Drainage Services
2019 Operational Plan

PROVIDING MORE EPCOR

1 Introduction

This document presents the 2019 Drainage Services Operational Plan. Water Services has developed a 2019 Operational Plan for Water and Wastewater Treatment which is being presented as a separate report. The purpose of this document is to provide the City of Edmonton Utility Committee and stakeholders with an overview of our various initiatives planned for 2019.

1.1 Vision & Mission

EPCOR exists to provide clean water and safe, reliable energy. Within this envelope, Drainage Services effectively manages stormwater and wastewater resources to keep the public safe and the river healthy. Our overarching goal is to provide customers with safe, reliable sanitary and drainage services while meeting all environmental requirements, delivering value and achieving a fair return. This is accomplished by a team of safe and accountable employees who are fully engaged in our operation.

As a regulated utility, Drainage Services will contribute to EPCOR's success by preserving and building the brand and reputation of EPCOR. Drainage Services will contribute to excellence in customer service, reliability, and cost efficiency by focusing on the foundation of the safety of its employees, contractors and the public, as well as ensuring environmental stewardship. A continued focus for 2019 is to identify synergies with other EPCOR businesses that will create efficiencies in operations and capital construction.

1.2 Transition

Drainage Services transferred from the City of Edmonton on September 1, 2017. There were many commitments made during the transfer and a lot of these were achieved through 2018. Our 2019 Operational Plan builds on the successes of the previous year and sets the foundation for Drainage Services to achieve the operational and capital efficiencies identified in the Letter of Intent. These commitments include:

- complete the Stormwater Integrated Resource Plan (SIRP)
- complete a plan to address odour complaints
- achieve operating savings through improved safety performance, work method improvements and synergies with Water
- achieve capital savings through master agreements, improved project management and in-house engineering

The evolution of Drainage Services has been previously characterized in three phases: stabilize, optimize, and leverage. In 2018 the focus was on "stabilize". This included establishing

new organizational structures, clarifying accountabilities, and implementing new EPCOR systems and processes. A project management office was established to monitor compliance to the developed processes for capital projects delivery. Foundational groundwork was also laid in developing the odour mitigation strategy and the Stormwater Integrated Resource Plan. Business cases for both of these programs will be presented to Utility Committee for approval in 2019.

In 2019, the integration will continue, however the focus will shift to “optimize”. A key focus will be to implement new structures and processes to meet the commitments made to City Council through the transfer discussions. EPCOR has established a “Synergy Team” co-chaired by two Divisional Vice Presidents, focused on realizing and documenting operational and capital savings. Drainage Services has also established an Operational Excellence team that will focus on completing work method and process improvement projects to improve efficiency, lower costs or improve services.

1.3 Values

Underlying all of EPCOR’s activities are the values that we demonstrate every day. Drainage Services believes in the EPCOR values and works to embody them in all of our activities. If our mission is to effectively manage stormwater and wastewater resources to keep the public safe and the river healthy, living our values will ensure that we achieve that. The six values that come alive in our work are:

Safety: We see a safety hazard and do something to eliminate it before starting on a job. That’s putting safety first in everything we do.

Integrity: We treat co-workers respectfully and approach their work responsibly. That’s acting with integrity.

Teamwork: We support co-workers and if work or ideas can benefit other members of your team or another area, we share it. That’s working as a team.

Customers: We support keeping the lights on and the water flowing — and when there’s an issue, we make sure customers know what’s going on and we help fix it. That’s being trusted by our customers.

Shareholder value: We support the growth of the company, whether through involvement in new acquisitions, projects, capital work, or by demonstrating operational excellence. That’s creating shareholder value.

Environment: We do whatever we can to avoid waste or pollution — whether in a vehicle, on a site, or in the office. That's being environmental leaders.

1.4 Strategic Focus

This Operational Plan is framed around six key strategic areas:

1. Safety
2. Environment
3. People
4. Operational Excellence
5. Customer & Stakeholder
6. Shareholder Value

In each area, Drainage Services has identified long term goals, strategies to accomplish these goals and specific objectives.

2 Goals and Initiatives

The goals, strategies and key objectives for each focus area are highlighted below.

2.1 Safety

Goal: Create a supportive culture where safety is our first priority and everyone has a voice

EPCOR puts safety first in everything we do and Drainage Services has emphasized this approach across its operations. We will ensure that employees and contractors have the required training and support to ensure safety of everyone on the team. We will focus on providing strong safety leadership and improving our awareness of hazards and risks. In order to achieve our safety objective, we are focusing on five strategies.

2.1.1 Reduce tolerance towards safety related risks

In order to reduce our tolerance towards safety related risks, Drainage Services is committed to developing appropriate plans and programs in order to shift our attitude about safety and the achievability of zero injuries. In order to achieve this, we have established the following objectives:

- Develop customized safe work plans for each unique work area. These will be in place for all groups by the end of 2019.
- Implement a new Contractor Management Program, including a framework and guidelines for managing prime contractor accountabilities.

2.1.2 Cultivate a culture of safety leadership

A culture of safety leadership is required to ensure frontline employees will continue to have a strong focus on safety. Our leadership team will demonstrate employee support by ensuring that incidents are reported accurately within our Event Reporting System (ERS), investigations are completed in a timely manner, and learnings are shared with all employees. The main objective is to improve incident reporting throughout all of Drainage Services.

2.1.3 Encourage ownership of safety at all levels

In addition to safety leadership, we will encourage employee ownership and involvement at all levels. A foundational piece of this will be to ensure that all staff have the skills to identify workplace hazards and implement controls to eliminate them. We will give staff a voice through field involvement in safety initiatives. Key objectives include:

- Continue to focus on hazard recognition and near miss reporting. Near miss reporting is a leading indicator of safety involvement. Reporting provides information and trends and it directly involves employees in the identification of work place hazards.
- Train all people leaders to lead an incident investigation. This includes analyzing root causes and determining the appropriate corrective action.
- Develop an observation program to identify workplace hazards and recommend controls.
- Roll out driver report cards based on telematics information. Please see page 19 for more information on telematics.
- Implement workplace inspections across Drainage Services.

