	Category	A 2019-2021 Actual / Forecast	B 2022-2024 PBR Plan	C Variance
	Reliability or Life Cycle Replacements			
1	CORe Large Trunk Rehabilitation Program		79.0	
2	High Priority Replacement Program		52.1	
3	Small Trunk Rehabilitation Program		18.8	
4	Pump Station Rehabilitation Program		15.5	
5	SIRP Proactive Pipe Relining Program		22.9	
6	SIRP Proactive Manhole Relining Program		18.7	
7	Vehicles and Fleet Program		13.2	
8	Drill Drop Manholes Program		13.1	
9	Proactive Service Renewal Program		10.3	
10	Projects < $10 million		52.0	
11	**Sub-total: Drainage Reliability**	**258.2**	**295.6**	**37.4**
	Growth/Customer Requirements			
12	SIRP Dry Pond Program[5]		93.1	
13	Drainage Neighbourhood Renewal		76.5	
14	LRT Relocates Program		48.5	
15	SIRP Low Impact Development Program		53.1	
16	CORe Drop Structure Modification Program		22.0	
17	CORe Access Manhole Program		17.9	
18	Private Development Construction Coordination		11.3	
19	Projects < $10 million[6]		58.4	
20	**Sub-total: Growth/Customer Requirements**	**333.3**	**380.8**	**47.5**
	Regulatory & Heath, Safety and Environment			
21	CORe Duggan Tunnel Project		56.3	
22	Projects < $10 million		12.9	
23	**Sub-total: Regulatory**	**37.3**	**69.2**	**31.9**
	Performance/Efficiency			
24	Projects < $10 million	3.7	8.7	5.0
25	**Sub-total: Performance/Efficiency**	**3.7**	**8.7**	**5.0**
26	**Total Capital Expenditures Net of Contributions**	**632.5**	**754.3**	**121.8**

432. The following provides a description of the nature of projects and programs included in each of the eight Drainage Program categories shown in Table 7.2-1.

for 2022-2024.

[26] $1.4 million of the SIRP Projects < $10 million capital expenditures during 2022-2024 is for the completion of projects that were included in the City LTP and is therefore included in the "Stormwater Utility Excluding SIRP" Rate Base in Financial Schedule 15-1 and is not included in the SIRP SRA for 2022-2024.

Drainage Neighbourhood Renewal Category Capital Projects

433. During the 2022–2024 PBR term, EWSI plans to renew and replace aging local sanitary, storm and combined sewers in 18 mature neighbourhoods within the City of Edmonton. Historically, EWSI has completed 5 to 6 neighbourhoods per year under this program which is based on the number of neighbourhoods that have been identified by the City for neighbourhood renewal. Details regarding this program are provided in the Drainage Neighbourhood Renewal Business case in Appendix H-10

Drainage System Expansion

434. The most significant capital project over $10 million (net of contributions) in this category is the Private Development Construction Coordination Program ($11.3 million) which includes costs to support the planning and facilitating the construction of new drainage infrastructure by private developers (including costs of the City of Edmonton staff reviewing private development applications). Details regarding this program is provided in a business case in Appendix H-11.

Drainage System Rehabilitation

435. This category comprises 22% of the total planned investment over the 2022-2024 term. The following are major projects/programs in the Drainage System Rehabilitation category:

- **High Priority Replacement Program ($52.1 million)** – A business case is provided in Appendix H-8. The scope for this recurring program is based on historic levels of replacements of assets considered at high risk of failure. The cost forecast is based on the average unit cost for each replacement, taking into account the cost efficiencies, which have been realized over the 2018 to 2020 period.
- **Small Trunk Rehabilitation Program ($18.8 million)** – A business case is provided in Appendix H-18. This new program initiated in the 2022 – 2024 PBR term is to address the risk of failure of small trunks. Previously small trunk rehabilitation was either combined with large trunk rehabilitation or completed on a reactive basis through standalone projects. Establishing a separate small trunk program will enable systematic and proactive rehabilitation to occur based on risk assessment before a major failure occurs. The scope of the program is to complete 5km of renewal through relining and 400m through replacement, with costs based on historical information on similar small trunk projects.
- **Pump Station Rehabilitation Program ($15.5 million)** – A business case is provided in Appendix H-13. This annual program focuses on the renewal of aging pump stations

within the city of Edmonton. The scope for 2022-2024 includes rehabilitation of eight pump stations of the 91 that EWSI owns and maintains across the City, based on those identified as in poor or very poor condition, with the cost based on historical costs of previous pump station rehabilitation projects,

- **Fleet and Vehicles Program ($13.2 million)** – A business case is provided in Appendix H-7. This program consists of the purchase of life cycle replacement for existing essential vehicles, as well as additional new vehicle types to support growth in the sanitary and stormwater system as the City continues to grow. Average costs for this program are decreasing due to changes in EWSI's construction strategy, reflecting a decreased requirement for heavy duty equipment.
- **Drill Drop Manholes (DDMH) Program ($13.1 million)** – A business case is provided in Appendix H-06. This annual program, originally initiated in 2006, includes costs to inspect and systematically rehabilitate or replace failing DDMH's. The scope for 2022-2024 includes completion of twelve full replacements and thirty rehabilitations through relining, addressing the higher frequency of emergency projects that have arisen from deficient DDMHs in the last few years.
- **Proactive Service Renewal Program ($10.3 million)** – A business case is provided in Appendix H-12. This is a new program, which will be initiated in 2023 to inspect and reline services that have structural and / or maintenance issues but are in adequate condition for relining. The aim of this program is to address the increasing trend of emergency replacements by addressing issues before they reach high priority or emergency status. This will reduce risk exposure on the drainage system at a lower cost than open cut replacement.

SIRP

436. SIRP is a wide-ranging initiative to mitigate flood risk. From 2022 onwards, SIRP incorporates projects that previously would have been categorized under Flood Mitigation or Environmental Quality Enhancement program categories. The overall SIRP Strategy is summarized in Appendix I-1 including description of the five themes and EWSI's progress to date. The SIRP capital expenditures forecast for the 2022–2024 PBR term reflects forecast recoveries of $41.3 million from grants which is allocated primarily to dry pond projects and a portion to outfall upgrades. The major projects planned in this category for the 2022 – 2024 PBR term are:

- **SIRP Dry Pond Program ($93.1 million net of grant funding contributions[27])** - , of which $32.7 million relates to Malcolm Tweddle and Edith Rogers which has been included as Flood Mitigation capital in the Financial Schedules) – A business case is provided in Appendix H-14. The aim of this annual program is to mitigate and reduce flood risk in targeted high risk communities by slowing the entry of stormwater into the drainage network and reducing pressure on the collection system. Under the program, EWSI plans to have six dry pond projects active at one time at different stages: two in construction, two in design and two in early planning. Cost forecasts are based on previous pond projects. For the ponds that also incorporate sewer separation, cost estimates for sewer separation are based on unit rates applied to the length of sewers required.
- **SIRP Low Impact Development (LID) Program ($53.1 million)** – A business case is provided in Appendix H-15. This supports the SIRP strategy of investing in green infrastructure, which involves incorporating vegetation, engineered soils and natural processes into developed areas to capture, absorb and filter stormwater before it flows into the sewer system. The LID program is a new program, initiated in 2019, with increasing investment over the 2022 – 2024 PBR term. The scope for the 2022 – 2024 PBR is based on alignment with the City's Building Great Neighbourhoods program, installations at 18 commercial and industrial sites along with eight other projects to be completed in line with other City projects. Cost forecasts are based on estimated unit costs for each type of LID installation.
- **SIRP Proactive Pipe Relining Program ($22.9 million)** – A business case is provided in Appendix H-17. This new program has been initiated to proactively focus on relining sanitary and combined sewer pipes in surface ponding areas to reduce inflow and infiltration into the sanitary and combined sewer system. The scope of the program during the 2022-2024 PBR term will be to reline 60 km of sanitary and combined sewer pipes with diameters of equal to or less than 750 mm with observed defects with costs based on similar pipe relining projects.
- **SIRP Proactive Manhole Relining Program ($18.7 million**) – A business case is provided in Appendix H-16. This new program was initiated in 2020 to proactively reduce inflow and infiltration into the sanitary and combined sewer system to reduce the risk of flooding due to sewer backups from these local sag areas. The scope of the

[27] $32.7 million of the $93.1 million SIRP Dry Pond Program relates to Malcolm Tweddle and Edith Rogers which has been included as Flood Mitigation capital in the Financial Schedules.

program during the 2022-2024 PBR term includes sealing and relining of 3,000 manholes with costs based on similar manhole relining projects.

SSSF Projects

437. There are no significant projects within the PBR terms that are not wholly funded by the SSSF. The net investment of $4.5 million over the 2022-2024 PBR term represents EWSI's continuing contributions to the fund. EWSI has an obligation to fund contributions to the SSSF as the drainage utility owner in the City of Edmonton. This amount represents contributions to the SSSF for diversion of sanitary flows from serviced City lands to the new trunk system constructed under the SSSF in the Mill Woods and Castle Downs areas. The calculation is based on an estimate of the Sanitary Sewer Trunk Charge these lands would have to pay and was last approved by City Council in March 2006.

LRT Relocates Program

438. This category includes the LRT Relocates Program. For the 2022-2024 PBR term, the only project included within the LRT Relocates Program is the West Valley LRT relocation project ($48.5 million). A business case is included in Appendix H-9. The scope of the work is based on utilities identified within the LRT conflict zone and the cost forecast is based upon agreed bid prices with EWSI's contractors.

CORe

439. In 2022 – 2024 the four significant CORe programs are:

- **CORe Large Trunk Rehabilitation Program ($79.0 million)** – A business case is provided in Appendix H-05. This is a new program which will be initiated in 2022 which aims to address large trunks over 1,200 mm in diameter which have been assessed as being in poor or very poor asset condition where rehabilitation is required due to hydrogen sulphide (H_2S) induced corrosion. Deterioration and failure of large trunks is largely due to H_2S which causes both odour and corrosion and, as such, this program is a key component of EWSI's CORe Strategy. Previously, large trunk rehabilitations were conducted as discrete projects as needed within the Drainage System Rehabilitation category. During the 2022-2024 PBR term, EWSI aims to complete approximately 4.9 km of rehabilitation or replacement of large trunks.
- **CORe Duggan Tunnel Project ($56.3 million)** – A business case is provided in Appendix H-04. As noted in the CORe NRA application, the Steinhauer-Duggan sewer corridor

is an area that suffers from chronic, intense sewer odours and rapid asset corrosion and has accounted for one out of every ten sewer odour complaints in the past 20 years. The aim of this project is to limit the release of H_2S and reduce pressurization within the Duggan Tunnel through abandonment of the existing tunnel and pump station and construction of a new, shallower sewer trunk.

- **CORe Drop Structure Modification Program ($22.0 million)** – A business case is provided in Appendix H-03. The intent of this annual program is to construct structures to reduce the downstream air pressurization of a sewer headspace that results from the normal operation of the drop structure, preventing sewer air from exiting the sewer at catch basins and manholes. Over the 2022-2024 PBR term, EWSI will construct 21 additional drop structure modifications with the cost forecast based on recent ongoing projects of similar type and scope.
- **CORe Access Manhole Program ($17.9 million)** – A business case is provided in Appendix H-02. This program was initiated in 2019 as a critical component of the CORe strategy to construct access manholes, which will be used to reduce the distance between access points, enabling safer access to inspection and cleaning in order to remove odour-causing sediments. The scope for the 2022-2024 PBR includes construction of 24 additional access locations on major trunk lines with costs based on the unit costs of similar recent projects.

8.0 DEPRECIATION AND AMORTIZATION

440. EWSI's methodology and assumptions for determining depreciation and amortization of its capital assets are provided in Section 4.4 of the Application. EWSI's forecast depreciation expenses and amortization of contributions for the period 2022 to 2024 is provided in Table 8.0-1. The 2021 forecasted amounts are provided for comparison. Depreciation expense and amortization of contributions are allocated between the sanitary and stormwater utilities in accordance with the cost allocation methodologies described in Section 11.

Table 8.0-1
Financial Schedule 12-1
Net Depreciation Expense
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	Gross Depreciation Expense	83.0	88.9	94.6	101.6
2	Less: Amortization of Contributions	(43.6)	(46.3)	(48.6)	(50.5)
3	**Depreciation Expense, net of Contributions**	**39.4**	**42.6**	**46.0**	**51.1**
	Allocated to:				
4	Sanitary Utility, excluding Core	17.4	16.9	17.6	18.7
5	CORe	0.8	1.5	2.1	2.7
6	Total Sanitary Utility	18.2	18.4	19.6	21.4
7	Stormwater Utility, excluding SIRP	20.4	21.9	22.3	23.4
8	SIRP	-	1.7	4.1	6.3
9	Total Stormwater Utility	20.4	23.6	26.4	29.7
10	**Depreciation Expense, net of Contributions**	**38.6**	**42.0**	**46.0**	**51.1**

441. For the 2021 forecast to 2022 forecast, the $3.2 million increase in net depreciation expense is due to:

- A $2.8 million increase due to new capital expenditures in 2022;
- A $3.0 million increase due to a full year of depreciation on 2021 capital expenditures;
- A $2.0 million increase due to the acceleration of depreciation on the TBM equipment to depreciate the remaining net book value on a straight line basis over six years, reflecting the change in construction strategy as noted in Section 4.4 and Section 2.3.5.1; offset by
- A $2.6 million decrease as a result of assets becoming fully-depreciated; and

- A $2.0 million decrease due to the transfer of Biosolids Management Program and related assets to Wastewater Treatment as the start of 2022, which partially offsets the increases above.

442. For the 2022 to 2024 PBR term, the annual increases in net depreciation expense are due to capital additions to rate base over the 2022-2024 period based on the capital expenditure forecast presented in section 6.2 of the Application, offset by reductions due to existing assets becoming fully depreciated.

9.0 RATE BASE

9.1 Drainage Services Rate Base

443. Table 9.1-1 provides EWSI's forecast rate base for Drainage for 2022-2024, with the 2021 forecast rate base provided for comparison.

444. Effective January 1, 2022, as part of the alignment of Drainage and Wastewater Treatment operations, the assets associated with the Clover Bar Biosolids Recycling Facility were transferred from Drainage to Wastewater Treatment Services. This transfer has been accounted for as an adjustment to the 2022 prior year balances of property plant and equipment and accumulated depreciation, transferring the regulated rate base from one regulated utility to another on a non-discriminatory basis. The effect of this transfer is shown in Table 9.1-1 rows 2 and 9. The remainder of the annual increases in EWSI's gross rate base from 2021 to 2024 reflect capital additions shown in row 4 of Table 9.1-1 less depreciation expense plus the change in working capital and average materials and supplies. The mid-year net rate base (row 20 of Table 9.1-1) is calculated as the difference between the gross mid-year rate base and the value of the mid-year net contributions. Details of the changes to the rate base components are provided in Financial Schedules 15-1 to 16-1. Additional information is provided in (i) Section 7.0, which discusses EWSI's capital expenditures for the 2018-2021 PBR term and its forecast for the 2022-2024 PBR term; (ii) Appendices H-2 to H-18 which includes capital business cases for projects over $10 million and programs over $10 million during the 2022-2024 PBR term; and (iii) Section 8.0 which discusses EWSI's forecast depreciation expense for the 2022-2024 PBR term.

Table 9.1-1

Financial Schedule 15-1
EWSI Rate Base
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	Prior Year Property, Plant and Equipment	5,333.0	5,790.2	6,168.8	6,506.7
2	Transfer of Biosolids Management to Wastewater	-	(37.5)	-	-
3	Prior year Property, Plant and Equipment, adjusted	5,333.0	5,752.7	6,168.8	6,506.7
4	Additions	472.4	432.0	337.9	456.3
5	Retirements	(15.2)	(16.0)	(11.0)	(14.3)
6	Current Year Property, Plant and Equipment	5,790.2	6,168.8	6,495.7	6,937.7
7	Mid-Year Property, Plant and Equipment	5,561.6	5,960.8	6,332.2	6,716.7
8	Prior Year Accumulated Depreciation	(1,055.6)	(1,123.4)	(1,182.8)	(1,266.4)
9	Transfer of Biosolids Management to Wastewater	-	13.5	-	-
10	Prior Year Accumulated Depreciation, adjusted	(1,055.6)	(1,109.9)	(1,182.8)	(1,266.4)
11	Depreciation Expense	(83.0)	(88.9)	(94.6)	(101.6)
12	Retirements	15.2	16.0	11.0	14.3
13	Current Year Accumulated Depreciation	(1,123.4)	(1,182.8)	(1,266.4)	(1,353.7)
14	Mid-Year Accumulated Depreciation	(1,089.5)	(1,146.4)	(1,224.6)	(1,310.1)
15	Mid-Year Net Property	4,472.1	4,814.4	5,107.6	5,406.6
16	Add: Working Capital	13.0	13.9	16.1	18.6
17	Add: Materials and Supplies	1.3	1.3	1.3	1.4
18	**Gross Mid-Year Rate Base**	**4,486.4**	**4,829.6**	**5,125.0**	**5,426.6**
19	Mid-Year Net Contributions	(2,923.6)	(3,076.0)	(3,195.2)	(3,293.5)
20	**Net Mid-Year Rate Base**	**1,562.8**	**1,753.6**	**1,929.8**	**2,133.1**
	Allocated to:				
21	Sanitary Utility, excluding CORe	762.8	798.2	840.9	886.8
22	CORe	54.8	102.1	134.8	178.3
23	Sanitary Utility	817.5	900.3	975.6	1,065.1
24	Stormwater Utility, excluding SIRP	714.0	772.1	813.1	860.3
25	SIRP	31.3	81.2	141.1	207.7
26	Stormwater Utility	745.3	853.4	954.2	1,068.0
27	**Net Mid-Year Rate Base**	**1,562.8**	**1,753.6**	**1,929.8**	**2,133.1**

445. The portions of the rate base allocated to the sanitary and stormwater utilities through the cost of service methodology described in Section 12 are provided in lines 24 and line 28 respectively. The portion of the sanitary utility rate base attributable to CORe and the portion of the stormwater utility rate base attributable to SIRP are shown separately on lines 23 and 27. The rates of return on equity for the SIRP and CORe programs are at the proposed 9.95% beginning in 2022. As discussed in Section 10, EWSI is proposing a 5.50% rate of return on equity for the sanitary utility excluding CORe and the stormwater utility excluding SIRP in 2022. This return will be "ramped up" to the full rate of return of 9.95% in a linear fashion over 5 years, providing an average rate of return on equity of 6.61% for the 2022-2024 PBR term.

9.2 Working Capital

446. The working capital component of EWSI's rate base is an allowance for the working capital needed to finance the lag between the time that EWSI provides a service and the time it is paid for the service (referred to as a "revenue lead"), and the timing differences between the time that expense is incurred and subsequently paid (referred to as an "expense lag").

447. EWSI has undertaken a lead-lag study (Appendix O-3) to support its working capital allowance for Drainage. In this study, lags are derived from analysis of each revenue and expenses stream and are broken down into their individual components in order to more precisely determine the total lag. An overall operating expense lag is then calculated on a weighted average and netted against the appropriate revenues. Net lags are also calculated for individual capital expenses including debt interest, retained earnings and depreciation. The working capital ratio (net lag/365) is then applied against the corresponding expense amount in order to determine the portion of necessary working capital related to each component (see Financial Schedule 16-1).

10.0 RETURN ON RATE BASE

448. The following sections include a calculation of EWSI's forecast return on rate base (section 10.1), explanations of EWSI's proposed return on equity (section 10.2), cost of debt (section 10.3) and capital structure (section 10.4).

10.1 Return on Rate Base Calculation

449. Table 10.1-1 shows the forecast returns on rate base for the sanitary utility excluding CORe, CORe, the stormwater utility excluding SIRP and SIRP for the years 2022-2024. Total returns on the portions of the rate base financed by debt and equity are summarized on lines 50-61. The 2021 forecast amounts are shown for comparison.

Table 10.1-1
Return on Rate Base
Financial Schedule 14-1
2021-2024
($ millions)

	Description	A 2021F	B 2022F	C 2023F	D 2024F
	Sanitary Utility excluding CORe				
1	Mid-Year Rate Base, net	762.8	798.2	840.9	886.8
	Mid-Year Capital Structure				
2	Debt	59.79%	60.00%	60.00%	60.00%
3	Equity	40.21%	40.00%	40.00%	40.00%
	Cost Rates				
4	Debt	2.71%	3.32%	3.14%	3.17%
5	Equity	10.84%	5.50%	6.61%	7.73%
	Return on Rate Base				
6	Financed by Debt	12.4	15.9	15.8	16.9
7	Financed by Equity	33.3	17.6	22.2	27.4
8	**Return on Sanitary Rate Base, excluding CORe**	**45.6**	**33.5**	**38.1**	**44.3**
	CORe				
9	Mid-Year Rate Base, net	54.8	102.1	134.8	178.3
	Mid-Year Capital Structure				
10	Debt	60.00%	60.00%	60.00%	60.00%
11	Equity	40.00%	40.00%	40.00%	40.00%
	Cost Rates				
12	Debt	2.71%	3.32%	3.14%	3.17%
13	Equity	10.18%	9.95%	9.95%	9.95%
	Return on Rate Base				
14	Financed by Debt	0.9	2.0	2.5	3.4
15	Financed by Equity	(0.5)	4.1	5.4	7.1
16	**Return on CORe Rate Base**	**0.4**	**6.1**	**7.9**	**10.5**

	Description	A 2021F	B 2022F	C 2023F	D 2024F
	Stormwater Utility excluding SIRP				
17	Mid-Year Rate Base, net	714.0	772.1	813.1	860.3
	Mid-Year Capital Structure				
18	Debt	59.79%	60.00%	60.00%	60.00%
19	Equity	40.21%	40.00%	40.00%	40.00%
	Cost Rates				
20	Debt	2.71%	3.32%	3.14%	3.17%
21	Equity	-2.03%	5.50%	6.61%	7.73%
	Return on Rate Base				
22	Financed by Debt	11.6	15.4	15.3	16.4
23	Financed by Equity	(5.8)	17.0	21.5	26.6
24	**Return on Stormwater Rate Base, excluding SIRP**	**5.7**	**32.4**	**36.8**	**42.9**
	SIRP				
25	Mid-Year Rate Base, net	31.3	81.2	141.1	207.7
	Mid-Year Capital Structure				
26	Debt	-	60.00%	60.00%	60.00%
27	Equity	-	40.00%	40.00%	40.00%
	Cost Rates				
28	Debt	-	3.32%	3.14%	3.17%
29	Equity	-	9.95%	9.95%	9.95%
	Return on Rate Base				
30	Financed by Debt	-	1.2	2.7	4.0
31	Financed by Equity	0.1	2.4	5.6	8.3
32	**Return on SIRP Rate Base**	**0.1**	**3.6**	**8.3**	**12.2**
	Summary of Returns on Rate Base				
	Return on Debt Financed Portion of Rate Base				
33	Sanitary utility excluding CORe	12.4	15.9	15.8	16.9
34	CORe	0.9	2.0	2.5	3.4
35	Stormwater utility excluding SIRP	11.6	15.4	15.3	16.4
36	SIRP	-	1.2	2.7	4.0
37	**Total Return on Debt Financed Portion of Rate Base**	**24.9**	**34.5**	**36.3**	**40.6**
	Return on Equity Financed Portion of Rate Base				
38	Sanitary	33.3	17.6	22.2	27.4
39	Stormwater	(5.8)	17.0	21.5	26.6
40	SIRP	0.1	2.4	5.6	8.3
41	CORe	(0.5)	4.1	5.4	7.1
42	**Total Return on Equity Financed Portion of Rate Base**	**29.6**	**41.0**	**54.7**	**69.3**

450. The 2021 forecast return on equity in Table 10.1-1 reflects the difference between EWSI's forecast revenues less expenses determined in accordance with the cost of service methodology discussed in Section 12. In 2021, Drainage's combined rate of return on equity was 4.38%, consisting of a 10.84% rate of return on equity for the sanitary utility and a -2.03% rate of return on equity for the stormwater utility. Although these results suggest that sanitary utility rates could be reduced and stormwater utility rates increased to rebalance revenues between the two utilities, rebalancing would have very little impact on customer bills, since the decrease in the sanitary utility portion of the customer's bill would be offset by a corresponding increase in the

stormwater utility. Further, EWSI believes that any changes to Drainage Services' rate structure and design must include consideration of Wastewater Treatment rate structure and design. EWSI plans to update the cost of service analysis over the 2022-2024 PBR term with the overall objective of implementing comprehensive improvements and refinements to rate structure and rate design in subsequent PBR terms. The proposed fair return on equity for SIRP and CORe investments is 9.95% as explained in section 5.3.1.

451. The basis of EWSI's forecast of capital structure, rate of return on equity and cost of debt for the 2022-2024 PBR period is described below.

10.2 Rate of Return on Equity

452. The rate of return approved by EWSI's regulator, Edmonton City Council, must meet the fair return standard which states that the utility must be allowed to earn a fair return which is (i) sufficient to ensure its financial integrity; (ii) adequate to attract capital at reasonable terms; and (iii) commensurate with returns on investments in enterprises having corresponding risks. Based on the fair return standard, EWSI recommends the return on equity and cost of capital as illustrated in Table 10.2-1 be approved for EWSI for the 2022-2024 PBR term:

Table 10.2-1
Recommended Cost of Capital for EWSI 2022-2024 PBR

	Category	A Proportion	B Rate	C Weighted Rate
1	Long-Term Debt	60%	3.50%	2.10%
2	Equity	40%	9.95%	3.98%
3	**Total**	**100%**		**6.08%**

453. EWSI is proposing a rate of return on common equity of 9.95% based on an extension of Grant Thornton's (GT) analysis presented in their *EPCOR Performance Based Regulation Filing Review* (GT Report) developed for the 2017-2021 PBR application for Water and Wastewater Services. A formulaic extension of this prior method is seen as the most straightforward approach under current economic conditions. The turmoil in financial markets resulting from the COVID 19 global pandemic and the resulting fiscal and monetary policy initiatives used by governments and central banks to diminish economic devastation has resulted in virtually no financial ratios, interest rates or other capital cost inputs or indicia remaining stable throughout 2020.

454. EWSI has not completed a Cost of Capital Study, as it has in the past, as reliance on these "roller coaster" 2020 data is problematic in applying traditional methods for estimating capital cost rates. The formulaic extension of a prior approach eliminates these concerns and best aligns

with the City's desire to determine a risk premium to the Alberta Utility Commission's generic cost of capital to derive the allowed rate of return on equity for EWSI. EWSI has prepared a Return on Equity Memorandum (Appendix D) to provide the background and analysis that led to these conclusions.

455. In the 2017-2021 PBR application for Water and Wastewater, both EWSI and GT recognized that: 1) EWSI's business risks are greater than the average Alberta electric and gas utility, and 2) it is reasonable to add a risk premium to the Alberta Utility Commission's generic cost of capital to derive the allowed return on equity for EWSI. Risk in a regulated utility encompasses both operational risk and regulatory risk. In combination, these risks result is variability in both cash flow and earnings that impact the utility's ability to recover costs and earn the awarded fair return. The following are the major risk factors that contribute to EWSI being riskier than an electricity of gas utility regulated by the AUC:

- **Water is a Consumable Product Risk**- As water is ingested by the end user, it is incumbent upon EWSI to ensure that appropriate processes and procedures are maintained to establish proper treatment. Additionally, the collection and treatment of the wastewater also has health and safety concerns that must be managed. Ensuring that the product remains safe at all stages and within strict regulatory guidelines represents considerably higher risk to EWSI than is seen in other utilities.
- **Health and Environmental Regulation Risk** - Increasingly stringent health and/or environmental standards necessitate additional capital investment to meet the new requirements in addition to process and reporting changes to ensure adherence to the standards. EWSI faces additional risk due to higher frequency of regulatory changes for both environmental and public health standards placing increased pressure to cash flow to fund new infrastructure as well as complete upgrades to existing assets to meet regulation changes.
- **Revenue Risk** – Demand for water is subject to considerable variation, particularly in the summer months. Additionally, water demand has declined on a per capita basis over a considerable period resulting in increased risk associated with recovering historic infrastructure costs. EWSI's rate structure is comprised of a very high portion of volumetric rates indicating that revenue fluctuates with changes in consumption. In contrast, electric and gas utilities have a lower percentage of volumetric rates implying that their revenue fluctuates less for a given level of consumption change. Overall, EWSI experiences higher revenue volatility than is seen in a gas or electric utility.

- **Capital Recovery Risk - Depreciation** - Water and wastewater utility assets typically have longer lives than electric and gas utilities. The resulting lower depreciation rates means that reliance on depreciation as one of the sources of internal cash flow is lower. In addition, the longer capital recovery period results in water and wastewater utilities facing greater risks from inflation which results in a higher replacement cost per dollar of net plant.
- **Level of Contributed Assets Risk** – EWSI utilities, particularly drainage, have a greater percentage of contributed assets (or assets not paid for by ratepayers though rates). As EWSI does not earn a return on these assets, yet is required to maintain and assume operational responsibility for the assets, this represents a risk not seen to the same level in electric and gas utilities.
- **Determination of Return on Equity Risk** - The City's PBR process is based on 5 year terms (with 3 year terms in this application as a one-time measure to stagger future applications) with EWSI's rate of return on equity fixed for that entire period. In contrast, the AUC's rate of return is adjusted more frequently based on their generic cost of capital proceedings. As EWSI is effectively "locked in" to the established return on equity irrespective of changes to the underlying financial market drivers and conditions, this represents an additional risk to EWSI.
- **Debt Risk -** Under EWSI's PBR Framework, the risk of interest rate fluctuations is entirely borne by EWSI and is not passed on to its customers. Under the AUC PBR, Alberta electric and gas utilities pass on interest rate risk to their customers through rate adjustments. As such, this risk factor represents another component of the EWSI risk premium above the AUC's Generic Cost of Capital.

456. To develop the proposed 9.95% ROE, EWSI updated the GT 2016 Report to reflect the 2019 pre-pandemic generic cost of capital determined by the Alberta Utilities Commission and bond yield changes, having regard for the compression and expansion of risk premiums. In the 2017-2021 application, EWSI proposed an ROE of 10.5%[28]. GT noted that an ROE of 10.5% represented a risk premium of 2.20% above the AUC generic of 8.3% in place at that time. Their

[28] Three methods were applied to determine the rate of return include Capital Asset Pricing Model (CAPM), Discounted Cash Flow (DCF) and Risk Premium Model (RPM). The recommendations for EWSI's return on equity were derived from the results of applying each of these methods to both the US water utility proxy group and the Canadian utility proxy group.

conclusions were that they viewed an appropriate risk premium would be in the range of .08% to 0.66% lower than the 2.20%[29]. This would result in a risk premium range of 1.54% to 2.12% with a mid-point of 1.83%. The Utility Committee ultimately determined a risk premium of 1.875% for the 2017-2021 PBR term, the same risk premium as was determined for the 2012-2016 PBR term.

457. For the 2017-2021 update of the GT approach, EWSI has used a risk premium of 1.83% as it was based on three formal methods and is more supportable than carrying a single point estimate from a prior period forward. EWSI believes, however, that the risk of the overall business has increased since the 2017-2021 period and a 1.83% risk premium represents the low end of an acceptable range. The inclusion of the Drainage business in the 2022 - 2026 PBR period with the same 40% common equity ratio as the Water and Wastewater businesses implies that EWSI's investment risks are higher today than they were in 2016. Thus, the appropriate premium *vis-à-vis* the Commission's generic cost of capital is no less than 1.83% today.

458. In *Decision 22570-D01-2018*, the Commission found that an 8.5% common equity rate of return was reasonable for test years 2018, 2019 and 2020.[30] All things equal, the indicated common equity rate of return for EWSI based on the GT Report and the 8.5% for generic Alberta utilities is therefore 10.33% (= 8.5% + 1.83%). However, the Commission's 8.5% in *Decision 22570-D01-2018* was predicated on a 2.3% yield on long-term Government of Canada bonds.[31] In contrast, the 2019 pre-pandemic yield on long-term Government of Canada bonds is 1.8%.[32] The lower 2019 bond yield suggests that a downward adjustment of 0.38% should be made to the 10.33% common equity rate of return but with recognition given to the fact that risk premiums expand as bond yields decline. This adjustment then results in the proposed 9.95% ROE.

459. Given the economic situation faced by rate payers as a result of the pandemic and EWSI's desire to moderate rate increases, EWSI proposes that the common equity rate of return for "Base" Drainage operations be established at 5.50% for 2022 and "ramped up" to 9.95% in linear fashion over the 2022 – 2026 period. Based on this plan, the forecast five-year average common equity rate of return for EWSI's consolidated operations is 9.05%. The 9.05% is materially less

[29] GT Report, page 145.
[30] Alberta Utilities Commission, *Decision 22570-D01-2018*, August 2, 2018, Paragraph 500, page 104. In its recently-released *Decision 24110-D01-2020*, the Commission did not provide a detailed rate of return analysis. Nevertheless, the 8.5% common equity rate of return from *Decision 22570-D01-2018* was extended through 2021 on a final basis. See *Decision 24110-D01-2020*, Paragraphs 14 and 20.
[31] Alberta Utilities Commission, *Decision 22570-D01-2018*, August 2, 2018, Paragraph 299, page 65.
[32] The average of the daily 2019 yields reported by the Bank of Canada for Series V39056 is 1.80%.

than the 9.95% proposed common equity rate of return from the updated GT analyses and represents the forecast level at which EWSI will earn over the term. Table 10.2-2 illustrates the ROE across all three EWSI utilities:

Table 10.2-2
Business Unit and Consolidated
Rates of Return on Common Equity
2022 – 2026

	Year	A Water	B Wastewater	C Drainage Base	D Drainage SIPR/CORe	E Drainage Consolidated	F Total Consolidated
1	2022	9.95%	9.95%	5.50%	9.95%	5.85%	7.97%
2	2023	9.95%	9.95%	6.61%	9.95%	7.09%	8.52%
3	2024	9.95%	9.95%	7.73%	9.95%	8.13%	9.01%
4	2025	9.95%	9.95%	8.84%	9.95%	9.07%	9.48%
5	2026	9.95%	9.95%	9.95%	9.95%	9.95%	9.95%
6	2022-2026	9.95%	9.95%	7.83%	9.95%	8.19%	9.05%

Note: Calculations are based on forecast 2022 – 2026 annual rate bases and Drainage rates of return calculated using the method described above.

460. Three conclusions are drawn from the data in Table 10.2-2. First, with the exception of the 2026 rate of return, each of the forecast consolidated rates of return in the final column are less than the 9.95% indicated common equity rates of return. Second, the average consolidated rate of return of 9.05% is materially less than the 9.95% and provides a premium above the Commission's 8.50% generic cost of capital of approximately 50 basis points, whereas the premium for EWSI's risks from the GT Report is 1.83%.

10.3 Cost of Debt

461. Consistent with regulated business units within the EUI group of companies, debt rates on long-term inter-corporate loans issued by EUI to EWSI are based on EWSI's regulated services on a stand-alone basis. EWSI is forecasting a cost of new debt issuances of 3.50% for the 2022-2024 PBR term based on the methodology described in section 4.3.2. The new cost rate of 3.50% is based on an estimated stand-alone debt rating for EWSI of A (low) provided by Dominion Bond Rating Service as at September 3, 2020. See Appendix D for EWSI bond rating.

462. EWSI's weighted average cost of debt shown in Table 10.3-1 below reflects the weighted average of the cost of debt of prior years' long-term fixed rate debentures and long-term inter-corporate loans issued by EUI, the 2022 forecast cost of debt of 3.50% for new debt issues and a small component of short-term debt.