2.1.4 Train staff for competency and confidence

In order to keep safety as our first priority, we need to ensure that our staff have the competency to perform their tasks. Through appropriate training, skill development and on-the-job experience, we will ensure they can confidently apply their skills on the job. We want to ensure that our compliance training in maintained at >85% and also plan on achieving 85% of all conformance training in 2019. In order to achieve this, our initiatives include:

- Create and implement Hazard Registries for all high risk work.
- Establish competency based assessments for high risk tasks.
- Implement “EPCOR Athletes” – a program to learn about body mechanics and how to incorporate healthy movement into everyday tasks for both field works and office workers.

2.1.5 Roll out a fully functional safety management system to all employees

A Safety Management System is a critical foundation for Drainage Services’ safety program. Many components of this system have already been highlighted above, including hazard awareness, incident investigation and safety leadership. We will also focus on redefining work procedures to ensure consistency, readability and accessibility. The focus in 2019 will be on critical procedures with a prioritized work plan in place for ongoing procedure redevelopment.

2.2 Environment

Goal: Continuous improvement to meet or exceed societal and stakeholder expectations

EPCOR Drainage Services is an environmental company that protects the watershed and contributes to a healthy river. Environmental challenges include the impacts of flooding, responding to releases, monitoring the quality of the river water, and ensuring compliance, reporting and adherence to international ISO standards. EPCOR Drainage has defined three strategies to realize this commitment:

2.2.1 Know what is important to stakeholders and understand how we contribute

Through our 2018 customer engagements, Drainage Services has gained a deeper insight into what is important to Edmontonians. Our 2019 Operational Plan targets initiatives that are most important to all our stakeholders. In addition to the Odour Mitigation Strategy and the Stormwater Integrated Resource Plan, both of which are described in more detail in later sections of this document, our primary objectives include:

- Develop and implement the Odour Mitigation Strategy (please see page 21 for more information).
- Expand on tools for environmental controls specific for Operations, Construction and Project Management to ensure proper data collection, and decrease our reliance on assumptions when discussing environmental performance. This includes a focused initiative to install more monitors/samplers at our outfalls.
- Update the Total Loading Strategy and obtain Alberta Environment and Parks approval through an amended Approval to Operate. Further information on the Total Loading Strategy can be found on page 22.

2.2.2 Minimize environmental impact of our operations

As an environmental steward in Edmonton, EPCOR Drainage Services will minimize our environmental impact in all aspects of our operations. Critical objectives include:

- Update the Combined Sewer Strategy and set Combined Sewer Overflow (CSO) reduction targets. This will be partially accomplished through the continued focus on sewer separation. Our continued goal for 2019 is zero dry weather Combined Sewer Overflow (CSO) discharges.
- Ensure that environmental work is aligned with projects in Planning and Engineering. This will ensure that all projects reflect considerations arising from the Stormwater Integrated Resource Plan (SIRP), our Odour Mitigation Strategy, and our goals to reduce flow to the river.

2.2.3 Adapt to impact of climate change

Drainage Services has been working with the City of Edmonton on the climate change initiative through the work on the Stormwater Integrated Resource Plan (SIRP). The purpose of this plan is to identify work that needs to be accomplished to reduce the impact of stormwater flow on Edmonton residents and businesses. We are also participating in the Flood Hazard Identification Program with Alberta Environment and Parks.

2.3 People

Goal: Engaged employees who are capable, confident and work as a team

People are the cornerstone of our success. We want to create an environment that fosters teamwork and accountability for all employees. Our leaders will be provided with the training and skills that reflect EPCOR's values and required competencies. We want all staff to know that they are valued, and are part of a team with common goals. Drainage Services has identified five strategies to engage our people:

2.3.1 Establish an environment that enables accountability, teamwork, and sound business decisions

In order to make sound business decisions, leaders must understand their accountabilities and their specific role in delivering the Drainage Services Operational Plan. Key objectives to create this environment include:

- Facilitate an understanding of accountabilities and authorities at all levels of leadership. This includes ensuring that 100% of people leaders have a complete Position Description that outlines their role and accountabilities.
- Create business plans for each Drainage Unit outlining two year objectives that align with the goals and strategies of the Operational Plan. This will create a deeper understanding of the business plan and alignment across all work units by directly involving leaders in the development of their section's business plan.

2.3.2 Create an environment where employees are engaged and their participation is valued

Drainage Services wants all employees to understand how the work they do impacts Drainage Services and EPCOR as a whole. Our focus is to support each employee so that they have the systems and resources they require to perform at the highest level. This will be accomplished through the following objectives:

- Create an understanding of how work fits into the bigger Drainage Services picture as well as EPCOR as a whole.
- Communicate the results of our Engagement Survey (conducted October 2018) when they become available. Establish cross-functional teams to develop and implement action plans on the top engagement drivers determined from the survey, both for Drainage Services and EPCOR wide.
- Build a respectful, inclusive, collaborative, safe and healthy work culture. We will support this by identifying and implementing two diversity initiatives in 2019 and also by ensuring that 100% of people leaders complete Mental Health training through the Mental Health Commission of Canada.
- Deploy the necessary technology to ensure system connectivity for all field staff.

2.3.3 Develop great leaders who embody EPCOR values

Drainage will provide leaders with the skills they require to be successful at EPCOR and to support their respective work teams. In 2019, critical objectives include:

- Provide regular feedback and coaching to employees both informally and through our formal Aligning Performance for Results (APfR) process.
- Roll out the EPCOR mentorship program which will provide Drainage employees with the opportunity to engage with a mentor or mentee from another area of the company.

2.3.4 Facilitate cross-functional collaboration, remove silos, and focus on team outcomes

Drainage Services wants to ensure that our leaders and staff have the opportunity to learn and work with others within our Business Unit and across EPCOR. This cross-functional approach enables information sharing, the development of new ideas, and a better overall understanding of our business. Primary objectives include:

- Define clear behavioural expectations for cross functional collaboration by stratum based on EPCOR values.
- Develop processes and a responsibility matrix for key integration or hand-off points in end-to-end project management. This will assist in defining roles, understanding individual contribution to an overall project, and identifying areas for improvement.

2.3.5 Promote development and career growth for every employee

Drainage Services wants to encourage people to grow and develop and we are committed to providing the opportunities to do so. This will assist us in retaining good

people and improve the success of our long term plans. In addition to career mapping, some initiatives for 2019 include:

- Leverage relief postings for succession planning, cross functional skill development and knowledge development for in-scope positions. This gives staff the opportunity to take on new roles, demonstrate their ability, diversify their experience, and develop their career.
- Implement succession planning through our Professional Growth Initiative (PGI) for out of scope positions. In 2019, all managers will have completed the Professional Growth Initiative assessment and have development plans in place.

2.4 Operational Excellence

Goal: Perform the right work the right way at the right time with the right resources.

As we move from the 'stabilize' to the 'optimize' phase of the transition, Drainage Services will put more focus on the review and improvement of our processes. Continual review of processes, systems and tools will drive efficiencies and optimization. Key strategies include:

2.4.1 Develop and optimize end-to-end processes within Drainage

Drainage Services will be reviewing all processes to determine opportunities for efficiency and optimization. Process improvement projects may utilize project management, reporting, metrics and change management to monitor success and ensure sustainment. Key objectives are highlighted below:

- Identify projects that either define or optimize cross-functional processes. Prioritize these projects through Operational Excellence Council and document at least two critical end-to-end processes in 2019.
- Deploy telematics to assess vehicle utilization and optimize our fleet. This will also assist us in optimizing our overall equipment to align with our defined core business (please see section on telematics on page 19).
- Develop a program management model building on the team delivery approach piloted in the control structure program. In 2019, we will define the roles and responsibilities, identify the potential program managers and plan for implementation.
- Complete the field technology recommendation that also ensures field staff will have the platform and connectivity for use on their devices.
- Build an Information Systems strategy that defines the systems of record and system integration strategy. Defining the systems of record will ensure data integrity. Defining the integration strategy will ensure users have access to the best data to ensure informed decision making.

2.4.2 Build knowledge of industry best practices to support our decision making and program development

We want to ensure that Drainage Services is contributing to and learning from industry best practices in order to ensure we are performing our work the right way with the right resources. To this end, we want to ensure employee attendance, participation or committee involvement in industry conferences, seminars, committees and research initiatives.

2.4.3 Identify and manage emerging risks

Through our planning process, Drainage Services has identified business risks and started to formulate strategies to mitigate these risks. Primary objectives include:

- Implement a knowledge transfer program to mitigate the risk of losing technical expertise related to drainage. In 2019, we will focus on documenting existing practices for knowledge transfer and implementing a “lunch and learn” program for staff to present on industry knowledge.
- Rationalize inventory classification to ensure the appropriate mix of stock, free issue and Vendor Managed Inventory (VMI). We also want to implement a low cost approach to dispensing Low Value Inventory (LVI).
- Define an approach to prioritize capital projects within our Performance Based Regulation envelope.
- Implement best practices in project management. This includes ensuring:
    - integrated systems
    - effective risk and contingency management
    - adequate governance and controls
    - clear cross-functional accountabilities
    - defined skill sets and development plans for project managers
    - safety management methodologies
- Implement recommendations arising from the Construction Services internal EPCOR Audit.
- Develop a plan to optimize crew and equipment utilization. Our focus is to review industry practices and evaluate our current work to determine the human resources requirements (e.g. working hours, shifts, competencies and cross-training) and the most efficient way to use the equipment necessary to complete all work.
- Develop and Implement Preventative Maintenance Programs based on benchmarking and best practices across the wastewater industry, customer

complaints, asset management condition assessment, health and safety requirements, risk, regulatory requirements, operational considerations, and maintainability. Finally, they will also be developed with optimization and efficiency as the end goal.

- Initiate the Sanitary Integrated Resource Plan (SanIRP) to establish a risk based plan to address various system issues such as flooding, odour, asset condition and operational issues. This will also consider increased flow due to developments in both green field and infill areas and associated potential system expansion options.

2.5 Customer and Stakeholder

Goal: Customers and stakeholders trust us and value our services

Drainage Services' customers and stakeholders include residents of Edmonton, business owners, City Council, and different areas of government. Our services, programs and projects directly or indirectly impact these stakeholders. We want ensure open lines of communication and mutual understanding of our programs and projects. We want to demonstrate how we add value to our customers and stakeholders through three strategies:

2.5.1 Meet transfer commitments to City Council

As part of the transfer to EPCOR, Drainage services committed to implement an Odour Mitigation Plan and a Flood Mitigation Plan. Our focus in 2019 is to:

- Obtain approval for a Stormwater Integrated Resource Plan (SIRP) that will meet the needs of Edmontonians and reduce the risks associated with climate change.
- Obtain approval for an Odour Mitigation Strategy that will reduce odours, particularly in "hotspot" areas where there are ongoing concentrated odour reports.

2.5.2 Build relationships with stakeholders to create trust and understanding

Constructive stakeholder relations are the foundation for trust and cooperative understanding. The following objectives will help to build our stakeholder relations:

- Implement an approach to measure customer satisfaction for Drainage Services. This will likely be in the form of a customer satisfaction survey.
- Build a stakeholder engagement plan that is aligned with the capital plan. This will include conducting a stakeholder evaluation for all major capital projects and defining when and how to engage with stakeholders.
- Review and prioritize public campaigns in order to meet all of our strategic goals while still adhering to our budget.