Table 10.3-1
EWSI Weighted Average Cost of Debt
2017-2021
Financial Schedule 14-1, line 32

		A **2022F**	B **2023F**	C **2024F**
1	Weighted Average Cost of Debt	3.32%	3.14%	3.17%

10.4 Capital Structure

463. EWSI is proposing a deemed capital structure of 60% debt and 40% equity for the 2022-2024 PBR term as supported by the Return on Equity Memorandum. This approach is consistent with EWSI's proposed method of updating the ROE as well as the historical capital structure.

11.0 REVENUE OFFSETS (NON-RATE REVENUES)

464. Revenue Offsets include revenues for various service charges and fees, penalties and miscellaneous revenues. Revenue Offsets are deducted from EWSI's expenses for purposes of determining EWSI's sanitary and stormwater revenue requirements.

465. Table 11.0-1 provides the Revenue Offsets (or non-rate revenues) allocated to EWSI's sanitary and stormwater utilities for the 2022-2024 PBR term. The 2021 forecast amounts are provided for comparison. EWSI's revenue offset forecast for 2022-2024 is initially based on EWSI's bottom-up forecast of 2022 amounts. These amounts, except for biosolids, are then escalated by the inflation factor to determine the forecast revenue offsets for 2023 and 2024. The biosolids forecast reflects the transfer of the Biosolids Management Program to Wastewater Treatment effective April 1, 2022. Other revenue offsets reflect a general continuation of historical levels. Revenue offsets are allocated between the sanitary and stormwater utilities in accordance with the cost of service methodologies described in Section 11.0.

Table 11.0-1
Revenue Offsets
(Financial Schedule 13-1)
2021-2024
($ millions)

		A **2021F**	B **2022F**	C **2023F**	D **2024F**
1	Biosolids	4.3	1.2	-	-
2	Compliance and monitoring	4.1	3.8	3.9	4.0
3	Pipeline maintenance	0.7	0.7	0.7	0.7
4	Late payment charges	0.5	0.5	0.6	0.6
5	Other	0.1	0.1	0.1	0.1
6	**Total**	**9.7**	**6.3**	**5.3**	**5.4**
	Allocated to:				
7	Sanitary utility	9.0	5.6	4.5	4.6
8	Stormwater utility	0.7	0.7	0.7	0.7
9	**Total**	**9.7**	**6.3**	**5.3**	**5.4**

466. Each of the categories of Revenue Offsets is described below.

i. Biosolids revenues are derived from the provision of biosolids management and disposal services provided to the Alberta Capital Region Wastewater Commission pursuant to a Biosolids Management Agreement. This function is transferred from Drainage Services to Wastewater Treatment Services effective March 31, 2022.

ii. Compliance and monitoring revenues are derived from several sources including: charges to customers for wastewater delivered to transfer stations; charges for permits to release from third parties; monitoring services provided to commercial customers; and regulatory compliance and monitoring services performed for regional customers with wastewater collection or transmission systems that connect to EWSI's sanitary sewer utility.

iii. Pipeline maintenance revenues are charges for repairs (sewer troubles) on the customer side of the collection system.

iv. Late payment penalty revenues are charges applied to customer invoices for amounts unpaid beyond the prescribed customer payment terms.

v. Other revenues are derived from surplus sales and various incidental services.

12.0 COST OF SERVICE

467. The sections below provide an overview of EWSI's cost of service methodology and practices, including a summary of the comprehensive cost of service study and analysis undertaken by HDR Engineering, Inc. (HDR), and how EWSI has incorporated the results of this study to assign Drainage Services' revenue requirement to the sanitary and stormwater Utilities and to assign cost responsibility to customer classes.

12.1 Cost of Service Methodology Review

468. In the fall of 2019, EWSI engaged HDR Engineering, Inc. (HDR) to provide technical assistance in the development of a sanitary and stormwater cost of service analysis to support EPCOR's historical practice of establishing cost-based rates. The objectives of this analysis included:

- Developing a sanitary utility cost of service analysis that is consistent with the principles and methodologies established by the Water Environment Federation Manual of Practice No. 27, Financing and Charges for Wastewater Systems;
- Developing a stormwater utility cost of service analysis that is consistent with industry best-practices and cost of service principles and methodologies for stormwater utilities;
- Developing sanitary utility and stormwater utility cost of service methodologies to equitably distribute the cost of providing these services to the various customer classes served;
- Reviewing the current sanitary utility and stormwater utility rate structures and providing alternatives for discussion and review by EWSI for its future consideration; and
- Providing EWSI with a sanitary utility and stormwater utility cost of service model to use and evaluate the distribution of future sanitary utility and stormwater utility costs and rate impacts.

469. HDR's cost of service analysis was based on test period 2021 forecasted revenue requirement, using financial and operational data provided by EWSI. Where key assumptions or estimates were required, HDR relied on EWSI's understanding of the system and customers and HDR's direct industry experience in similar cost of service studies. Sections 12.1.1 to 12.1.3 summarize the methodology, conclusions and recommendations from HDR's February 2021

Sanitary and Stormwater Drainage Cost of Service Study (the "HDR Cost of Service Study", Appendix N-2).

12.1.1 Revenue Requirement

470. Drainage Services' revenue requirement is determined on a utility basis, where the annual revenue requirement, representing Drainage Services' overall financial needs, is determined by aggregating operations and maintenance expenses, depreciation and amortization and returns on rate base.

471. Drainage Services provides sanitary utility services related to the collection and transmission of wastewater, and stormwater utility services related to the management of stormwater runoff. Although the sanitary and stormwater utilities share some facilities and resources and are both operated and accounted for on a combined basis, they provide separate and distinct utility services. Therefore, the first stage of HDR's cost of service analysis was to segregate the revenue requirement between the sanitary and stormwater utilities.

12.1.1.1 Functionalization of Net Plant in Service

472. The process of segregating, or assigning the test period revenue requirement between the sanitary and stormwater Utilities started with the functionalization and allocation of net plant in service. HDR's analysis was based on December 31, 2018 net plant-in-service (cost less accumulated depreciation) balances provided by EWSI. EWSI's net plant-in-service records indicate whether individual assets are used to provide sanitary utility functions, stormwater utility functions or combined sewer functions and include the cost, accumulated depreciation, and annual depreciation expense for each individual asset.

473. Almost all of Drainage's net plant-in-service can be directly assigned to either of the sanitary or stormwater utilities. Consistent with industry practices, in HDR's analysis, assets providing combined sewer functions, are assigned to the sanitary and stormwater utilities in proportion to the net book values of the directly assigned assets. Assignment of contributions, amortization of contributions and accumulated amortization, which are also included in the property, plant and equipment records, follows the assignment of the related assets. Table 12.1.1.1-1 summarizes HDR's functionalization of net plant in service between the sanitary and stormwater Utilities.

Table 12.1.1.1-1
Appendix N-2, Table 3-1
Functionalization of Net Plant in Service
($ millions)

				474. A 477. Total	475. B 478. Sanitary	476. C 479. Stormwater
480.	1	481.	Sanitary	482. 1,512.4	483. 1,512.4	484. -
485.	2	486.	Stormwater	487. 2,117.0	488. -	489. 2,117.0
490.	3	491.	Combined	492. 81.6	493. 45.5	494. 36.1
495.	4	496.	Total	497. 3,711.0	498. 1,557.9	499. 2,153.1

12.1.1.2 Functionalization and Allocation of the Revenue Requirement

500. The next step in HDR's revenue requirement analysis was to segregate, or assign, the 2021 revenue requirement to the sanitary and stormwater utilities. HDR based this assignment on factors, such as assets, customers and revenues that reflected the nature of the underlying cost. The 2021 test year's costs assigned to the sanitary and stormwater Utilities are summarized in Table 12.1.1.2-1 below

Table 12.1.1.2-1
Appendix N-2, Table 2-3
Allocation of the 2021 Test Year Drainage Services Revenue Requirement to Sanitary and Stormwater Utilities
($ millions)

		A	B	C	D	E
			Composite Allocation			
		Drainage Services	**Sanitary**	**Stormwater**	**Sanitary Utility**	**Stormwater Utility**
1	Operating expenses					
2	Franchise Fee	10.7	100%	0%	10.7	-
3	Drainage Operations	43.1	55%	45%	23.5	19.6
4	Planning	12.4	48%	52%	6.0	6.4
5	Billing/Meter Reading	7.4	97%	3%	7.1	0.3
6	Project Support Costs	4.7	50%	50%	2.3	2.3
7	Drainage Services Admin.	13.8	63%	37%	8.7	5.1
8	Corporate Allocation	19.6	63%	37%	12.4	7.2
9	SIRP & CORe	8.6	52%	48%	4.5	4.1
10	**Sub-total**	**120.2**			**75.3**	**45.0**
11	Property Taxes	0.8	50%	50%	0.4	0.4
12	Depreciation (Net)	38.8	39%	61%	15.3	23.5
13	Financing Costs	22.0	65%	35%	14.4	7.7
14	Return on Investment	28.8	65%	35%	18.8	10.0
15	**Total**	**210.7**			**124.2**	**86.5**

501. The allocated sanitary and stormwater utility revenue requirements provide the basis for the cost of service studies discussed in Sections 12.1.2 and 12.1.3.

12.1.2 Sanitary Utility Cost of Service Study

502. The objective of HDR's sanitary utility cost of service study is to provide EWSI with a methodology to determine the fair and equitable manner in which to apportion or collect the revenue requirement across the various customer classes of service. Therefore, the first step in a cost of service study is to determine the customer classes of service to which costs will be equitably distributed. To establish the classes of service, the utility segregates customers into groups (i.e., classes of service) that have similar usage patterns and facility requirements. Currently, EWSI uses the following sanitary customer classes of service: residential, multi-residential, commercial and the University of Alberta. The University of Alberta, while actually part of the commercial customer class, has unique characteristics, including its own collection system. Therefore, for costs of service analysis purposes, it is treated as a separate customer class.

503. HDR reviewed the classes of service and, following discussions with EWSI, concluded that the current sanitary utility customer classes of service are reasonable and follow current industry practices. After establishing classes of service, HDR was able to undertake its comprehensive cost of service analysis using a three-step approach to review costs: functionalization, allocation, and distribution.

12.1.2.1 Functionalization of Sanitary Drainage Costs

504. HDR used EWSI's system of accounts to arrange asset (plant/infrastructure) data and expenses (costs) by major operating functions within the utility, including collection, pumping stations, storage and general plant.

12.1.2.2 Allocation of Sanitary Drainage Costs

505. The second analytical task performed in the sanitary utility cost of service analysis is the allocation of the costs. Allocation involves reviewing each cost to determine why the expense is incurred or what type of need (e.g., volume/flow, customer-related) is being met. In this step, HDR categorized costs as follows:

- **Volume-Related Costs** which tend to vary with the total quantity of wastewater collected and conveyed;

- **Capacity/Demand-Related Costs** which are related to the capacity requirements of the system, both in terms of the number of customers on the system and the capacity use or maximum flows that customers place on the system;
- **Customer-Related Costs** which vary with the number of customers served. Customer-related costs typically include the costs of accounting, billing, and collections; and
- **Revenue-Related Costs**, such as franchise fees, which vary with the amount of revenue received by the utility.

506. HDR's cost allocations for the sanitary utility follows generally accepted wastewater cost of service principles and methodologies, as discussed and outlined in the Water Environment Federation, Manual of Practice #27, Financing and Charges for Wastewater Systems. HDR has adapted and tailored these methodologies to reflect EWSI's specific and unique facilities, customers, costs, and operations.

12.1.2.3 Distribution to Customer Classes of Service

507. In HDR's analysis, allocated costs are proportionally and equitably distributed to each customer group using distribution factors. The development of the distribution factors is based on generally accepted principles and methodologies and includes:

- **Volume Distribution Factor:** Volume-related costs are generally distributed on the basis of estimated contributions to wastewater flows. For the 2021 test period, the volume distribution factor is based on forecast wastewater volumes by sanitary drainage customer class of service;
- **Capacity/Demand Distribution Factor:** HDR based this distribution factor on an equivalent meter analysis, which takes into consideration the number of meters by customer class of service and the capacity flow from those meters. This factor was used to equitably allocate and distribute a portion of the sanitary drainage systems collection lines;
- **Customer Distribution Factors:** HDR uses a customer distribution factor based on the actual number of customers in each customer class of service to distribute customer costs to customer classes of service. The underlying assumption supporting the use of actual customer counts is that customer costs are directly related to the number of customers and that there are no disproportionate costs; and

508. **Revenue Related Distribution Factor:** The revenue related distribution factor is based on projected rate revenues for 2021 for each customer class of service.

12.1.2.4 Summary of the Sanitary Drainage Cost of Service Analysis

509. HDR aggregated the distributed revenue requirement for each customer class of service to determine each customer group's overall revenue responsibility and HDR compared the distributed revenue requirement to projected revenues for the 2021 test period. This comparison is summarized on Table 12.1.2.4-1:

Table 12.1.2.4-1
Appendix N-2, Table 3-4
Summary of the Sanitary Utility Cost of Service Analysis
For the 2021 Test Period
($ millions)

		A ***Present Revenue***	*B* ***Allocated Costs***	*C* ***$ Difference***	*D* ***% Difference***
1	Residential	84.0	78.7	5.3	−6.3%
2	Multi-Residential	21.2	21.3	(0.2)	0.7%
3	Commercial	28.0	27.2	0.8	−2.7%
4	University of Alberta	1.2	1.3	(0.1)	9.5%
5	**Total**	**134.6**	**128.6**	**5.8**	**–4.3%**

510. HDR typically reviews the summary of a cost of service analysis to determine whether a class of service is within a "reasonable range of their cost of service", defined as +/- 5% of the overall required adjustment. Therefore, in HDR's analysis, since the sanitary utility requires a −4.3% overall adjustment to the cost of service, a class of service is considered within a "reasonable range of their cost of service" if they are within the range of +1.3% to –9.3%.

511. Based on this definition, only the University of Alberta is outside of the range. HDR notes that these results are based on a single test year's costs and usage characteristics. Since cost of service results change over time due to changes in costs and customer usage, costs of service for customer classes are best determined over an extended number of studies. Accordingly, HDR recommends that EWSI continue to review and update the sanitary utility cost of service analysis before making interclass adjustments.

12.1.3 Stormwater Utility Cost of Service

512. Similar to the sanitary utility cost of service study, the objective of HDR's stormwater utility cost of service study is to provide EWSI with a methodology to equitably distribute the revenue requirement across the various customer classes of service. Therefore, the first step in a cost of service study is to determine the customer classes of service to which costs will be equitably distributed. To establish the classes of service, the utility must segregate customers into groups of customers (i.e., classes of service) that have similar stormwater characteristics, parcels and/or facility requirements.

513. Currently, EWSI uses the following stormwater utility classes of service: Residential, Multi-Residential and Commercial. HDR reviewed the classes of service and, following discussions with EWSI, concluded that the current stormwater utility customer classes of service are reasonable and follow current industry practices. After establishing classes of service, HDR was able to undertake its comprehensive cost of service analysis using a three-step approach to review costs: functionalization, allocation, and distribution.

12.1.3.1 Functionalization of Stormwater Drainage Costs

514. HDR used EWSI's system of accounts to arrange asset (plant/infrastructure) data and expenses (costs) by major operating functions within the utility, including collection, pumping stations, storage and general plant.

12.1.3.2 Allocation of Stormwater Drainage Costs

515. HDR reviewed each cost to determine why the expense is incurred or what type of need (e.g., volume/flow, customer-related) is being met. In this step, HDR categorized costs as follows:

- **Equivalent Stormwater Unit (ESU)-Related Costs:** An equivalent stormwater unit is an equivalency measure of run-off contributions (i.e., volume) and typically this approach, or similar approaches, are used for billing stormwater customers. In this analysis an ESU is calculated as the product of the parcel's area, its development intensity factor and a runoff coefficient based on the parcel's zoning. In sections 1, 5 and 13, EWSI refers to ESUs as the Stormwater Billing Determinants.
- **Customer-Related Costs:** These costs vary with the number of customers served. Customer-related costs typically include the costs of accounting, billing, and collecting; and

- **Revenue-Related Costs:** These include costs such as late payment charges, which vary with the amount of revenue received by the utility.

516. HDR's cost allocations for the stormwater utility follows generally accepted wastewater cost of service principles and methodologies, as discussed and outlined in the Water Environment Federation, Manual of Practice No. 27, Financing and Charges for Wastewater Systems. HDR has adapted and tailored these methodologies to reflect EWSI's specific and unique facilities, customers, costs, and operations.

12.1.3.3 Development of the Stormwater Drainage Distribution Factors

517. In HDR's analysis, allocated costs are proportionally and equitably distributed to each customer group. The development of the distribution factors is based on generally accepted principles and methodologies and includes:

- **ESU Distribution Factor:** ESUs are an equivalency measure for estimating surface water runoff from a parcel. EWSI's existing stormwater rates develop billing units reflective of a parcel's area, stated in m^2, along with a development intensity factor and a runoff coefficient which is based upon the zoning of the premises. This distribution factor was based on EWSI's current billing determinants which take these factors into account and are reflective of the relative runoff contributions;
- **Customer Distribution Factors:** HDR uses a customer distribution factor based on the actual number of customers in each customer class of service to distribute customer costs to customer classes of service. The underlying assumption supporting the use of actual customer counts is that customer costs are directly related to the number of customers and that there are no disproportionate costs; and
- **Revenue Related Distribution Factor:** The revenue related distribution factor is based on projected rate revenues for 2021 for each customer class of service.