2.5.3 Build systems, processes and training to provide consistently good service that feels seamless to the customer

We strive for a good public reputation and want our customers to have a good experience when dealing with Drainage Services. To that end, we will be focusing on the following primary initiatives in 2019:

- Evaluate sources of customer escalations and implement remedial actions. Reduce the number of escalations in 2019.
- Reduce the customer service connection time. Our goal is to have the time from construction ready to completed connection to be an average of 5 weeks.

2.6 Shareholder Value

Goal: Improve financial performance to earn allowed return

Drainage Services is pursuing efficiencies through process improvement, the implementation of telematics, the development of a construction strategy and the identification of operational synergies with the Water business unit. We have identified three primary strategies to improve our financial performance.

2.6.1 Produce compelling rate applications for approval by the regulator

With the transition, Drainage Service was limited to a 3% per year increase in rates. We are challenged to work within this envelope while undertaking all of the initiatives outlined in this document. Our primary focus will be to:

- Prepare for the 2022 rebase by evaluating rate structures to determine the appropriate balance between consumption and fixed rates.
- Develop a capital forecast that prioritizes spending to maintain service levels and ensure that any rate increases are affordable and reflect the priorities of Edmontonians.

2.6.2 Pursue cost efficiencies as committed to during the Drainage transfer discussions with City Council

Specific cost efficiencies were identified in the Grant Thornton report recommending the transfer of Drainage Services to EPCOR. We continue to pursue some of these cost efficiencies with the following initiatives:

- Assess the impact of the City of Edmonton LRT program (please see LRT Construction on page 22).

- Develop and execute a long term strategy to rationalize real estate and facilities in order to enable operational cost savings.
- Establish a Synergy team led at the Divisional Vice President level to identify efficiencies and opportunities to optimize services across the Drainage and Water Business Units (see section on Synergies on page 17).
- Review and document all non-financial commitments. Develop a format and identify a forum to communicate ongoing adherence to the commitments.

2.6.3 Meet operational and capital budget targets

In order to improve our financial performance, we will develop and execute realistic capital and operational budgets.

3 Gaining Efficiencies

Through 2019 Drainage Services will continue to identify, implement and refine cost saving opportunities as committed during the transfer. The goal for 2019 is to identify and implement $2M in operational savings.

Opportunities will fall into the following categories:

- Organizational Synergies with Water
- Process Improvement
- Construction Strategy
- Telematics
- Long Term Goals

3.1 Organizational Synergies with Water

Drainage Services and Water Services have created a Synergy team led at the Divisional Vice President level to identify efficiencies and opportunities to optimize services across the Drainage and Water Business Units. This review is expected to be complete by Q1 of 2019 with recommendations implemented by the end of 2019.

Examples of synergies projects implemented earlier in 2018 are:

- Consolidation of Private development inspection:

  This involved the amalgamation of the Water and Drainage teams that inspect private development. Over time this will permit a reduction in staffing, through attrition or redeployment, as employees are cross trained to perform alternative functions and the number of visits to construction sites is reduced.

- Infill construction:

  The Water and Drainage Teams that construct connections for infill development have been consolidated. Over time this will enable one crew to do both functions. This efficiency will create more capacity as cross training occurs.

3.2 Process Improvement

Drainage Services is committed to continuous process improvement. We are working on efficiency gains through some of the major projects discussed in this document but we also actively identify improvement projects throughout the organization. Front line staff are encouraged to approach their leaders with any improvement suggestions and leadership is incented to act on those suggestions to better the working environment for their team.

In addition to informal process improvement, Drainage Services has established a team of operational excellence advisors. These individuals have lean six sigma training and they will be acting as internal consultants to Business Leaders. Large, cross-functional projects will be identified and prioritized by the Drainage Operational Excellence Council and lead by cross functional work teams empowered to identify and implement cost saving ideas. A primary focus will be to define end-to-end processes, identify efficiencies, remove duplication and ensure work can be executed simply and effectively. Cost savings and efficiencies will be documented.

Our goal in 2019 will be complete a minimum of two major projects and a large number of smaller “quick win” initiatives. Two projects were already initiated in 2018:

- Reduction in time to procure:

  This is an initiative to streamline the amount of time to procure consultants and contractors for construction projects. This will have a material impact on our ability to outsource work quickly

- Storm Water Revenue Loss reduction:

  Our analysis has identified 28 different circumstances where stormwater rates are not being collected from some customers. This represents an inequity (some customers are not paying) and a loss of revenue (the full revenue requirement is not being realized). A preliminary analysis will be shared in Q2 at the same time as recommendations for Stormwater Integrated Resource Planning come forward to Utility Committee.

3.3 Construction Strategy

Drainage Services is defining a long term construction strategy. The study includes an in-depth review of current practices and costs, opportunities, risks and potential efficiencies. It will include a review of best practices and the approaches undertaken in other EPCOR businesses and outside organizations.

The study will consider:

- Operational requirements
- Resource requirements
- Safety
- Risk
- Stakeholder engagement

It will review the costs and financial benefits of different delivery models and make recommendations to improve our capital construction practices. The overarching goal is to ensure efficiency and effectiveness.

The implementation of any future changes arising from these recommendations will respect commitments made during the transfer that there will be no layoffs. If required, material changes to our construction program will be implemented through a combination of re-skilling, redeployment of current staff or attrition.

3.4 Telematics

EPCOR will implement telematics (Global positioning) on all Drainage vehicles in 2019. Data from other business units indicates that a fuel saving of 14% can be anticipated. In addition this tool will allow us to optimize vehicle utilization, rationalize vehicle purchases and identify and surplus vehicles that are under-utilized.