12.1.3.4 Summary of the Stormwater Utility Cost of Service Study

518. Similar to the sanitary utility cost of service study, HDR aggregated the distributed revenue requirement for each customer class of service to determine each customer group's overall revenue responsibility and compared the distributed revenue requirement to projected revenues. This comparison is summarized on Table 12.1.3.4-1:

Table 12.1.3.4-1
Appendix N-2, Table 4-3
Summary of the Stormwater Utility Cost of Service Analysis
For the 2021 Test Period
($ millions)

		A ***Present Revenue***	*B* ***Allocated Costs***	*C* ***$ Difference***	*D* ***% Difference***
1	Residential	40.4	42.8	(2.4)	5.9%
2	Multi-Residential	3.8	4.2	(0.4)	9.9%
3	Commercial	31.4	34.4	(3.0)	9.7%
4	**Total**	75.6	81.4	(5.8)	7.7%

519. HDR typically reviews the summary of a cost of service analysis to determine whether a class of service is within a "reasonable range of their cost of service", defined as +/- 5% of the overall required adjustment. Therefore, in HDR's analysis, since the stormwater utility requires a 7.7% overall adjustment, a class of service is considered within a "reasonable range of their cost of service" if they are within the range of 2.7% to 12.7%.

520. Based on this definition, all classes of service are within a reasonable range of covering their costs. As with the sanitary utility cost of service analysis, HDR notes that these results are based on a single test year's costs and usage characteristics. Since cost of service results change over time due to changes in costs and customer usage, costs of service for customer classes are best determined over an extended number of studies. Accordingly, HDR recommends that EWSI continue to review and update the sanitary utility cost of service before making interclass adjustments.

12.2 Assignment of 2022-2024 Forecast Revenue Requirement

521. EWSI utilized the principles and methodologies from HDR's comprehensive cost of service study to segregate Drainage Services' 2022-2024 forecast revenues requirements between the sanitary and stormwater Utilities. In addition, to provide greater transparency into the costs of CORe, the sanitary utility revenue requirement was further segregated into revenue requirements for the sanitary utility excluding CORe and for CORe. Similarly, to provide greater transparency into the costs of SIRP, the stormwater utility requirement was further segregated into revenue requirements for the stormwater utility excluding SIRP and SIRP.

522. EWSI segregated Drainage Services' 2022-2024 forecast revenue requirements between the sanitary and stormwater utilities using the plant-in-service functionalization methodology developed with the assistance of HDR. In accordance with this methodology, EWSI was able to

assign almost 90% of Drainage's 2022-2024 forecast plant-in-service directly to either of the sanitary or stormwater utilities. The remaining 2022-2024 forecast plant-in-service, which provides combined sewer functions was assigned to the sanitary and stormwater Utilities in proportion to the net book values of the directly assigned assets. Assignment of contributions, amortization of contributions and accumulated amortization, which are also included in the property, plant and equipment records, followed the assignment of the related assets.

523. Functionalization of the assets and related contributions to the sanitary and stormwater utilities allowed EWSI to develop rate bases for each utility, as well as SIRP and CORe rate bases, and to calculate the capital-related portions of the revenue requirements, including depreciation, amortization of contributions, and returns on rate base. Details of the forecast rates bases are provided in Section 9.

524. After assigning the capital-related portions of the revenue requirement to the sanitary and stormwater Utilities, the next step in the assignment process was to segregate Drainage Services' 2022-2024 forecast operating costs and revenue offsets. This step started with the costs included in the functional cost groups described in Section 6.2. The costs comprising each operational function were assigned to the sanitary and stormwater utilities, SIRP and CORe using the methodologies from the HDR cost of service study, as follows:

- **Drainage Operations.** EWSI analyzed the accounts comprising each of these operational functions to determine if the costs could be assigned to a single utility or whether they related to both utilities. Costs relating to both utilities were assigned to the Sanitary and Stormwater Utilities in proportion to the net book value of the assets functionalized to the related utility;
- **SIRP and CORe**. Costs in these operational functions were assigned to SIRP and CORE, respectively;
- **One Water Planning and Project Support; Operational Support Services.** Costs in these operational functions support Drainage Operations, SIRP and CORe. These costs were assigned to the sanitary and stormwater utilities, SIRP and CORe in proportion to the net book value of the related assets;
- **Billing, Meters and Customer Services**. Billing and customers service costs vary with the number of bills. Since the sanitary and stormwater Utilities have essentially the same number of customers, billing and customer service costs were split 50/50 between the two utilities. Meter costs are not applicable to stormwater and, therefore, are directly assigned to the sanitary utility;

- **Drainage Services Administration and Corporate Shared Services**. These costs, which amount to about one-third of total operating expenses, support all of Drainage Services' operations and can be regarded as overheads that are budgeted and managed at a business unit level. Accordingly, these costs were assigned to the sanitary and stormwater Utilities, SIRP and CORe in proportion to the operating costs assigned to each utility and program before Drainage Services and Corporate Shared Services. This methodology results in the same percentage loading on direct costs for the sanitary and stormwater Utilities, SIRP and CORe;
- **Franchise Fees and Property Taxes**. Franchise fees are only applicable to the sanitary utility. Franchise fees were calculated separately for the sanitary utility excluding CORe, and to CORe, and directly assigned to each. Property taxes were assigned to the Sanitary and Stormwater Utilities (excluding SIRP and CORe) in proportion to the net book value of the assets functionalized to each utility; and
- **Revenue Offsets**. Individual components of revenue offsets were assigned to the Sanitary and Stormwater Utilities on the same basis as the related expenses.

525. The result of this process is that EWSI was able to identify distinct 2022-2024 forecast revenue requirements for the sanitary utility excluding CORe, CORe, stormwater utility excluding SIRP and SIRP. Further information on the segregated revenue requirements is provided in Section 4 of this Application.

12.3 2022-2024 Forecast Cost of Service Results

526. After calculating the 2022-2024 forecast revenue requirements, EWSI applied the HDR cost of service study methodology to distribute the revenue requirements to customer classes. EWSI then compared forecast revenues to forecast costs of service. The resulting revenue surplus or shortfall for the sanitary utility including CORe, the stormwater utility including SIRP and for Drainage Services as a whole, are summarized on Table 12.3-1 below:

Table 12.3-1
Financial Schedules 19-2
Sanitary Utility and Stormwater Utility Cost of Service Summary
($ millions)

		A	B	C	D	E	F	G	H	I
		Sanitary Utility			Stormwater Utility			Total Drainage Services		
		2022 F	2023 F	2024 F	2022 F	2023 F	2024 F	2022 F	2023 F	2024 F
	Revenue									
1	Residential	91.5	93.6	100.2	49.2	54.7	60.5	140.7	148.3	160.7
2	Multi-Residential	24.0	24.6	26.5	5.2	5.7	6.2	29.2	30.3	32.7
3	Commercial*	28.1	30.0	33.1	38.5	42.8	47.4	66.5	72.9	80.6
4	Total	143.6	148.2	159.7	92.8	103.2	114.2	236.5	251.4	273.9
	Revenue Requirement									
5	Residential	73.0	74.6	81.8	60.6	67.6	75.1	133.6	142.1	156.8
6	Multi-Residential	22.1	21.9	24.2	6.4	7.0	7.7	28.4	28.9	31.9
7	Commercial	24.3	25.5	29.1	47.2	53.1	59.3	71.6	78.6	88.3
8	Total	119.4	122.0	135.0	114.2	127.6	142.0	233.6	249.6	277.1
	Difference									
9	Residential	18.5	19.1	18.4	(11.4)	(12.9)	(14.5)	7.1	6.2	3.9
10	Multi-Residential	2.0	2.7	2.2	(1.2)	(1.3)	(1.5)	0.8	1.4	0.7
11	Commercial	3.8	4.5	4.1	(8.8)	(10.2)	(11.8)	(5.0)	(5.7)	(7.7)
12	Total	24.2	26.3	24.7	(21.4)	(24.4)	(27.9)	2.8	1.9	(3.1)
	Revenue to Cost Ratios									
13	Residential	125.3%	125.6%	122.5%	81.2%	80.9%	80.6%	105.3%	104.4%	102.5%
14	Multi-Residential	109.0%	112.3%	109.2%	81.2%	80.9%	80.6%	102.7%	104.7%	102.3%
15	Commercial	115.4%	117.6%	114.0%	81.4%	80.8%	80.1%	93.0%	92.7%	91.2%
16	Combined	120.3%	121.5%	118.3%	81.3%	80.9%	80.4%	101.2%	100.7%	98.9%

527. *Consistent with the Bylaw, the University of Alberta is included in the commercial customer class of service.

528. Two significant observations can be made from data presented in Table 12.3-1. First, based on current rate structure and design, over the 2022-2024 PBR term there is a substantial over-recovery of sanitary utility revenues and a substantial under-recovery of stormwater utility revenues. The magnitude of these differences is greater than was shown in HDR's 2021 test period results primarily because of re-categorization of assets from sanitary functions to combined functions between the time that the December 31, 2018 asset records were provided to HDR and the time that EWSI developed the 2022 to 2024 forecasts. Second, for Drainage Services in aggregate, revenue to cost ratios for the residential and multi-residential customer classes are within the +/- 5% range considered reasonable by HDR and the aggregate revenue to cost ratio for the commercial customer class is only slightly outside of this range.

529. These results suggest that although sanitary utility rates could be reduced and stormwater utility rates increased to rebalance revenues between the two utilities, rebalancing

would have very little impact on customer bills, since the decrease in the sanitary utility portion of the customer's bill would be offset by a corresponding increases in the stormwater utility. Further, EWSI believes that any changes to Drainage Services' rate structure and design must include consideration of Wastewater Treatment rate structure and design. As HDR has noted, further analysis and additional studies are needed to fully ascertain the effects of the cost of service methodology on Wastewater Treatment's over-strength surcharges. Therefore, except for special rate adjustments for SIRP and CORe described in Section 13, EWSI is not proposing any cross-utility or interclass adjustments to sanitary and stormwater rate structure and design for the 2022-2024 PBR term. Instead, EWSI plans to update the cost of service analysis over the 2022-2024 PBR term with the overall objective of implementing comprehensive improvements and refinements to rate structure and rate design in subsequent PBR terms.

13.0 PBR RATES

530. Drainage's sanitary utility and stormwater utility services are provided pursuant to a franchise agreement with the City of Edmonton. These services are regulated by City Council under a performance-based regulation framework.

531. Consistent with Water Services and Wastewater Treatment, Drainage's sanitary and stormwater utility customers are assigned to residential, multi-residential and commercial customer classes. The customer definitions and other classification criteria are generally consistent among Water Services, Wastewater Treatment and Drainage. Therefore, a residential water or wastewater treatment customer also qualifies as a residential sanitary or stormwater utility customer, a multi-residential water or wastewater treatment customer also qualifies as a multi-residential sanitary or stormwater utility customer and a commercial water or wastewater treatment customer also qualifies as a commercial sanitary or stormwater utility customer.

13.1 PBR Rate Structure – Sanitary Utility

532. EWSI's sanitary utility rates are designed to collect the costs associated with wastewater collection services. Sanitary utility rates consists of a flat monthly charge levied on each customer's premises that varies with the size of the premises' water meter and a variable monthly charge based on a rate per cubic metre of either metered water consumption for the premises, or, if a sewer meter has been installed, the sewer discharge for the premises. The sanitary utility rate design also includes a provision for EWSI, under the conditions of the Utility Credit Programs, to provide a utility credit to discount metered water volumes. In the 2022-2024 forecast, there is only one customer, the University of Alberta that receives a utility credit. This credit provides a 44% reduction to the sanitary utility variable rate to recognize that the University of Alberta is a large wholesale customer that owns and operates its own on-campus collection system.

533. EWSI believes that this rate structure is appropriate and is not proposing any changes for the 2022-2024 PBR term. EWSI's position is supported in HDR's cost of service study (see Section 12), which included a review of EWSI's current sanitary utility and stormwater utility rate structures. In this review, HDR concluded that EWSI's current rate design approach for sanitary utility rates is contemporary in approach and design.

13.2 PBR Rate Structure – Stormwater Utility

534. EWSI's stormwater utility rates are designed to collect the costs associated with the management of stormwater runoff. The current stormwater utility rate design consists of a single rate applied to the product of:

- The area of the property in square metres and, for multiple units sharing a single building, the proportion of the building lot area attributable to each unit;
- The development intensity factor, which measures the portion of lot being used for its intended development. The development intensity factor is set at 1.0, except for those properties where owners demonstrate that they contribute significantly less stormwater runoff per property area to EWSI's land drainage system during rainfalls than other similarly-zone properties through the use of retention/detention ponds or other stormwater best practices. Applications for changes to the development intensity factor are made in accordance with the terms and conditions of the Utility Credit Programs; and
- The runoff coefficient, which measures the permeability of the lot's surface (i.e., grass versus concrete), based on land zoning. The runoff coefficient ranges from 0.20 (e.g., agricultural zone AG) to 0.95 (e.g., commercial business zone CB2). As point of reference, a single-detached residential home (Zone RF1) has a runoff coefficient of 0.50. The runoff coefficients are included in Schedule 1 of the Drainage Services and Wastewater Treatment Bylaw. EPCOR is currently working with the City's Rezoning Bylaw initiative which may require future updates to the runoff coefficients.

535. EWSI believes that this rate structure is appropriate and is not proposing any changes for the 2022-2024 PBR term. As with the sanitary utility, HDR's cost of service study (see Section 12), included a review of EWSI's current sanitary utility and stormwater utility rate structures. In this review, HDR concluded that EWSI's current rate design approach for stormwater utility rates is contemporary in approach and design.

13.3 2022-2024 Rates and Special Rate Adjustments

536. Under the PBR framework, sanitary and stormwater rate increases are limited to PBR inflation plus Special Rate Adjustments. For the 2022-2024 PBR term, EWSI is applying for four Special Rate Adjustments for: (i) Re-basing of the Revenue Requirement ("Re-basing"); (ii) recovery of costs related to the 90 Day Deferral Program; (iii) recovery of costs related to CORe; and (iv) recovery of costs related to SIRP.

13.3.1 Special Rate Adjustment for Re-basing

537. EWSI is applying for Special Rate Adjustments for Re-basing to be applied to Sanitary Utility and Stormwater Utility rates in 2022. The Special Rate Adjustments for Re-basing account for the difference between the revenue that would be realized by limiting annual rate increases to PBR inflation (Row 6 of Table 13.3.1-1) and EWSI's revenue requirement forecast, excluding the portions of the revenue requirement attributable to SIRP and CORe (Row 10 of Table 13.3.1-1). The resulting surplus of $30.7 million (Row 11 of Table 13.3.1-1) will be refunded to rate payers over the 2022-2024 PBR term through the Special Rate Adjustment for Re-basing. The portion of the revenue attributable to SIRP and CORe will addressed through the special rate adjustments discussed in sections 13.3.3.

Table 13.3.1-1
Revenue Requirement Shortfall
2022-2024
($ millions)

		A **2022-2024**
	Revenue Collected at Prior Year's Rates:	
1	Sanitary Utility, excluding CORe	402.5
2	Stormwater Utility, excluding SIRP	253.9
3	Total Revenue Collected at Prior Year's Rates	656.3
4	PBR Inflation Impact on Revenue	26.7
5	Total Revenue Collected at PBR Rates	683.0
	Revenue Requirement:	
6	Sanitary Utility, excluding CORe	326.6
7	Stormwater Utility, excluding SIRP	325.7
8	Total Revenue Requirement	652.4
9	**Revenue Surplus to be Refunded through Re-basing**	**30.7**
	Revenue Surplus attributable to:	
10	Transfer of the Biosolids Management Program to Wastewater Treatment	47.5
11	Cost savings achieved over the 2018-2021 PBR Term	20.0
12	Increase in Revenue Requirement over the 2022 and 2024 PBR Term	(38.1)
13	Customer growth over the 2022-2024 PBR Term	12.7
14	Declining Consumption over the 2022-2024 PBR Term	(11.4)
15	**Revenue Surplus to be Refunded through Re-basing**	**30.7**

538. The revenue surplus to be refunded to customer through the Special Rate Adjustments for Re-basing is comprised of the following:

Transfer of the Biosolids Management Program to Wastewater Treatment

539. Effective April 1, 2022, the Biosolids Management Program will be transferred from Drainage to Wastewater Treatment. This transfer recognizes that biosolids management is an

essential component of wastewater treatment processes and, as such, accountability for biosolids management better resides within EWSI Wastewater Treatment. The $47.5 million reduction in Drainage's 2022-2024 revenue requirement shown in Table 13.3.1-2 is calculated as the sum of the 2022F Biosolids Management Program operating expenses, less revenue offsets, escalated at PBR inflation to 2023 and 2024, as well as depreciation and returns for 2022F to 2024F on approximately $24.0 million of biosolids management facility assets transferred to Wastewater Treatment. The decrease in Drainage's revenue requirement is offset by a corresponding increase in Wastewater Treatment's revenue requirements over the same period.

Table 13.3.1-2
Components of the Special Rate Adjustment for Re-basing
Transfer of the Biosolids Management Program to Wastewater Treatment
($ millions)

		A	B	C	D
		2022F	**2023F**	**2024F**	**2022-2024 Impact**
1	Operating expenses	12.6	17.5	17.8	47.8
2	Franchise fee	1.0	1.4	1.4	3.8
3	Depreciation and amortization	2.0	2.0	2.0	5.9
4	Return on rate base financed by debt	0.5	0.4	0.4	1.2
5	Return on rate base financed by equity	0.5	0.6	0.6	1.7
6	Revenue offsets	(3.5)	(4.7)	(4.8)	(12.9)
7	**Total revenue requirement**	**13.1**	**17.0**	**17.3**	**47.5**

Cost adjustments attributable to the 2018-2021 PBR term

540. The $20.0 million reduction in revenue requirements shown in Table 13.3.1-3 is calculated as the difference between the 2021 forecast revenue requirement escalated at PBR inflation and the 2022 forecast revenue requirement. This amount comprises operating cost savings reflected in the 2022 forecast, partially offset by the full year impact of depreciation on 2021 capital additions, and the increase in returns on rate base attributable to the replacement of low cost debt with higher cost debt and the increase in the rate of return on equity from 4.38% in 2021 to 5.50% in 2022. The resulting $6.5 million difference is escalated at PBR inflation over the 2022-2024 PBR term.