3.5 Long Term Goals

Drainage Services has identified two long term strategies to enable efficiencies between Water and Drainage:

3.5.1 Systems

Consistent systems will be critical to attaining future synergies. In 2019 our focus is to implement field connectivity for all Drainage employees. Our longer term strategy is to have systems of record identified and all employees on the same platforms for GIS, telematics and work management. Currently, the systems in use are disparate and not integrated, making data sharing and accessibility challenging. By defining systems of records and ensuring integration between systems, the most accurate and up to date information will be available to all users to ensure informed decision making is occurring.

3.5.2 Co-location

Currently Drainage and Water operations are spread across sites **nine** sites; a combination of offices and service centres. EPCOR has defined a long term strategy to co-locate Water and Drainage across no more than **two** service centres: Kennedale and a second large site (approximately 23 acres). The location for the second site is to be determined but we are already exploring both brownfield and greenfield options. Co-locating work teams is critical to the efficient management of crews. It provides both flexibility and efficiency and it enables end to end process efficiency when planning, engineering, project management and construction staff are able to connect and collaborate easily. Furthermore, having fewer centres reduces the redundancy in support services, particularly with respect to stores, yard, materials handling, equipment dispatch, construction support and related administrative services. Our intention is to have a long term consolidation plan in place by the end of 2019.

4 Major Initiatives

In addition to the initiatives outlined in each of the strategic areas above, EPCOR Drainage Services has identified several Major Initiatives that will be a key focus in the 2019 Operational Plan.

4.1 Stormwater Integrated Resource Plan

As part of the Drainage transfer, EPCOR committed to a flood mitigation project following an integrated resource planning approach. EPCOR created the Stormwater Integrated Resource Plan (SIRP) project to integrate environmental and social externalities; operational, planning and infrastructure responses; risk assessment and management; financial analysis; and an open participatory process that incorporates continuous improvement. This is aligned with active City of Edmonton initiatives addressing Climate Change Adaptation.

In 2018, SIRP completed the following activities:

- consolidation of historical reports,
- developed risk framework methodology,
- public engagement and associated analysis and recommendations
- risk analysis by sub-basin for four perspectives: Health and Safety, Environment, Social, and Financial

Based on the work completed in the previous year, in 2019, EPCOR will develop recommendations for capital infrastructure investments and operational program resourcing to reduce the overall risks for the targeted sub-basins. Some solutions that will make up the overall recommendation include:

- Trunks and sewer separation
- Outfalls and control gates
- Ponds and road grading
- Maintenance programs
- Emergency response
- Weather forecasting
- Low impact development (LID)
- Insurance and flood proofing

We will be developing a number of different implementation options covering multiple timelines for consideration by Utility Committee in May 2019. An accelerated flood mitigation program will be one of the options considered.

This Major Initiative was not included in the envelope of drainage services that were transitioned to EPCOR, and as a result is not reflected in the rates approved under the current Performance Based Regulation. The capital and operational costs required to implement this Major Initiative is material. As such, the business case will be proposed to Utility Committee for approval as a non-routine adjustment to the stormwater rates to support the program to cover to the end of the current Drainage PBR period (2021). Subsequent investments in flood mitigation will be incorporated into the overall Drainage PBR renewal through the normal regulatory approval process with Utility Committee and City Council.

4.2 Sewer Odour Mitigation Strategy

As part of the transition of the Drainage utility, EPCOR committed to develop the Sewer Odour Mitigation Strategy. Drainage Services' general approach is that solutions to sewer odour problems need to consider a broad range of concepts and options to address odour nuisances experienced by customers. EPCOR is committed to implementing corrective measures that will address the root causes of odour issues.

Drainage Services is undertaking a number of proactive activities in order to address odour issues while continuing to develop the strategy. These include:

- System upgrading and research application testing in Bonnie Doon, Steinhauer, Duggan, Twin-Brooks, Blue Quill and Blackburne.
- Developing a deep trunk inspection and cleaning protocol and identifying actionable capital improvements.
- Developing capital and operating action plans, and identifying efficiency opportunities with approved capital plans within EPCOR and City capital plans.
- Research with the University of Alberta, system monitoring, enhanced odour data collection and analysis, and catch-basin inspections.
- Assessment of workload with the current and projected workforce required to implement the strategy recommendations.

EPCOR has explored and prioritized a broad range of capital and operational projects located in 157 neighbourhoods at an estimated cost of $460 Million (in 2018 dollars). These projects, together with design standard changes, operational changes and improved construction practices (e.g. ventilation during construction), will address the odour nuisances experienced by customers, protect the drainage infrastructure from deterioration due to corrosion and provide a safe work environment for our employees by reducing exposure to sewer gases. Designs for the initial projects will begin immediately after the detailed business case is approved and funding in place to enable construction in 2020-2021, or sooner if the opportunity presents.

In 2019, the focus is to conduct public engagement to inform the final implementation scenario based on quality of life impacts. Another outcome of this public engagement is to educate our customers and stakeholders on the complexity of the issues as the reduction in odour in one neighbourhood may necessitate construction or other disruption in other neighbourhoods not currently experiencing odour problems.

This Major Initiative was not included in the envelop of drainage services that was transitioned to EPCOR and as a result it is not reflected in the rates approved under the current Performance Based Regulation, which expires in 2022. The capital and operational costs required to implement this Major Initiative is material.

The results of the public engagement and the feedback from Utility Committee will be incorporated into a detailed business case for approval by Utility Committee in Q2 2019 as a non-routine adjustment to the current rate structure. The detailed business case will address the need for urgency and balancing rate impact. The proposed adjustments to rates to support the business case will be submitted to cover to the end of the current Drainage PBR period (2021). Subsequent investments in odour mitigation will be incorporated into the overall Drainage PBR renewal through the normal regulatory approval process with Utility Committee and City Council.

4.3 LRT Construction

The impact of the city LRT program for the Valley Line West and Metro Line Phase 1 will be assessed. The required design and construction efforts to relocate drainage infrastructure will be quantified and presented to Utility Committee in early 2019. Historically drainage relocations, including the current Valley Line construction, were funded by the city LRT program and were therefore not included in the rates approved under the current Performance Based Regulation, which expires in 2022. The capital and operational costs required to implement this Major Initiative is material. Once a full business case is developed, it will be presented to Utility Committee for approval as a non-routine adjustment to the current rate structure.

4.4 Total Loading Strategy

Drainage Services' Total Loading Plan is a continuous commitment to protect regional watershed, comply with regulatory requirements and sustain the surface water quality by managing and limiting loadings from collection system.

In 2002, Drainage Services adopted the Total Loading Concept in demonstration of commitment to continuous improvement and environmental stewardship. By 2005, the Water Quality Model for North Saskatchewan River (NSR) was developed, total loading limit benchmark for Total Suspended Solids (TSS) was set, and a ten year management plan was developed to achieve a benchmark for improving water quality and monitoring plan to measure improvements.

2019 marks the end of the original 10-year Total Loading Plan. Drainage Services will re-evaluate established benchmarks and align the Total Loading Strategy with EPCOR's corporate strategic goals of preserving and sustaining Edmonton's environment and maintaining a healthy river.

EPCOR Drainage Total Loading Strategy will be developed collaboratively, with input from other corporate units, Regional Partners and affected stakeholders. The Strategy is rooted in four guiding principles:

1. Limit TSS Loading
    - Establish achievable load reduction targets
    - Plan for and implement mitigation measures to reduce current and limit future loadings.
2. Align Total Loading Management Plan with EPCOR Drainage and corporate plans and strategies.
3. Align Total Loading Management Plan with Regional Partners and Stakeholders
4. Align Total Loading Management Plan with Provincial Regional Water Management Framework

In line with those principles, the following objectives and accompanying projects, plans and initiatives will guide our work to ensure healthy river and sustainable environment for the long term.

1. Develop and implement a Flow Monitoring Plan to increase the accuracy of data, assist in closing identified gaps in flow data, and enable setting realistic and achievable loading objective. This plan will also provide additional information for better understanding of green infrastructure performance as well as success of programs and projects implemented for Combined Sewer Overflow (CSO) reduction and stormwater runoff reduction.
2. Develop a Volume Control Plan, including policies, programs, initiatives and capital projects around surface runoff reduction and in line with other major programs that directly benefit from volume reduction like CSO Strategy and Stormwater Integrated Resource Plan (SIRP)
3. Focus on watershed to protect creeks and streams from erosion and loss of aquatic habitat.
4. Meet Regulatory Requirements which include updating Load Management Objectives in consideration with changing storm patterns and Edmonton land use.

The framework for the strategy will be presented to Alberta Environment and Parks in March 2019. The Total Loading Strategy, complete with short, medium and long term plans for each of the four main objectives will be complete by the end of 2019.

5 Drainage Services 2019 Capital Plan

Drainage Services Project Management Office continues to refine our capital reporting process. For 2019, we will be focusing on the following areas to enhance our capital systems, tools, and processes:

- 2020 Capital Plan –To align with initial asset management framework
- Long term asset management plan
- 5 and 10 year capital plan

The 2019 budget (shown in Table 1 below) was approved by the EPCOR Board of Directors and represents the Drainage Services 2019 Capital Plan. Please refer to Appendix A for further details of all projects within each program.

Please note EPCOR Water and Wastewater have presented a five-year Capital Plan as part of Performance Based Regulation (PBR) and reporting against that plan is presented as part of the annual PBR Progress Report. Drainage Services has not yet presented a Capital Plan as part of Performance Based Regulation and as such, has provided additional detail regarding our capital efforts.

Program	**2019 Budget**
Drainage Neighbourhood Renewal	$30M
Drainage System Expansion	$19M
Drainage System Rehabilitation	$82M
Environmental Quality Enhancement	$10M
Flood Mitigation	$37M
Sanitary Service Strategy Fund (SSSF)	$34M
Total	**$211M**

Table 1: 2019 Capital Plan

5.1 Drainage Neighbourhood Renewal

The Neighbourhood Renewal Program is an infrastructure renewal and replacement program driven by the City of Edmonton. Drainage Services will continue to coordinate the renewal and replacement of our sanitary and storm sewers in conjunction with the City of Edmonton through this program.

There is currently $30 million in the 2019 budget for this program. The need to assess inclusion of longer term opportunities continues to be a priority. Drainage Services is also preparing for the upcoming Back Alley Renewal Program.

5.2 Drainage System Rehabilitation

Currently, 30% of drainage assets are in fair, poor or very poor condition, with large diameter deep trunks posing the biggest risk. The increase to the rehabilitation program in 2019 to approximately $82 million is primarily due to the following projects:

- Groat Road Trunk Sewer Rehab – $14.4M
- Drainage Vehicles and Fleet $6.4M
- Large Trunk Rehab Projects $3.9M
- Gold Bar Utilidor (PW552 and 147) Rehabilitation - $3.6M
- 127 St & 153 Ave Sanitary Chamber Replacement $3.3M

5.3 Environmental Quality Enhancement

In 2019, we are planning to start rehabilitation of the Clover Bar lagoons. The lagoons act primarily as storage and are 45 years old. They require a modern liner system to prevent groundwater contamination. The design is expected by mid-year and construction on the first cell to begin in the fall. The remaining four cells will be relined in successive years, one cell per year. The internal valves and chambers that control flow within the lagoons will also be replaced over the next three years.

5.4 Flood Mitigation

The Flood Mitigation Program is budgeted for $37 million in 2019. The program is expected to average $65 million annually over the 2020–22 period. Flood Mitigation projects are proceeding with continuous linkage into the Stormwater Integrated Resource Plan (SIRP).