Table 13.3.1-3
Components of the Special Rate Adjustment for Re-basing
Cost Adjustments Attributable to the 2018-2021 PBR Term
($ millions)

		A	B	C	D
		Revenue Requirement			
		2021 F (escalated)	2022 F	Difference	2022-2024 Impact
1	Operating expenses	121.9	98.6	23.3	
2	Franchise Fee	10.9	10.6	0.3	
3	Depreciation and amortization	38.6	38.7	(0.2)	
4	Return on rate base financed by debt	24.5	31.3	(6.8)	
5	Return on rate base financed by equity	28.0	34.5	(6.6)	
6	Revenue offsets	(9.9)	(6.3)	(3.6)	
7	**Total**	**214.0**	**207.5**	**6.5**	**20.0**

Growth in the 2022-2024 revenue requirement

541. This amount is calculated as the difference between the 2022-2024 forecast revenue requirement adjusted for the biosolids transfer and excluding SIRP and CORe, and the 2022 forecast revenue requirement adjusted for the biosolids transfer and excluding SIRP and CORe, held constant to 2024. As shown in Row 5 of Table 13.3.1-4, approximately 75% of the increase in revenue requirements relates to the ramp-up of the applied-for rate of return on equity from 5.50% in 2022 to 7.73% in 2024. The remainder is due to increases in depreciation and interest expense reflecting the impacts of capital additions in both the 2018-2021 PBR term, and the 2022-2024 PBR term, as well as increases in franchise fees related to increases in sanitary utility revenue.

Table 13.3.1-4
Components of the Special Rate Adjustment for Re-basing Growth in the 2022-2024 Revenue Requirement
($ millions)

	A	B	C	D	E
	2022F-2024F Revenue Requirement				
	Total	Biosolids	Total, Adjusted for Biosolids	2022F Constant until 2024	Difference
1 Operating expenses	287.8	47.8	335.6	333.6	(2.0)
2 Franchise fee	33.0	3.8	36.8	35.0	(1.8)
3 Depreciation and amortization	120.6	5.9	126.5	122.0	(4.5)
4 Return on rate base financed by debt	95.6	1.2	96.8	95.2	(1.7)
5 Return on rate base financed by equity	132.3	1.7	133.9	105.2	(28.8)
6 Revenue offsets	(16.9)	(12.9)	(29.8)	(29.3)	0.6
7 **Total**	**652.4**	**47.5**	**699.8**	**661.7**	**(38.1)**

Customer Growth and Consumption per Customer

542. The effects of increased customer counts and declining consumption per customer on the 2022-2024 Re-basing adjustment are summarized in Table 13.3.1-5. Unlike Water and Wastewater Treatment, where the majority of revenues are derived from variable charges, the majority of Drainage revenues are derived from fixed monthly charges, including the sanitary utility flat monthly charge and the fixed stormwater utility rate. Therefore, over the 2022-2024 PBR term, additional revenues from customer growth are forecast to offset the decrease in revenue attributable to declining consumption per customer.

Table 13.3.1-5
Components of the Special Rate Adjustment for Re-basing
Customer Growth and Declining Consumption per Customer
($ millions)

		A **2022 F**	B **2023 F**	C **2024 F**	D **Total**
	Stormwater Utility Revenue				
1	With 2022-2024 forecast customer counts	81.0	83.8	88.5	253.3
2	With 2021 customer counts held constant	79.6	80.9	83.9	244.3
3	Increase in Stormwater Utility revenue attributable to customer growth	1.4	3.0	4.6	9.0
	Sanitary Utility Flat Monthly Charge Revenue				
4	With 2022-2024 forecast customer counts	44.8	45.9	48.1	138.9
5	With 2021 customer counts held constant	44.3	44.7	46.2	135.2
6	Increase in Sanitary Utility revenue attributable to customer growth	0.5	1.2	1.9	3.7
7	**Combined Increase in revenue attributable to customer growth**	**1.9**	**4.2**	**6.5**	**12.7**
	Sanitary Utility Variable Charge Revenue				
8	With 2022-2024 forecast consumption per customer	84.4	87.1	91.1	262.7
9	With 2021 consumption per customer held constant	89.0	90.8	94.3	274.1
10	**Decrease in revenue attributable to declining consumption**	**(4.5)**	**(3.6)**	**(3.2)**	**(11.4)**

543. EWSI proposes to implement the Special Rate Adjustment for Re-basing as follows. First, the $47.5 million adjustment related to the Biosolids Management Program transfer will be made entirely in 2022. Although this adjustment results in a substantial decrease to Drainage rates, it is offset by corresponding increases to Wastewater Treatment rates. The remainder of the Special Rate Adjustment for Re-basing will be spread equally over the 2022-2024 PBR term. The Special Rate Adjustment for Re-basing will be applied uniformly to the Sanitary Utility fixed monthly charge, the Sanitary Utility monthly variable charge and the Stormwater Utility rate.

13.3.2 Special Rate Adjustment for 90 Day Deferral Program

544. On March 18, 2020, Alberta announced "Albertans who are experiencing financial hardship directly related to the COVID-19 pandemic can work with their utility company to defer electricity and natural gas bills until June 19, 2020 without any late fees or added interest payments." The option to defer payment applied to residential, farm and small commercial electricity consumers with sites that consume less than 250,000-kilowatt hours of electricity per year and to residential, farm and small commercial natural gas consumers with sites that consume less than 2,500 gigajoules per year. This program for electricity and gas customers is known as the "Utility Payment Deferral Program".

545. The Government of Alberta requested that Alberta municipalities develop similar utility payment deferral programs for municipal utility bills. On March 20, 2020, Edmonton City Council approved a 90-day deferral program for deferral of waste utility bills for customers in need. On March 24, 2020, Mayor Don Iveson, in accordance with a City Council Motion[33], sent a letter to EPCOR requesting that EPCOR implement a program to allow customers to defer water, wastewater treatment and drainage utility bill payments, without interest or penalty, for a 90-day period from March 18, 2020 to June 18, 2020.

546. On May 12, 2020, Alberta's Utility Payment Deferral Program Act (the "Act"), received royal assent in the Legislative Assembly of Alberta. The Act sets out the Electricity Utility Payment Deferral Program (Part 1); the Gas Utility Payment Deferral Program (Part 2) and the powers granted to the AUC to implement these programs (Part 3).

547. The Act allows regulated rate service providers to establish a deferral account to track and recover the costs for administering the deferral of customer payments, interest expenses and any incremental bad debts costs. The Act allows carrying charges to be applied to the deferral account balances to be calculated at the regulated rate service provider's weighted average cost of capital. Regulated rate service providers are to apply to the Commission for approval of a rate rider to recover the prudently incurred costs accrued to the deferral account during the period June 19, 2021 to June 18, 2022.

548. EPCOR's utility payment deferral program was structured to be in compliance with the Utility Payment Deferral Program Act for its electricity and gas customers. EEA, as EPCOR's retail service provider, delivered and managed a consistent and coordinated program across all of the EPCOR utilities. As such, the utility payment deferral programs for EWSI's Water Services, Wastewater Treatment, and Drainage were aligned, to the extent possible, with Alberta's requirements for electricity and gas programs described above.

549. Table 13.3.2-1 summarizes the incremental bad debt expense, administration, and carrying costs associated with the 90 Day Deferral Program. In the 2022-2024 PBR Application EWSI is proposing to apply Special Rate Adjustments to the sanitary fixed monthly charge and to the stormwater rate in 2022 to recover the $1.6 million cost of the 90 Day Deferral Program. These Special Rate Adjustments will add $0.32 to the average residential bill in 2022, and will be removed from customer bills in 2023. EWSI also proposes to adjust its final rate to reflect the

[33] http://sirepub.edmonton.ca/sirepub/mtgviewer.aspx?meetid=2703&doctype=MINUTES

actual costs incurred for this program as part of its 2022 Rates Filing which would be approved by the City Manager.

Table 13.3.2-1
Components of 90 Day Deferral Program
Special Rate Adjustment
($ millions)

	Item	A Expense
1	Incremental Bad Debt Expense	1.2
2	Late Payment Charges	0.2
3	Carrying Costs	0.2
4	**Total Revenue Requirement**	**1.6**

13.3.3 Special Rate Adjustments for SIRP and CORe

550. EWSI is proposing to apply Special Rate Adjustments to sanitary and stormwater rates to recover the costs of SIRP and CORe over the 2022-2024 PBR term. The forecast costs of SIRP and CORE, shown in Section 4 and summarized in Table 13.3.3-1 below, are calculated in accordance with the cost of service methodologies described in Section 12. Consistent with the non-routine adjustments, the Special Rate Adjustments for SIRP will be applied to the stormwater rate and the Special Rate Adjustments for CORe will be applied to the sanitary monthly variable charge. The impact of these Special Rate Adjustments on the average monthly residential bill are shown on line 7 of Table 13.3.3-1.

Table 13.3.3-1
SIRP and CORe Revenue Requirements
Recovered through Special Rate Adjustments
($ millions)

		A	B	C	D	E	F
		CORe			**SIRP**		
		2022F	**2023F**	**2024F**	**2022F**	**2023F**	**2024F**
1	Operating Costs	5.4	4.1	5.5	6.6	7.4	7.8
2	Franchise Fees	1.1	1.2	1.6	-	-	-
3	Depreciation and Amortization	1.5	2.1	2.7	1.7	4.1	6.3
4	Return on Rate Base Financed by Debt	2.0	2.5	3.4	1.2	2.7	4.0
5	Return on Rate Base Financed by Equity	4.1	5.4	7.1	2.4	5.6	8.3
6	**Total Revenue Requirement**	**14.2**	**15.2**	**20.4**	**12.0**	**19.8**	**26.4**
7	**Average Residential Bill Impact ($/month)**	**2.82**	**2.37**	**3.51**	**2.29**	**3.33**	**4.25**

13.4 Summary of Bill Impacts

551. Over the 2022-2024 PBR term, sanitary rate increases include PBR inflation and Special Rate Adjustments for Re-basing, the 90 Day Deferral Program and CORe. Stormwater Utility rate increases include PBR inflation and Special Rate Adjustments for Re-basing, the 90 Day Deferral Program and SIRP. The impacts of these rate increases on sanitary utility and stormwater utility bills for the average residential customer, the average multi-residential customer and the average commercial customer are shown on Tables 13.4-1, 13.4-2 and 13.4-3 below.

Table 13.4-1
Bill Impacts on the Average Residential Customer
($/month)

		A **2022 F**	B **2023 F**	C **2024 F**	D **Total / Average**
	Sanitary Utility				
	Annual Rate Increase (%)				
1	Normal Operations (i-x)	2.08%	2.08%	2.08%	
2	SRA – Re-basing	-5.84%	1.83%	1.83%	
3	SRA – 90 Day Deferral Program	0.90%	-0.93%	0.00%	
4	Annual Rate Increase, excluding CORe	-2.86%	2.99%	3.91%	
5	Impact of Declining Consumption	0.00%	-1.02%	-1.04%	
6	Current Year Bill Increase, excluding CORe	-2.86%	1.97%	2.88%	0.7%
7	SRA – CORe	7.06%	-1.84%	3.94%	3.0%
	Average Bill Impact ($)				
8	Average Monthly Bill	27.41	27.45	29.32	
9	Change in Bill	1.10	0.04	1.87	3.01
10	Average Bill Increase (%)	4.2%	0.1%	6.8%	3.7%
	Stormwater Utility				
	Annual Rate Increase (%)				
11	Normal Operations (i-x)	2.08%	2.08%	2.08%	
12	SRA – Re-basing	-5.84%	1.83%	1.83%	
13	SRA – 90 Day Deferral Program	0.72%	-0.75%	0.00%	
14	Annual Rate Increase, excluding SRA - SIRP	-3.04%	3.17%	3.91%	1.3%
15	SRA – SIRP	11.72%	6.48%	4.80%	7.7%
	Average Bill Impact ($)				
16	Average Monthly Bill	14.96	16.40	17.83	
17	Change in Bill	1.20	1.44	1.43	4.07
18	Average Bill Increase (%)	8.7%	9.6%	8.7%	9.0%
	Combined Sanitary and Stormwater Utilities				
19	Average Monthly Bill	42.37	43.85	47.15	
20	Change in Bill	2.30	1.48	3.30	7.08
21	Average Bill Increase	5.7%	3.5%	7.5%	5.6%

552. Table 13.4-1 shows that over the 2022-2024 PBR term, increases in residential bills are largely attributable to SIRP and CORe, with CORe increasing the average residential sanitary utility bill by 3.0% annually and SIRP increasing the average stormwater Utility bill by 7.7% annually. The increase in residential Sanitary Utility and Stormwater Utility bills excluding SIRP and CORe is due to savings from the re-basing reductions discussed in Section 13.3.1 and decreases in forecast consumption.

Table 13.4-2
Bill Impacts on the Average Multi-Residential Customer
($/month)

		A	B	C	D
		2022 F	**2023 F**	**2024 F**	**Total / Average**
	Sanitary Utility				
	Annual Rate Increase (%)				
1	Normal Operations (i-x)	2.08%	2.08%	2.08%	
2	SRA – Re-basing	-5.84%	1.83%	1.83%	
3	SRA – 90 Day Deferral Program	0.23%	-0.24%	0.00%	
4	Annual Rate Increase, excluding CORe	-3.52%	3.67%	3.91%	
5	Impact of Declining Consumption	0.00%	-0.42%	-0.42%	
6	Current Year Bill Increase, excluding CORe	-3.52%	3.25%	3.49%	1.1%
7	SRA – CORe	10.77%	-2.75%	6.03%	4.7%
	Average Bill Impact ($)				
8	Average Monthly Bill	537.50	540.16	591.58	
9	Change in Bill	36.31	2.67	51.42	90.39
10	Average Bill Increase (%)	7.2%	0.5%	9.5%	5.8%
	Stormwater Utility				
	Annual Rate Increase (%)				
11	Normal Operations (i-x)	2.08%	2.08%	2.08%	
12	SRA – Re-basing	-5.84%	1.83%	1.83%	
13	SRA – 90 Day Deferral Program	0.72%	-0.75%	0.00%	
14	Annual Rate Increase, excluding SRA - SIRP	-3.04%	3.17%	3.91%	1.3%
15	SRA – SIRP	11.72%	6.48%	4.80%	7.7%
	Average Bill Impact ($)				
16	Average Monthly Bill	117.13	128.43	139.62	
17	Change in Bill	9.36	11.30	11.19	31.86
18	Average Bill Increase (%)	8.7%	9.6%	8.7%	9.0%
	Combined Sanitary and Stormwater Utilities				
19	Average Monthly Bill	654.63	668.59	731.20	
20	Change in Bill	45.67	13.96	62.61	122.25
21	Average Bill Increase	7.5%	2.1%	9.4%	6.3%

553. Similar to residential bills, Table 13.4-2 shows that over the 2022-2024 PBR term, increases in multi-residential bills are largely attributable to SIRP and CORe. The differences in the percentage increases in sanitary utility bills between the residential and multi-residential customer classes relates to changes in consumption per customer, since residential consumption per customer is forecast expected to decrease at a faster rate than multi-residential consumption per customer. The percentage increase in stormwater bills is the same as that of the residential customer class because of the flat rate structure.

Table 13.4-3
Bill Impacts on the Average Commercial Customer
($/month)

		A	B	C	D
		2022 F	**2023 F**	**2024 F**	**Total / Average**
	Sanitary Utility				
	Annual Rate Increase (%)				
1	Normal Operations (i-x)	2.08%	2.08%	2.08%	
2	SRA – Re-basing	-5.84%	1.83%	1.83%	
3	SRA – 90 Day Deferral Program	0.52%	-0.54%	0.00%	
4	Annual Rate Increase, excluding CORe	-3.23%	3.37%	3.91%	
5	Impact of Declining Consumption	0.00%	3.73%	1.85%	
6	Current Year Bill Increase, excluding CORe	-3.23%	7.10%	5.77%	3.2%
7	SRA – CORe	9.14%	-2.06%	5.55%	4.2%
	Average Bill Impact ($)				
8	Average Monthly Bill	132.02	138.67	154.37	
9	Change in Bill	7.36	6.66	15.70	29.72
10	Average Bill Increase (%)	5.9%	5.0%	11.3%	7.4%
	Stormwater Utility				
	Annual Rate Increase (%)				
11	Normal Operations (i-x)	2.08%	2.08%	2.08%	
12	SRA – Re-basing	-5.84%	1.83%	1.83%	
13	SRA – 90 Day Deferral Program	0.72%	-0.75%	0.00%	
14	Annual Rate Increase, excluding SRA - SIRP	-3.04%	3.17%	3.91%	1.3%
15	SRA – SIRP	11.7%	6.5%	4.8%	7.7%
	Average Bill Impact ($)				
16	Average Monthly Bill	185.50	203.46	221.20	
17	Change in Bill	14.80	17.96	17.74	50.50
18	Average Bill Increase (%)	8.7%	9.7%	8.7%	9.0%
	Combined Sanitary and Stormwater Utilities				
19	Average Monthly Bill	317.51	342.13	375.57	
20	Change in Bill	22.16	24.62	33.44	80.22
21	Average Bill Increase	7.5%	7.8%	9.8%	8.3%

554. As shown in Table 13.4-3, sanitary utility bills for commercial customers are forecast to increase at a greater rates than other classes because consumption per customer is forecast to increase over the PBR term as the economy recovers from the pandemic.

14.0 PERFORMANCE MEASURES

14.1 Overview

555. EWSI has prepared the EPCOR Drainage Services and Wastewater Treatment Bylaw in accordance with the *EPCOR Rates Procedure Bylaw No. 12294*, as amended, ("Rates Procedure Bylaw") Subsections 5(e) and 5(f), which state that "utility services are to be provided in a manner that reflects reasonable environmental management in comparison to industry benchmarks" and that "performance will be assessed by reference to industry benchmarks". The following defines these performance measures, the rationale for their selection and the performance level or standards at which Drainage Services is expected to perform. Where possible, comparisons to other jurisdictions or to industry benchmarks are provided.