Major Flood Mitigation projects include:

- Hurstwood Estates (Maple Ridge) - $2.4M
- Greenfield (East) Sanitary Relief - $4.2M
- Ermineskin / Steinhauer - $3.2M
- Aldergrove - $2.9M
- Tweddle Place - $6.5M
- Malcolm Tweddle & Edith Rogers Dry Ponds - $14.8M

5.5 Sanitary Service Strategy Fund (SSSF)

The SSSF program is a City of Edmonton managed fund to build sanitary trunk lines in areas where new land development is occurring. The fund collects ~$20 million annually from developers. The program is expected to be $34M in the 2019. The program will continue to average $37 million over the 2020-2022 period.

6 Performance Measures

EPCOR Drainage Services is regulated by the City of Edmonton through a form of Performance Based Regulation (PBR). Rates are currently set for the next four years with rate increases of 3% annually as part of the transition from the City of Edmonton.

6.1 Current Bylaw Metrics

Drainage Services committed to maintain the same bylaw metrics as established prior to the transfer, while developing future service metrics and targets for inclusion in typical Performance Based Regulation. Our performance on these metrics is reported annually through progress reporting to the Edmonton Utility Committee. The current Bylaw Metrics are outlined in Table 2: 2018 to 2019 Bylaw metrics.

	Metric	Performance Measure	2018 Target	2019 Target
1.	Edmonton Watershed Contaminant Reduction Index Score	Index score that measures contaminants released to the North Saskatchewan River from the City of Edmonton.	6.9	6.9
2.	Total Loading – Total Suspended Solids	Total suspended solids loading (Kg/Yr) contributed to the North Saskatchewan River from the storm sewer system, combined sewer system, and Gold Bar Wastewater Treatment Plant. Based on a 5 year average.	50,000	50,000
3.	Emergencies Responded to Within 2 Hours	Measures the efficiency in responding to customer reports or complaints that require an emergency response. The emergency repair crew is given 2 hours to respond and be on site from the time the report is received.	87%	87%
4.	Number of Blocked Mainline Sewers	Measures the number of blockages in the mainline per 100km of pipe.	2.1	2.2
5.	Mature Neighbourhoods at 1:100 Service Level	Measures the percentage of neighbourhoods that are protected against a 100 year storm flood out of the 157 identified at-risk mature neighbourhoods.	16.0%	16.0%
6.	Odour Complaints	Measures the number of odour complaint received from customers.	Reduction from previous year	Reduction from previous year

7.	Pipe Capacity Rating – Sanitary	Percentage of linear infrastructure assessed as having a hydraulic condition rating of 2 (or B) or better. Measured separately for sanitary, storm, and combined sewer infrastructure.	96.0%	96.0%
	Pipe Capacity Rating – Storm		50.0%	50.0%
	Pipe Capacity Rating – Combined Sewer		80.0%	80.0%
8.	Infrastructure at or Above Minimum Level of Condition Rating	Percentage of all infrastructure (including non-linear) assessed as being at or above the minimum level of condition rating.	90.0%	90.0%
9.	Capital (as rehabilitation) Re-invested Compared to Total System Replacement	Measures the percentage of investment dollars spent on renewal/rehabilitation work on aging drainage infrastructure compared to the total system replacement value.	0.81%	0.81%
10.	Employee Engagement (survey every 2 years)	Measures the level of employee engagement within Drainage Services as a percentage.	70	n/a
11.	Employee Turnover (excluding retirements)	Measures the percentage of employees leaving Drainage Services compared to the overall headcount. Excludes retirements. Includes voluntary, involuntary, and transfers to other business areas.	6.0%	6.0%
12.	Lost Time Frequency Factor	Refers to the number of workplace injuries resulting in lost time related to the total number of hours worked (200,000 hr) in a specific time period.	0.50	0.50

Table 2: 2018 to 2019 Bylaw metrics

6.2 Performance Measures

Performance Based Regulation (PBR) metrics will be presented to Edmonton Utility Committee at the June 2019 Utility Committee meeting for approval. Performance goals will be set for this meeting in order to complete the bylaw amendment and implement the metrics effective January 1, 2020 for the 2020/2021 reporting period. These metrics will be revisited and/or renewed when the Drainage Services / Waste Water Services PBR application is submitted in 2021 (to become effective in 2022).

6.2.1 Framework for Performance Measures

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 PBR for Regulated Water and Wastewater Treatments in 2002. Drainage Services is also using the same categorizations.

For the period January 1, 2020 – December 31, 2021, operational performance of Drainage Services will be assessed under four categories:

- Environment
- Customer Service
- System Reliability and Optimization
- Safety

Each of these categories contains individual performance measures that represent the more specific performance standards expected.

6.2.2 Assessment of Performance

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. If EWSI does not meet the standard, financial penalties are applied to a maximum of $1,000,000 per annum. 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 Drainage Services are detailed in the table below.

	Performance Category	A Weighting	B Maximum Penalty
1	Environmental Index	50%	$500,000
2	Customer Services Index	20%	$200,000
3	System Reliability/Optimization Index	15%	$150,000
4	Safety Index	15%	$150,000
5	Total	100%	$1,000,000

Table 3: Performance Measures Indices and Penalties

The weightings and financial penalties of the indices are different between drainage services, water and wastewater treatment operations in order to reflect the different nature of those operations. There is also no financial reward to EWSI for meeting or exceeding performance standards and the purpose of these standards are to ensure that the level of service provided to customers does not degrade over the PBR period.

The overall performance is determined on a point basis with 100 base points available if the standards for all four performance indices are achieved. 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.

6.2.3 Performance Measures

The table below details the 2020-2021 Drainage Services Performance Measures and applicable points. The base points "available" are earned by achieving performance that meets the standard. Their relative weighting totals a target of 100 points. Bonus points are also available for performance above standards. Definitions of each of the Performance Measures can be found in Appendix B.