14.1.1 Framework for Performance Measures

556. A framework for the categorization of performance measures has been established to define the critical areas of operational performance that EWSI must meet. This framework was established at the inception of the Water PBR in 2002 and has been maintained since that time. Drainage Services uses the same general framework as Water and Wastewater Treatment except that drainage's limits the Water Quality and Environment index to just environmental measures, given the nature of the utility.

557. For the 2022-2024 PBR, the operational performance of Drainage Services will be assessed under four categories:

1. Environment;
2. Customer Service;
3. System Reliability and Optimization; and
4. Safety.

558. Each of these categories contains individual performance measures that represent the more specific performance standards expected. The performance standards are based on historic trending and targeted future performance and where available, aligned with industry benchmarks. With each PBR renewal, EWSI typically revises the PBR performance metrics through updating the standards of performance (where possible) and introducing new metrics to better align with operational priorities and strategic goals. However, the current performance metrics for Drainage Services was only introduced January 1, 2020 and has not yet completed a full reporting cycle. EWSI is proposing to maintain that program including all metrics as approved

by City Council in February, 2020 through the 2022-2024 PBR term given it has only recently been introduced. The only exception to this an expansion of the Sewer Renewal Metric to include renewal programs introduced since the initial approval.

559. A single standard of performance is generally applied to all years of a PBR term and then that standard is reset for the next term. The Utility Committee has requested that annual standards or targets be set for the metrics intended to assess the implementation of the SIRP and CORe programs, namely Green Hectares and Sewer Odour Hotspots. Unlike most metrics that are outcome based on operational performance, SIRP and CORe are primarily driven by defined deliverables which will lead to outcomes in later time periods. Metrics targets aligned with the planned deliverables are therefore likely a better gauge of those programs. The specifics of this approach are more fully detailed in the individual metrics descriptions below.

560. The selection of performance measures and their category weightings have been reviewed by customers as a component of the stakeholder engagement process completed by EWSI as part of PBR development activities. In particular, stakeholders have been asked to comment on the priority of the various performance categories to ensure their weightings are aligned with stakeholder expectations. This has resulted in these category weightings being updated from that used in the 2020 ands 2021 performance program.

14.1.2 Assessment of Performance

561. Actual performance is assessed against the standard for each metric on an annual basis. An audit is conducted to provide assurance that all measurement and reporting of these measures by EWSI has been externally verified (Note for the 2022-2024 period, EWSI is proposing that EPCOR internal audit department conducts these audits). If EWSI does not meet the standard, financial penalties are applied to a maximum of $2,400,000 per annum ($1 million for Drainage, $1 million for Water and $400,000 for Wastewater). If a penalty amount is assessed, that amount is returned to the customers in the form of a rate rebate. The proposed weighting and penalty amounts applicable to each performance category for water are detailed in Table 14.1.2-1. The weightings of the performance categories have been updated from those used in the 2020-2021 term based on the stakeholder engagement surveys

Table 14.1.2-1
Drainage Performance Measures Indices and Penalties

	Performance Category	A 2020-2021 Weighting	B 2022-2024 Weighting	C 2022-2024 Maximum Penalty
1	Environmental Index	40%	35%	$350,000
2	Customer Services Index	20%	20%	$200,000
3	System Reliability/Optimization Index	25%	30%	$300,000
4	Safety Index	15%	15%	$150,000
5	Total	100%	100%	$1,000,000

562. The weightings and financial penalties of the indices are different between Drainage, Water and Wastewater treatment operations in order to reflect the different nature of the operations and stakeholder expectations. There is also no financial reward to EWSI for exceeding performance standards. The purpose of the standards are to ensure that the level of service provided to customers does not degrade over the PBR period. EWSI is already performing at a high level and wants to present rates that are stable and predictable. The addition of a financial reward for performance that exceeds the standards is inconsistent with that goal.

14.1.3 EWSI's Performance Experience

563. As noted above, the current Drainage metrics program commenced January 1, 2020. When drainage initially transitioned to EPCOR, the existing City of Edmonton performance program was maintained in order to ensure continuity of service as well as to allow sufficient time to develop a track record upon which to base a new metrics program. The requirements and expectations for the new program was detailed in a Letter of Intent that documented the transfer from the City to EPCOR. The Letter of Intent included the following statement related to establishing performance measures:

> *"Service quality metrics patterned after current Drainage Utility service quality metrics, with appropriate targets detailed in a manner similar to Schedule 3 of Bylaw 17698 EPCOR Water and Wastewater Treatment Bylaw."*

564. EWSI developed a PBR style metrics program in late 2019 and sought approval through the Utility Committee. The proposal culminated in the introduction of the current metrics program through a bylaw amendment. Under provisions of the Bylaw, EWSI reports on its actual performance results on each of the performance measures as part of its annual PBR Progress Report (presented to City of Edmonton Utility Committee) and the annual Drainage rate filing.

The overall performance is determined on a point basis with 100 base points available if the standards for all four performance indices are achieved. Drainage, Water and Wastewater Treatment individually have a 100 point benchmark. Total points are determined by the summation of points available for each performance measure. Bonus points are also available for performance above standards and financial penalties are applied if EWSI does not meet the 100 base point standard (note: on an individual index basis, with some performance measures, such as blocked sewers, a lower-than-standard score represents performance above standards while for other measures a higher score indicates better performance).

14.1.4 Performance Benchmarks

565. In an effort to provide references to external benchmarks when establishing the standards for the proposed PBR performance measures, EWSI investigated the metrics used by other utilities as well as benchmarking studies conducted by various water and wastewater associations. This latter group included: the American Water Works Association (AWWA), the leading North American drinking water industry association, the Water Environment Federation, the leading wastewater industry association, and the Office of Water Services (Ofwat), the primary water regulators in the United Kingdom.

566. Despite these efforts, it has proven challenging to find either other utilities that use an approach similar to EWSI's score card or specific, broad based industry benchmarks for the majority of the individual performance measurements proposed. While some utilities tend to use some of the individual measures similar to EWSI, benchmark comparisons with these utilities have proven to be not directly comparable due to factors such as plant and distribution system configuration, operating conditions, regulatory requirements, environmental factors, raw water and wastewater conditions and weather. Where available, comparable benchmarks are described in the subsequent sections describing the individual metrics. Where there are no external benchmarks, performance trends over a considerable period of time or the established level of performance as reviewed by external stakeholders are the basis upon which the proposed standards are established.

14.2 Drainage Services Performance Measures

567. Table 14.2-1 details the proposed 2022-2024 Drainage Services performance measures, the accompanying expected standards that are to be achieved and applicable points. The base points "available" are earned by achieving performance that meets the standard. Their relative weighting has been adjusted based on stakeholder input from those used on 2020-2021.

Table 14.2-1
Drainage Services Quality Measures

	A Index Measures	B Measure	C 2022-24 Standard	D Avail.	E Points Bonus	F Total
1	**Environmental Index**			35	3.5	38.5
2	Stormwater Flow Monitoring	% of area (hectares) monitored	63%	11.67		
3	Environmental Incidents	# of incidents	50	11.67		
4	Green Hectares	Area managed by green infrastructure	2022-45 2023-90 2024-180	11.67		
5	**Customer Service Index**			20	2.0	22.0
6	Service Maintenance Calls	% resolved within 24 hours	80%	5		
7	Emergency Dig Ups - Service Restored	% restored within 48 hours once deemed an emergency dig up	98%	5		
8	Service Connections	% meeting 6 week target	85%	5		
9	Sewer Odour Hotspots	% coverage area of sewer odour hotspots	2022-15.0% 2023-14.5% 2024-14.0%	5		
10	**Reliability and Optimization Index**			30	3.0	33.0
11	Blocked Sewers	# blocked mainline sewers per 100 km	2.1	7.5		
12	Sewer Renewal	# kms of sewers renewed	60	7.5		
13	Infrastructure Condition Rating - Minimum Level	% of infrastructure at or above minimum level of condition rating	90	7.5		
14	Full Property Flood Inspections	# Completed	750	7.5		
15	**Safety Index**			15	1.5	16.5
16	Near Miss Reporting	# completed	750	3.75		
17	Worksite Inspections / Observations	# completed	1,300	3.75		
18	Lost Time Frequency Rate	Frequency Rate	0.75	3.75		
19	All injury Frequency Rate	Frequency Rate	4	3.75		
20	**Total Point to be Earned**			100	10	110

14.2.1 Environmental Index

568. Drainage Services recognizes that the environment is common to all stakeholders and requires thoughtful stewardship and accountability by all users to sustain its quality and preserve it for future generations. Similarly, EPCOR conducts its electricity and water/wastewater treatment businesses in a responsible and open manner that is environmentally, socially, and economically sustainable.

569. With the transition to EPCOR, Drainage Services has completed a number of activities in order to improve the assessment of its environmental performance. Specifically, the Approvals to Operate have been separated from those of City of Edmonton facilities. In 2018, Drainage Services also converted its environmental management system registration to the ISO 14001:2015 standard. Drainage Services will continue to evaluate trends, industry standards and performance with the goal of continued environmental leadership within the framework of environmental compliance and regulatory reporting requirements.

570. The Environmental Index is comprised of the following three equally weighted factors:

1. Stormwater Flow Monitoring
2. Environmental Incidents
3. Green Hectares

14.2.1.1 Stormwater Flow Monitoring

571. Stormwater flow monitoring measures the percentage of the total number of developed catchment areas where discharges are monitored. Flow measurement at storm sewer outfalls is part of Drainage Services' requirement for load measurement to satisfy Alberta Environment and Parks (AEP) Approval requirements. It also aids in loading estimations for setting environmental targets in storm sewer systems as well as evaluating flow and volume controls in developed areas and facilitates the development of the Total Loadings Plan and the SIRP. In areas of the City where stormwater flow is not monitored, estimation processes are used. Working towards a higher level of monitoring decreases reliance on estimation and enhances the accuracy of flow model calibration.

572. The Stormwater Flow Monitoring is based on the area (hectares) that are monitored as a percentage of the total qualifying area, which is the sum of hydrologically-effective drainage areas serviced by outfalls as per Drainage design standards. As stormwater flow monitoring was

recently added, historic performance is limited. The only available results are from 2019 where a 63.0% monitoring level was achieved.

573. For the 2022-2024 period, Drainage Services is proposing to set the performance standard for Stormwater Flow Monitoring at 63.0%.

14.2.1.2 Environmental Incidents

574. Drainage Services is committed to improvement in environmental performance and to reducing the number of incidents that are reportable to the provincial or federal regulator. This measure tracks the number of environmental incidents that are both internal and reportable. Internal incidents are environmental incidents involving the operation, construction and design of the sanitary and storm collection system. Since transferring to EPCOR, Drainage Services has been focused on the alignment of reporting, tracking of incidents with other utilities and operational groups within EPCOR, and promoting the reporting of internal incidents within the framework of the ISO 14001:2015 registered Environmental Management Systems (EMS). Reportable incidents are determined as per the Guidance Document for Reportable Environment and Public Health Incidents for EPCOR Drainage Services – May, 2019. This includes:

- Contraventions of a facility regulatory approval / permit / Code of Practice.
- Any contravention of any Federal or Provincial Act, Regulation or Municipal Bylaw or statute.
- A spill or release (including untreated or partially treated wastewater) of material to the environment that is not fully contained.
- A release of chlorinated water (potable or super-chlorinated) directly into a watercourse.
- Releases from the collection system that cause natural area site erosion, sediment transport or habitat destruction.

575. The environmental performance measures is based on incidents that are reportable based on external (Government) guidelines.

576. In establishing a performance standard for environmental incidents, it has been determined that the number of incidents at any particular utility is highly dependent upon that utility's operational parameters and procedures, maintenance criteria and a wide variety of other factors that are not comparable to Drainage Services operations. Therefore, an external

benchmark for this metrics has not been determined. It is noted, however, that "Non-conformance, Corrective and Preventative Action" is an element of an ISO 14001:2015 environmental management system and the inclusion of this metrics remains part of a comprehensive environmental program.

577. Establishing a standard for the Environmental Incidents is seen as important to include as the measure assesses environmental responsibility and is generally comparable to the performance measure used with Water Services and Wastewater Treatment. Drainage Services does not have the historical data to categorize incidents as preventable and non-preventable as is currently done in Water Services and Wastewater Treatment[34]. Drainage Services has included this measure to ensure incidents are visible to all stakeholders.

578. For the 2022-2024 PBR term, Drainage Services is proposing to set the performance standard for Environmental Incident Report at 50 incidents per year. This is based on an extrapolation of recent incidents.

14.2.1.3 Green Hectares

579. The SIRP program is classified under five central themes: Slow, Move, Secure, Predict and Respond. One of the more prominent themes is the investment in "Slow." That is, slowing the entry of stormwater into the drainage network through large-scale implementation of green infrastructure to manage runoff at the source and reduce demands on the collection system during storm events. Approximately $500 million of the total SIRP capital program has been proposed to be invested over the next twenty to thirty years to green Edmonton's stormwater infrastructure and keep stormwater out of the collection system.

580. To track the implementation of the green infrastructure capital programs, Drainage is proposing a performance measure based on the approach that utilizes green infrastructure to manage the first 15 mm of runoff (1 in 2 year frequency event or 95% of storm events in Edmonton) from 1 hectare of impervious land. An equivalent methodology is used in both New York City and Philadelphia to track their flood mitigation efforts.

[34] Water and Wastewater Treatment's environmental incidents performance measures assess incidents that are deemed to have been both preventable and reportable. Preventable incidents are those incidents that involve a failure to meet performance limits, failure to follow procedures or take reasonable measures to prevent an incident. Non-Preventable incidents are those incidents where the root cause is not with EWSI's control. Drainage Services does not have the historical data to categorize incidents as preventable and non-preventable at this time, however, the criteria and exceptions to be able to measure internal environmental incidents deemed both reportable and preventable will developed in order to align the Drainage metrics with Water Services and Wastewater Treatment for the next PBR Rate Application

581. A greened hectare represents a volume of runoff managed by a green infrastructure (GI) or LID practice. A greened hectare is the volume of managed runoff spread evenly over an area of 15 mm depth. The greened hectare metric aligns with the SIRP Strategy by determining the impervious hectares managed by GI/LID practices. These GI/LID practices may include stormwater storage, bioretention, soils cells, and pocket/small dry ponds. Larger dry ponds are not included in this performance metric as they are only operational during large storm events

582. The green hectare metric will be calculated by summing the volume of runoff managed by green infrastructure commissioned each year and spreading that volume over a 15 mm depth. Drainage Services set the green hectare standard at 22 total green hectares per year for 2020 and 2021 as outlined in Table 14.2.1.3-1. For the 2022-2024 PBR term, EWSI is proposing to set the performance standard at a successively high number each year in order to recognize the planned installation of the infrastructure.

Table 14.2.1.3-1
Green Hectares

		A	B	C	D	E
					PBR #1 (2022-2024)	
		2020	**2021**	**2022**	**2023**	**2024**
1	Annual Target	22	22	45	90	180
2	Cumulative		44	89	179	359

14.2.2 Customer Service Index

583. The customer service index is a composite measure of the customers' perception of satisfaction with Drainage Services' level of service and the speed of response to customer issues. These measures are important because they represent the direct contact that customers have with Drainage Services and communicate how well citizens are being served. This index is comprised of four equally weighed factors:

- Service Maintenance Calls
- Emergency Dig Ups – Service Restored
- Service Connections
- Sewer Odour Hotspots

14.2.2.1 Service Maintenance Calls

584. The Service Maintenance Call metric measures the percentage of sewer trouble calls resolved within 24 hours. Sewer trouble occurs when there is an interruption of service as a result of pipe deficiency or blockage within the main service line. Sewer trouble calls are considered resolved when a service maintenance crew has restored service to the customer by means of mechanical obstruction removal or high pressure flushing, or a service maintenance crew has completed their investigation and determined that:

- an emergency open cut repair is required to restore service to the customer;
- the sewer trouble is a result of a private plumbing issue; or
- there is no access to enable resolve - a no access situation is considered when the main clean out is not available for crews to perform work.

585. The Service Maintenance call metrics can be adjusted for emergency situations. Specifically, during a major storm event, notifications received from customers related to flooding or displaced manhole/catch basin covers take precedence over sewer trouble call requests given the potential danger to the public. As a result, the response to sewer trouble calls during a storm event with an overall rating of E3 or higher will not contribute to the measure. An E3 event is defined as: Ponding near catch basins; eaves troughs starting to overflow; and sewers are almost full.

586. Service Maintenance Call Resolution is a recently introduced metric, so historic performance is limited. For 2018, 81.7% of calls were resolved in 24 hours.

587. For 2020-2021, Drainage Services set the performance standard for service maintenance calls at 80% of calls resolved within 24 hours. That level of performance represented a continuation of the most recent results for which data is available while providing a small degree of allowance for variations and currently unknown factors that will occur over time. EWSI is proposing to maintain the 80% standard for the 2022-24 PBR term.

14.2.2.2 Emergency Dig-Ups – Service Restored

588. The emergency dig-up metric assesses the service restoration performance when a customer's sanitary and/or storm service line ceases to function. When a call is received indicating a service connection no longer functions, a drainage operations crew responds and determines whether the service can be repaired from the surface or if it must be excavated to

make the necessary repairs to restore the customer's service. If it is a surface repair, the operations crew completes the work. If the issues required excavation to complete the repair, the issue is transferred to an open cut construction crew to complete the repair as an emergency dig up. This measure provides the percentage of emergency dig ups restored within 48 hours from the time the call is deemed an emergency dig up.

589. This measure has been used for a number of years by Drainage Services to monitor performance on customer service and work delivery processes. When a customer is deemed to require an emergency dig up they are no longer able to use their sewer and/or storm service without risk of damage to their property as a result of a backup and as such restoration is required as soon as possible.

590. The emergency dig-up measure is calculated as the percentage of instances restored within 48 hours. The past six years of results for emergency dig-ups are detailed in Table 14.2.2.2-1.

Table 14.2.2.2-1
Emergency Dig-ups – Service Restored

	A **Year**	B **Percentage Restored within 48 Hours**
1	2014	100.0%
2	2015	98.7%
3	2016	98.1%
4	2017	98.4%
5	2018	100.0%
6	2019	88.3%[35]
7	6 Year Average	97.3%

591. For the 2020-2021 period, Drainage Services set the performance standard for emergency dig-ups at 98% restored within 48 hours and is proposing to continue at that level for the 2022-2024 PBR term. This level of performance takes into account the average of the past 6 years as well as a review of factors that have impacted past results. Specifically, there is considerable variability in the timing and severity of emergency dig-ups which can impact restoration times. On average, there are 50 emergency dig-ups per year and achieving a 98% restoration target would result in 49 being restored in 48 hours.

[35] 2019 reporting is low as is the result of a process error where service restorations for July and August were not counted in the total. Process changes have been implemented to prevent a reoccurrence.

14.2.2.3 Service Connections

592. The service connections measure tracks the time it takes to complete the installation of a new sanitary, storm, or common trench water service connection (<50mm). Improvements in Service Connection response increases customer service through improvement to service connection time, better work delivery and improved customer processes. This performance measure does not include water service connections greater than 100mm as these require a separate trench and have not historically been included in the metric.

593. The service connection metric is the percentage of service connections completed within 6 weeks. This measure has been used for a number of years by Drainage Services. The past six years of results for service connections are detailed in Table 14.2.2.3-1.

Table 14.2.2.3-1
Service Connection Completions

	A Year	B Percentage Completed in 6 Weeks
1	2014	77.7%
2	2015	86.1%
3	2016	68.2%
4	2017	27.5%
5	2018	87.5%
6	2019	72.4%
7	6 Year Average	69.9%

594. For 2020-2021, Drainage Services set the performance standard for service connections at 85% completed within 6 weeks and proposed to continue at that standard for the 2022-2024 PBR term. This standard is above the average historic performance but is aligned with the high levels of performance achieved in 2018 which is seen as more representative of planned future performance.

14.2.2.4 Sewer Odour Hot Spots

595. The development of an Odour Mitigation Strategy is one of the key deliverables in the Drainage Services Operational Plan. That plan, now known as the CORe Strategy was presented to Utility Committee on June 28, 2019. The sewer odour hot spots metric aligns with that strategy by determining the percentage of city-wide coverage area of sewer odour hotspots. A sewer odour hotspot is a defined region where the number of odour reports spatial density exceeds a defined threshold of 10 reports per square kilometer. The number of odour reports include

reports received from customers or EWSI field staff. The percentage of city wide coverage area of sewer odour hotspots is calculated based on the total area of sewer odour hotspots (in terms of square km) divided by the total area of the municipality (in square km).

596. For the 2022 to 2024 PBR period, the total area of the municipality has been updated to the municipal franchise area as of 2019 (768 km^2) to include the annex area and has been applied retroactively to years prior to 2019. Previously, the total area of the municipality was defined as 685 km^2. The impact on including the annex area will reduce the percent coverage across the board by 9% of what it was previously. As a result, a hotspot percent coverage previously at 16% of the city it is now 14.5%.

597. Performance in subsequent years will also be calculated using a 5 year data period up to the year of the performance evaluation. For example to evaluate the year 2018, odour reports from the years 2014 to 2018 (inclusive) are considered. The performance measure will only consider changes to the sewer odour hotpots identified within the baseline period as they are within the scope of the current CORe.

598. The historical results for sewer odour hot spots are detailed in Table 14.2.2.4-1

Table 14.2.2.4-1
Rolling Five-Year Average of Sewer Odour Hot Spot Coverage

	A **Year**	B **Sewer Odour Hotspots Coverage Area**
1	2010 – 2014	22.1%
2	2011 – 2015	21.7%
3	2012 – 2016	19.6%
4	2013 – 2017	17.4%
5	2014 – 2018	16.7%
6	2015 – 2019	8.6%
7	6 Year Average	16.3%
8	PBR #1 - 2022	15.0%
9	PBR #1 - 2023	14.5%
10	PBR #1 - 2024	14.0%

599. For 2020-2021, Drainage Services set the performance standard for Sewer Odour Hot Spots at 16.7% of city wide area coverage area. This standard was based the 2014-2018 5-year average in recognition of the downward trend in odour hotspots since the 2010-2014 reporting period.

600. For 2022, EWSI is proposing to set an annual performance standard for Sewer Odour Hot Spots at 15.0% of city wide area coverage area. This target is based on the historical odour reporting rates in the past 10 years. The target for Sewer Hot Spots are 14.5% and 14.0% for 2023 and 2024 respectively. EWSI is proposing to decrease these targets over the 2022-2024 PBR term to correspond with the on-going implementation of the CORe Strategy.

14.2.3 System Reliability and Optimization Index

601. System reliability and optimization asses the overall management of the drainage system. They are also directly aligned with the degree of confidence that customers can place in the system. This index is comprised of four equally weighed factors:

- Blocked Sewers
- Sewer Renewal
- Infrastructure Condition Rating – Minimum Level
- Full Property Flood Inspections

14.2.3.1 Blocked Sewers

602. The Blocked Sewer metric measures the number of blocked sewer mains in the sanitary and combined sewer systems (storm sewers are not included in this measure). The measure is determined as the number of sewer main blockages per 100 kilometers of total sanitary and combined pipes. Blockages may be due to grease build up, debris or foreign objects, tree root intrusion, poor hydraulics or sewer line collapse due to deteriorated sewer pipes. A blocked sewer mainline may result in sewage back up, sewer service interruptions or overflow.

603. The blocked sewer metric assess the efficacy of the Drainage Service's preventive maintenance programs designed to lessen/eliminate blocked sewers. Preventative maintenance entails proactive cleaning and inspection of wastewater mainlines. Monitoring efforts on this measure are key to ensuring that blockages in sewer pipes, which may cause service interruptions, are minimized.

604. The blocked sewer metric has been used for several years and is based on the number of blocked mainline sewers per 100km. The historical results for Blocked Sewers are detailed in Table 14.2.3.1-1.

Table 14.2.3.1-1
Blocked Sewers per 100 km

	A Year	B Blocked Sewers per 100 km
1	2014	3.90
2	2015	2.24
3	2016	1.95
4	2017	1.96
5	2018	2.46
6	2019	2.37
7	6 Year Average	2.48

605. For 2020-2021, Drainage Services set the performance standard for blocked sewers at 2.1 blocked mainline sewers per 100km. This standard is based on a higher level of performance than seen in the average of the past 5 years of performance and is proposed to be maintained for the 2022-2024 PBR term.

14.2.3.2 Sewer Renewal

606. The Sewer Renewal metric assess the number of kilometers of sewer pipes that have been renewed. Renewing a sewer pipe extends the life of the pipe and improves its capacity, thereby reducing flooding. When this metric was first proposed in 2020, renewal initiatives were completed as part of the following programs:

- Neighbourhood Renewal Program: Renewal and replacement of aging sanitary and storm sewers in mature neighbourhoods.
- Local Sewer Rehabilitation Program: Renewal and replacement of aging local sanitary and storm sewers on a location by location basis around the city.
- Arterial and Collector Roadway Renewal Coordination Program: Rehabilitates the sanitary and storm sewers system infrastructure as it ages on major arterial and collector roads around the city.

607. Since the initial metrics were approved, in addition to the programs listed above, other programs that renew the sewer pipes and extends their lives have been introduced and are proposed to be included in this metric. This includes programs that have either been initiated recently or are proposed for the 2022 to 2024 PBR term that include significant sewer renewal initiatives. These are the SIRP Proactive Pipe Relining Program, the Proactive Service Renewal Program, and the CORe Large Trunk Rehabilitation programs. These programs represent the shift in focus to support the SIRP and CORe strategies as part of the sewer renewal programs to

address the priority risk reduction objectives of these initiatives while maintaining the commitment to align with the City programs.

608. SIRP identifies that there are a number of neighbourhoods at risk of basement flooding due to sewer surcharge during heavy storm events. The Proactive Pipe Relining Program is to reduce the risk of basement flooding due to inflow and infiltration by relining sanitary and combined sewer pipes in surface ponding areas. This program started in 2020 and will continue through the 2022 to 2024 PBR period.

609. The Proactive Service Renewal Program is an annual program to inspect and renew services that have structural and/or maintenance issues, but are in adequate condition for relining. Through the proactive relining of services through this program, identified asset risks are mitigated and managed appropriately to reduce risk exposure which aligns with the asset management objectives set out by EPCOR. This new program will be started in 2023.

610. As part of the CORe initiative, there is an increased focus on renewal of the major trunk sewers exposed to corrosive gases as part of the CORe-Prevent strategy. The km of sewers renewed as part of this program will be also be captured in this performance measure and are classified as the CORe Sewer Trunk Rehabilitation program.

611. This measure is reflective of Drainage Services commitment to provide a high level of service to residents by ensuring that the right drainage assets are renewed at the right time, thereby reducing occurrence of expensive unexpected failures and service disruption.

612. The Sewer Renewal metric is based the length (measured in kilometers) of sewer renewed per year. The historical results for Sewer Renewal are detailed in Table 14.2.3.2-1.

Table 14.2.3.2-1
Sewer Renewal

	A **Year**	B **Neighborhood Rehab**	C **Local Sewer Rehab**	D **Arterial & Collector**	E **Other**	F **Total - Sewer Renewed (km)**
1	2014	44.2	5.4	5.1	0.9	55.6
2	2015	64.7	7.6	4.5	0.2	77.0
3	2016	77.1	2.3	4.0	1.1	84.4
4	2017	38.4	8.3	5.7	0.0	52.4
5	2018	68.3	6.4	2.9	0.0	77.5
6	2019	29.0	4.0	2.8	6.8	42.6
7	6 Year Avg.	53.6	5.7	4.2	1.5	64.9

613. For 2020-2021, Drainage Services set the performance standard for Sewer renewals is 60.0 and is proposing to maintain that standard for the 2022-24 PBR term. This standard is based primarily on the average of the past 6 years of performance for the neighborhood renewal. This standard ensures ongoing coordination with City programs such as Building Great Neighbourhoods but also reflects a shifting focus to the assessment and rehabilitation of critical assets such as large trunk sewers. The systematic renewal of the local sewer system remains a key component of the Drainage Services Asset Management Strategy and the 60 km standard represents the appropriate level of improvement combined with a commitment to City programs

14.2.3.3 Infrastructure Condition Rating – Minimum Level

614. This Infrastructure Condition Rating metric provides information on the condition assessment of sewer assets and is shown as a percentage of total sewer assets assessed to be in fair, good or very good physical condition. The metric is determined by the total replacement value ($) of physical condition rated assets with a fair, good or very good condition divided by the total replacement value ($) of all physical condition rated assets. Physical condition rating of assets includes ratings of very good, good, fair, poor or very poor. Drainage Services is working towards improving asset management practices to ensure there is a focused effort on rehabilitation of the assets in the worst condition first.

615. The historical results for Infrastructure Condition Rating are detailed in Table 14.2.3.3-1.

Table 14.2.3.3-1
Infrastructure Condition Rating

	A	B
	Year	**% of Infrastructure with Fair/Good/V.Good Rating**
1	2014	90.8%
2	2015	90.8%
3	2016	89.0%
4	2017*	90.0%
5	2018	90.0%
6	2019	90.6%
7	6 Year Average	90.2%

616. For the 2020-2021, Drainage Services set the performance standard for Infrastructure Condition Rating at 90.0% and is proposing to maintain that standard in the 2022-204 PBR term. This standard is aligned with the past 6 years of actual performance. It is also noted that the performance reporting for the Infrastructure Condition Rating is actually the results of the year

prior to that indicated given the time necessary to collect the required data (and the need to meet audit timelines for rate implementation).

14.2.3.4 Full Property Flood Inspections

617. Under the SIRP Strategy's central themes, the "Secure" theme focuses on immediate risk reduction to individual properties in higher risk areas through programs such as Enhanced Building Flood Proofing. The SIRP risk assessment identified approximately 40,000 properties at high and medium-high risk of basement flooding due to geographical proximity to topographical sag locations in the urban environment.

618. The Enhanced Building Flood Proofing Program is aimed at identifying and implementing flood-proofing measures on the targeted properties, including backwater valve installation. The program is supported through the hiring of a manager and additional flood inspectors as well as an increase in the amount of funding available for backwater valve subsidies.

619. Drainage Services assesses the implementation of the Enhanced Building Flood Proofing program by measuring the number of completed full property flood proofing inspections per year. Historically, the annual total of completed full flood proofing inspections ranged from 250 to 570; these inspections were completed at the request of a customer.

620. Drainage Services introduced an enhanced program that involves reaching out directly to the higher risk properties to arrange inspections. The inspection report provided to property owners is also enhanced to align with the recommendations from the Intact Center for Climate Adaptation, thereby allowing the report to be utilized to review insurance options with brokers.

621. At the outset, Drainage Services did not know how receptive customers would be to an unsolicited inspection. As are result, there, was some uncertainty as how successful this new program would be. To increase uptake, Drainage Services planned to coordinate its efforts with community leagues as well as the City of Edmonton Change for Climate Adaptation initiatives. The COVID-19 pandemic impacted the implementation of this program as access to properties was curtailed under public health measures. As a result, the acceptance of the program remains uncertain. Moreover, homeowners may not be more hesitant to allow in-home inspections even once the pandemic is over.

622. Drainage Services is recommending a performance standard of 750 Full Property Flood Proofing Inspections completed per year for the 2022-2024 PBR term. This is the same standard has was set for 2020 and 2021 and is based on pre-covid estimates. This standard is an increase

over historic levels (Table 14.2.3.4-1) and incorporates the additional staffing allocated to the program.

Table 14.2.3.4-1
Full Property Flood Proofing Inspections

	A	B
	Year	**Full Property Inspections**
1	2018	273
2	2019	558
3	2 Year Average	416

623. This metric is based on full inspections with the completion of the report of recommended improvements. It does not include partial inspections such as backwater valve installation confirmation and exterior-only check ups. Drainage Services is currently reviewing these programs to determine if they can be aligned with other programs that require a visit to individual properties.

14.2.4 Safety Index

624. EPCOR and Drainage Services are committed to a safe, healthy workplace and demonstrate this through care and concern for people. Both believe that safety, quality, and productivity are mutually dependent and when diligently managed will provide challenging and satisfying work experiences in a safe and healthy environment. In order to fulfill this commitment, EPCOR has established Health, Safety and Environment ("HSE") Policy that applies to all staff. The Policy is as follows:

Health, Safety and Environment (HSE) Policy

625. Getting home safely and protecting the environment are responsibilities we all share. There is nothing more important than the health and safety of our employees, contractors and the general public. Everyone is expected to understand, promote and support the implementation of this policy. We must deliver on our commitments.

We Believe

- All injuries are preventable.
- Everyone has the right to work in a safe workplace.

- All employees and contractors are accountable for working safely and in an environmentally responsible manner.
- Health, safety and environmental aspects must be considered when establishing processes.
- Employee involvement, training and communication are essential to achieve health and safety excellence.

Our Commitments

- Sustain an effective HSE management system and promote a positive culture to prevent all injuries and work related illnesses.
- Reduce pollution and minimize harm to the environment.
- Meet or exceed all applicable legal requirements, industry standards and societal expectations.
- Set objectives and targets to continually improve HSE management and performance.
- Provide timely and effective training, resources and equipment.
- Identify hazards, evaluate risks and ensure controls are in place.
- Learn from our incidents and apply corrective actions to prevent reoccurrence.
- Involve employees to improve health and safety performance.
- Measure and share our HSE performance.

Drainage Services' Safety Initiatives

626. In keeping with the EPCOR HSE policy, Drainage Services' believes all injuries are preventable and that safety is a responsibility shared by everyone. In order to achieve a workplace free of occupational injury and illness, all Drainage Services employees and contractors have an obligation to take responsibility, intervene in unsafe or non-compliant situations, seek to identify and address safety hazards and environmental aspects before they can cause harm, and learn from the incidents that occur. Drainage Services' overarching goal is to focus on safety awareness and training for all employees and contractors and to achieve a zero injury workplace. Some of the initiatives intended to support and achieve this goal include the following:

- continuous monitoring and analysis of safety incidents;
- root cause analysis teams for serious incidents;
- near miss reporting;
- department specific health and safety plans;
- health and safety summits and seminars;
- safety surveys with accompanying action plans;
- safety recognition programs; and
- safety culture programs.

627. For the 2022-2024 PBR term, EWSI is proposing to have common safety measures across the Drainage, Water and Wastewater business units in order to drive consistency in approach and comparability of results. EWSI is proposing that the Safety Index continues to be comprised of the following four equally weighted factors:

1. Near Miss Reporting
2. Worksite Inspections/Observations
3. Lost Time Frequency Rate (LTIF)
4. All Injury Frequency Rate (AIF)

628. The proposed safety measures includes both leading and lagging indicators as a combination provides the broadest assessment of safety programs. Lagging indicators (LTIF and AIF) measure incidents in the form of past accident statistics and assess the overall effectiveness of safety programs. The major drawback to these indicators is that they are a poor gauge for assessing prevention programs. Leading indicators (near miss reporting and worksite inspections/observations) are measures intended to prevent future incidents. Leading indicators are focused on future safety performance and continuous improvement. These measures are proactive in nature and report what employees are doing on a regular basis to prevent injuries. Industry safety statistics indicate that increasing performance on leading indicators should have an inverse relationship to lagging indicators. That is, higher levels of injury prevention should lead to a corresponding decrease in actual incidents.

14.2.4.1 Near Miss Reporting

629. Near miss reporting measures the number of near misses and hazard identifications reported by employees and logged in ERS (Event Reporting System). A **near miss** is an unplanned event, unsafe condition or unsafe act that did not result in contact, injury, illness, or damage – but had the potential to do so. The contact, injury, fatality or damage was only prevented by a fortunate break in the chain of events surrounding the event. An "Unsafe Condition" is any condition in the work place that is likely to cause injury or property damage. An "Unsafe Act" is any performance of a task or other activity that is conducted in a manner that may threaten the health and/or safety of workers. A Hazard Identification is an observed potential hazard that did not result in a near miss or incident on EPCOR property.

630. The rationale for including Near Miss Reporting is that most safety activities are reactive rather than proactive. Unfortunately, many organizations wait for losses to occur before taking steps to correct the underlying problem and prevent a recurrence. Near miss events often precede actual loss producing incidents but are largely ignored because no contact, injury, damage or loss occurred. By formally identifying near misses, organizations have been able to develop mitigations and employee awareness programs that have reduced the overall safety incident rates. Near-misses are also an indicator of culture. As employees learn to look for unsafe acts/conditions and act on them, they become more aware of unsafe conditions and eventually safety becomes a way of life, on and off the job.

631. Table 14.2.4.1-1 indicated the past performance of the new miss reporting metric.

Table 14.2.4.1-1
Near Miss Reporting

	A **Year**	B **Near Miss Reporting**
1	2017 (partial year)	365
2	2018	1,063
3	2019	1,494
4	3 Year Average	974

632. For the 2020-2021 period, EWSI set the overall near miss reporting target at 750. This was based on based on an average of each employee reporting 1.25 near misses annually. EWSI is proposing to maintain this standard for the 2022-204 PBR term.

14.2.4.2 Worksite Inspections/Observations

633. The Worksite Inspections and Observations measure the number of worksite inspections and observations completed per year. Worksite inspections and observations are intended to prevent occupational injury, illness, environmental incident or property damage. Effective worksite inspections/observations assist in maintaining safe working conditions and the removal of any potential hazards that arise in the workplace. Inspections are observed physical hazards on worksites, while observations are focused on unsafe behaviour i.e. how the work is done.

634. Drainage Services' worksite inspection/observations program ensures that comprehensive inspections are conducted throughout the work environment including buildings, structures, grounds, excavations, tools, equipment, machinery, work methods and practices both in the field and office environments. Worksite inspections and observations are conducted by specific individuals or as a group. Group participants may include: area worker, area supervisor, specialists (e.g. HSE Advisors, fire system technician, engineer, hygienist, work methods specialist, etc.), and whenever feasible, include a worker health and safety representative.

635. The following can be taken into consideration when planning to perform a workplace inspection/observation:

- recent incidents;
- recent procedural changes;
- insurance, fire or other agency reports;
- recent workplace inspection reports (trends);
- items of concern brought up at an HSE meeting; and
- recent changes (new equipment or personal protective equipment).

636. All work site inspections/observations are completed and then submitted to the appropriate foreman. Each foreman then submits them to the Advisor, Health and Safety in order to ensure that observations and learnings from one site can be transferred to others areas. All work site report deficiencies are be reviewed at the monthly safety meeting. The observations are entered directly into an online tracking tool by the observer. Any corrective action is then documented, assigned and followed through to completion by the respective area.

637. The actual results of the worksite inspection and observations metrics are detailed in Table 14.2.4.2-1.

Table 14.2.4.2-1
Worksite Inspections/Observations

	A Year	B Inspections and Observations
1	2017	606 (inspections only)
2	2018	920 (inspections only)
3	2019	1,284
4	3 Year Average	937

638. For 2020 and 2021, a target was established based on every employee reporting 1 worksite inspection and 1 worksite observation annually. For the 2022-2024 PBR, EWSI is proposing to maintain that standard of 1,300 worksite inspections and observations per year.

14.2.4.3 Lost Time Frequency Rate and All Injury Frequency Rate

639. Lost Time Frequency is a measure of the effectiveness of Drainage Services' safety programs as related to disability injuries and illnesses. It measures the frequency or number of lost time injuries or illnesses per hours of exposure. The all injury frequency Rate is based on the total number of fatalities and lost time injuries plus the number of medical treatment injuries per total hours of exposure. Exposure hours are defined as the total number of hours employees are exposed to the work site.

640. Both the lost time frequency rate and all injury frequency rate are measures that have a standardized reporting protocol defined within the Canadian Electrical Association's (CEA) 1-2 Standard for Recording and Measuring Occupational Injury/Illness Experience and Transportation Incidents. Use of this protocol, while ensuring consistent reporting, also enables EWSI to compare itself against the other business units within EPCOR. It is noted that the results are not always specifically comparable given the differences between the water/wastewater/drainage businesses and electricity focused businesses. The CEA has noted that their standards are consistent with recognized external standards including:

- U.S. Occupational Safety and Health Administration (OSHA) 29 CFR Part 1904, Occupational Injury and Illness Recording and Reporting Requirements: Final Rule; and
- CSA Z795, Coding of Work Injury or Disease Information.

641. In order to clearly define lost time, Drainage Services has adopted the guidelines developed by the CEA criteria where incidents are separated into four categories:

- **Near Miss** – an undesired event that could have resulted in a work-related injury, damage, loss of production, etc. The accident did not occur.
- **First Aid** – simple care of an injury that was taken care of onsite without the help of a medical professional. In the case where the employee went to see a physician, treatment was something that did not require professional training.
- **Medical Aid** – medical treatment of an injury that could not be performed by a first-aid trained employee. Examples include stitches, casting of broken bones, ordering prescriptions. The employee is able to return to work for their next shift.
- **Lost Time** – employee cannot return to work due to a disability injury.

642. These indicators vary from year to year depending on the number and nature or occurrences/incidents. EWSI aims to reduce these indicators by promoting safe behaviours in order to minimize the risk of occurrence of severe incidents.

Lost Time Frequency Rate

643. The historic results for the Lost Time Frequency Rate are detailed in Table 14.2.4.3-1. The history available from City records appears to have a great deal of variability and the source is not determinable.

Table 14.2.4.3-1
Lost Time Frequency Rate

	A	B
	Year	**Lost Time Frequency Rate**
1	2014	2.30
2	2015	0.54
3	2016	1.00
4	2017	0.61
5	2018	0.66
6	2019	0.33
7	6 Year Average	0.91

644. For 2020-2021, Drainage Services set the performance standard for Lost Time Frequency Rate at 0.75 and proposes to maintain that standard for the 2022-2024 PBR term. This standard is based primarily on the results of 2018 and 2019 which is seen as more representative of current safety programs and approaches.

All Injury Frequency Rate

645. The historic results for all injury frequency rate are very limited. The results available are detailed in Table 14.4.2.3-2.

Table 14.4.2.3-2
All Injury Frequency Rate

	A **Year**	B **All Injury Frequency Rate**
1	2018	3.77
2	2019	2.80
3	2 Year Average	3.29

646. For the 2020-2021, Drainage Services set the performance standard for all injury frequency rate at 4.0 and is proposing to maintain that level for the 2022-2024 PBR term. This standard is based primarily on the results of 2018 with a small allowance for the natural variation that will occur over time.

15.0 SERVICE CHARGES AND TERMS AND CONDITIONS OF DRAINAGE SERVICES

15.1 Service Charges

647. Service Charges are set out Schedule 1, Part II of the Bylaw and consist of three categories of fees: Application Fees, Sanitary Sewer Trunk Charges and Other Service Charges. In addition, there is a catch-all provision that allows for a miscellaneous charge for service reasonably connected to the provision of sewer service. Through this Application, EWSI seeks approval to:

(i) update existing Service Charges to reflect the costs to provide service;

(ii) remove Service Charges from the Bylaw where that service is no longer required; and

(iii) include additional Service Charges.

Service Charge Update

648. For Service Charges related to Application Fees and Hauled Wastewater, EWSI proposes to update the existing charges to better reflect EWSI's costs of providing the service. These services are not uniformly required by all customers. As such, EWSI proposes to recover the costs of providing the service from the customer using the service. This approach aligns with EWSI's cost of service methodology and practices used to calculate rates and assigns cost responsibility to the customer as end user.

649. The proposed changes, along with EWSI's costs to provide these services, are set out below in Table 15.1-1

Table 15.1-1
Proposed Changes to Existing Service Charges

	A **Service Charge**	B **Existing Service Charge Bylaw 18100, Schedule 1,Part II**	C **Proposed Charge**
1	Application to Release Matter	$387.18	$189.58
2	Application to approve a compliance program	$387.18	Subject to estimate based on cost to provide service
3	Records Search	$120.43	$142.06
4	Application for Stormwater Utility Credit	$360.16	Initial Application: $400.00 Renewal Application: $225.00
5	Application for Sanitary Utility Credit	$360.61	$400.00
6	Hauled Wastewater	$24.76 per axle, excluding the first steering axle	$26.67 per axle, excluding the first steering axle

650. Historically, charges for "applications to release matter" and "applications to approve a compliance program" were tracked together. As a result, the costs to provide these services were also tracked together. Upon review, EWSI determined that by tracking these services separately, it could more accurately assess the costs to provide each service. The proposed charge for the Application to release matter has been reduced by approximately one half while the charge for an "application to approve a compliance program" is proposed to be charged on the basis of a cost of service estimate. EWSI has determined that there is variability within individual applications for compliance programs and that estimating a charge in response to each unique application better reflects cost of service as well the principle that the customer using the service pays for the service.

651. EWSI also reviewed the actual cost to provide service in response to applications for Stormwater and Sanitary Utility Credits and found that for both credit programs, the existing service charges did not reflect the actual costs of reviewing and processing the applications. The applications require significant resources from analysts, engineering technologists and engineers along with management oversight. At the same time, EWSI is proposing a reduction in the service charge for renewal applications for the Stormwater Utility Credit on the basis that once the initial application has been approved, subsequent applications require fewer resources to process.

Removal of Service Charges

652. There are two Service Charges currently listed in Bylaw 18100 that are no longer required: "application for sewer metering approval" and "application for large wholesale designation". There are currently no Drainage customers that use sewer meters and only one large wholesale customer in the City of Edmonton. EWSI does not anticipate any customer growth in this area. In the event a customer wished to pursue either of these services, EWSI would calculate a charge for the application based on the terms of the Miscellaneous Fee charge.

Additional Service Charges

653. Additional Service Charges for which EWSI is seeking approval are (i) charges for missed appointments; (ii) charges for appointments where the customer fails to provide sufficient access to their sanitary service; (iii) charges for investigation a sewer blockage; and (iv) charges for service connections. The proposed new Service Charges are set out in Table 15.1-2.

654. EWSI proposes to charge customers a fee where the customer schedules an appointment for a flood assessment or obstruction removal and fails to attend the appointment. The basis for the proposed fees reflect the costs associated with these missed appointments (time and

materials). Notably, there is a difference in the fees for these two appointments. The difference is driven by the higher costs to dispatch the vehicle and equipment used for appointments related to obstruction removal. Missed appointments also cause a back-log with other customers impacting the response time of their service.

655. EWSI also proposes to charge a fee where it attends at a customer site to remove an obstruction but the customer fails to provide sufficient access to their sanitary cleanout facilities or where the drainage problem is due to a private plumbing issue. In 2019, there were approximately 200 customer site visits where EWSI attended at the customer site but the customer failed to follow the directions provided by EWSI dispatch related to site-preparation. For site visits within this category, EWSI proposes to waive or refund the proposed service fee where the customer facilitates EWSI's access within 30 days of the initial investigation request.

656. The third new Service Charge is proposed to apply to site visits where EWSI responds to a customer's request investigate sewer trouble but a determination is made that the sewer trouble is caused by the customer's plumbing issues. In 2019, there were 25 site visits that fell within this category. In an effort to ensure that EWSI's time and equipment is used only for the provision of regulated service, EWSI proposes to charge a service fee in these instances. This charge will only be applied for the second and any subsequent service appointment. The first visit will continue at no charge.

657. The fourth new Service Charge is a charge for a Service Connection. Prior to the Drainage Utility transfer, the city of Edmonton charged drainage service connection fees based on a flat fee with reference to the size of the property's sanitary or storm service. EWSI has continued to charge these same fees during the 2018-2021 PBR time frame. These charges were not included in the now-repealed City Drainage Bylaw 16200. Because this is a regulated service subject to approval, EWSI seeks to include these charges in the Bylaw and proposes to calculate the charge on a cost of service, rather than a flat fee, basis.

658. Fees based on cost of service are consistent with the guiding objectives that govern the rates EWSI charges and ensure that the customer uniquely benefitting from the service is responsible for the cost.

Table 15.1-2
New Proposed Service Charges

	A **New Service Charge**	B **Proposed Charge**
1	Missed Flood Assessment Appointment Fee	$60.00
2	Missed Obstruction Removal Appointment Fee	$200.00
3	Appointment fee where sewer trouble is caused by private plumbing	$200.00 for second and subsequent appointments
4	Service Connection Fees	Calculated on a cost of service basis in accordance with the Drainage Services Guidelines

15.2 Terms and Conditions of Service

659. The existing Terms and Conditions of Service (Terms & Conditions) are set out in Schedule 2 to the Bylaw. EWSI has proposed a few minor changes to the Terms & Conditions that govern its relationship with its Customers. Each of the amendments to the Terms & Conditions are set out in the blacklined version of the Bylaw. The majority of the proposed changes add clarity, improve consistency and readability and eliminate duplication. Details regarding all of the proposed amendments (except changes of a minor nature) along with a rationale for each change is set out in Appendix A. Details regarding the more substantial proposed changes are set out below.

660. EWSI proposes to make the following amendments to the Terms & Conditions:

Article 2.3(d) Drainage Services Guidelines

To support the inclusion of Sewer Connection Service Charges in the Bylaw, EWSI proposes to include Guidelines related to its Sewer Connection program. These new Guidelines will assist customers to better understand the requirements and costs of the program.

Article 4.3 Flow Monitoring Points

EWSI has expanded the exemption related to Flow Monitoring Points from residential premises to duplex properties.

Article 4.6 Screening and Pretreatment

EWSI proposes to expand a customer's obligation related to screening and pretreatment. In addition to being authorized to require an Owner of a premises to install screens or pretreatment, with this proposed amendment, EWSI will also be able to require that an Owner modify pretreatment processes.

Article 4.12 Stormwater Management Facilities

661. EWSI proposes to add the following amendment to the Terms and Conditions:

4.12 (c) A Person shall not facilitate any of the activities prohibited by this section.

Through this proposed amendment, EWSI seeks to enhance its ability to ensure the continued safe operation of its Stormwater Management Facilities. The current provision prohibits activities such as wading, swimming, boating, fishing and skating, unless otherwise permitted by EWSI. The proposed amendment prohibits persons from facilitating these activities. More specifically, and for reasons driven by safety, EWSI is seeking to discourage persons who, for example, build docks, remove vegetation, build skating rinks or place hockey nets on these facilities.

Article 5.5 Waste Management

662. EWSI proposes to add the following amendment to the Terms and Conditions:

5.5(b) A Person who keeps or stores a Prohibited or Restricted Waste shall ensure that those materials are sequestered through secondary containment, barriers and/or distance to ensure that the Prohibited Waste is not Released into the Sewerage System.

This proposed amendment provides clarification related to the storage of Prohibited or Restricted Waste and is sought to reduce the risks associated with these materials.

Article 5.17 Release Control

663. EWSI proposes to add the following amendment to the Terms and Conditions:

5.17 (c) prevent future releases of matter other than those permitted in this Article.

The addition of part (c) to section 5.17 imposes an additional obligation on a party who releases matter other than that permitted by the terms of the Bylaw. With this amendment, not only is the person required to remedy the effects of the release, they are also required to take preventative measures to ensure that further releases don't occur.

Article 8.1 (a) Protection of EWSI's Facilities and Property of Other Customers

664. EWSI proposes to amend the existing "No interference with Facilities" article as indicated by the underlined text below:

> Only an EWSI employee or Authorized Agent ~~of EWSI~~ shall remove, operate, enter, access, attach, affix to or maintain EWSI Facilities. A Customer shall not obstruct access to or interfere with any Facility or permit the same to be done by any Person other than an employee or authorized agent of EWSI. If a Customer or a Person authorized by a Customer fails to comply with this provision, the Customer is responsible to pay the cost of repairing or otherwise remedying any damage to or loss of Facilities located on the Customer's premises or premises controlled by the Customer, unless caused by circumstances, as determined in EWSI's sole discretion, to have been beyond the Customer's control.

665. The purpose of this amendment is to clarify that only EWSI employees or persons authorized by EWSI can perform work on EWSI's Facilities.

Article 13.2 Discontinuation of Water Service

666. EWSI proposes to include the following amendment to Article 13.2:

> In addition to any other remedy or penalty, EWSI may, in its sole discretion, discontinue or limit the provision of water services as provided by EPCOR Water Services and Wastewater Treatment Bylaw to any premises if the Customer of that premises is in breach of these Terms and Conditions and no less than forty-eight hours advance notice of the discontinuance is provided to the Customer of the premises.

667. Through this proposed amendment, EWSI will have the option to limit water supply, rather than fully disconnecting supply, in the event that a customer breaches the Terms and Conditions. EWSI submits that this option will allow it to work with Customers to encourage

compliance with the Terms and Conditions rather than fully disconnecting Water Service and possible threatening the continuing viability of a commercial operation.

Article 15.4 Powers of EWSI

668. EWSI proposes to add the following amendment to Article 15.4(c):

> 15.4(c) take any steps or carry out any actions required to remedy a contravention or release which, in EWSI's reasonable opinion, appears to be a contravention of this bylaw;

669. The purpose of this amendment is to expand EWSI's authority to take action where, based on reasonable belief, there appears to be a bylaw contravention. This additional authority will, for example, allow EWSI personnel to require immediate containment where there are reasonable grounds to do so. EWSI submits that this expanded authority will serve to reduce the spread of contaminated substances and harm to the environment.