Index • Sub-indices	Measure	Points		
		Avail.	Bonus	Total
Environment Index		**50.0**	**2.0**	**52.0**
• Stormwater Flow Monitoring	% of area (Hectares) monitored	12.50		
• Environmental Incidents	# of incidents	12.50		
• Flooding Risk	% of sub basins at major or extreme likelihood and consequence	12.50		
• Biosolids Inventory Reduction[1]	Biosolids inventory (dry tonnes) reduction in Clover Bar Lagoons	12.50		
Customer Service Index		**20.0**	**3.0**	**23.0**
• Service Maintenance Calls	% resolved within 24 hours	5.00		
• Emergency Dig Ups - Service Restored	% restored within 48 hours once deemed an emergency dig up	5.00		
• Service Connections	Average time in weeks	5.00		
• Sewer Odour Hotspots	% coverage area of sewer odour hotspots	5.00		
System Reliability and Optimization Index		**15.0**	**3.5**	**18.5**
• Blocked Sewers	# blocked mainline sewers per 100km	5.00		
• Sewer Renewal	# kms of sewers renewed	5.00		
• Infrastructure Condition Rating - Minimum Level	% of infrastructure at or above minimum level of condition rating	5.00		
Safety Index		**15.0**	**1.5**	**16.5**
• Near Miss Reporting	# completed	3.75		
• Worksite Inspection/Observation	# conducted	3.75		
• Lost Time Frequency Rate	frequency rate	3.75		
• All Injury Frequency Rate	frequency rate	3.75		
Total Points to be Earned		**100.0**	**10.0**	**110.0**

Table 4: Drainage Services 2020/2021 Performance Measures

[1] The Biosolids Management Program is moved to Gold Bar Wastewater Treatment effective January 7, 2019. However, the Biosolids Inventory Reduction metric will remain with Drainage Services until the next PBR period in 2022.

6.3 Future Performance Based Reporting

In preparation for the 2022-2026 PBR application, Drainage services will develop a cost of service study in conjunction with an industry recognized external consultant. The study will review the wastewater treatment, sanitary drainage, and stormwater drainage services and develop cost of service methodologies and models for each. The study is intended to provide the analytical tools which would be used to develop the next rate filing for each of these utilities. The cost of service analysis is used to equitably allocate or assign the cost of each utility to its end users in an equitable and cost-based manner. The cost of service also is valuable in that it provides average unit cost or cost-based rates which are the starting point for final proposed rate designs. The study will be developed in a manner that is consistent with the principles and methodologies established by the Water Environment Federation (WEF) Manual of Practice No. 27, *Financing and Charges for Wastewater Systems*.

Appendix A: Drainage Capital Projects

Project	Project Forecast	Status	Update
Program: Drainage System Expansion			
Initial Phase Downtown Stormwater Drainage Servicing	$37 M	Construction	• In-house tunneling crews completed manhole structure construction work at 111 Ave and 107 St working shaft. • External contractor (SCGC) has developed Rescue shaft #2 construction plan and submitted for EPCOR's review and approval. They have also completed another 4m tunnel excavation works towards the rescue shaft #2.
Program: Drainage System Rehabilitation			
151 St and 99 Ave San Tr Rehab Ph II	$39 M	Detailed Design	• Concept and preliminary design completed. Detail design started. Geotechnical drilling work completed safely. Communications with the residents about the investigation initiated prior to geotechnical investigation.
Groat Road Trunk Sewer Rehab	$40 M	Construction	• Cleaning and rail system (for pipe installation) from Shaft 1 (142 St) completed. • Invert repairs and void grouting underway from Shaft 1. • Mandrel testing completed from Shaft 1 to confirm pipe size. - Pipe for first section and pipe jacking machine delivered to Shaft 1. • Worksite safety inspection done. - Shaft 3 (at 118 Ave & 135B St) construction continued.
West Jasper Place	$21 M	Commissioning	• Demobilization and paving of the last active site at 151 Street and 99 Avenue was completed in October. Completed first lesson learned session

High Priority Repairs 2018	$15 M	Construction	• 47 locations completed in October as part of the High Priority repair program:
			  ○ 3 Mainlines
			  ○ 24 Service Connections
			  ○ 8 Catch Basins
			  ○ 6 Catch Basin Leads
			  ○ 3 Manholes
			  ○ 3 Subsidences
			  ○ 0 Culverts

Project	Project Forecast	Status	Update
Large Trunk Rehabilitation: Area S-2a	$25 M	Planning	• Phase 1 locations determined
West Valley Line LRT Sewer Relocation	$52 M	Planning	• Concept design is done for the 87Ave and will more to detail design with the completion date of January 30, 2019. The other locations design is underway.
Program: Environmental Quality Enhancement			
Cloverbar Cell # 1 Redevelopment	$31 M	Conceptual Design	• Non-approved contractor form was completed; waiting for approvals prior to sending it to the consultants.
Program: Flood Mitigation			
Ermineskin / Steinhauer	$17 M	Preliminary Design	• Had an open house on October 23 with great feedback. The results have been sent to the School Board for their information and to make a decision on the pond at the school site.
Lee Ridge and Richfield Improvements	$16 M	Procurement	• Updated forecast for 2019-20

Tweddle Place	$47 M	Construction	• The construction of Stage #1 and Stage #2 were completed. The pond expansion Stage #3 is ongoing and will be done by the end of 2018.
			• In October 2018 the following was completed:
			  ○ Construction of TP5
			  ○ Multi-use trail pavement
			  ○ 80% of seeding
			  ○ 95% of lining wall structure
			• The contractor has completed the road restoration in the trench area on 86 St & north of 43 Ave.

Tawa Dry Pond (TW1, HV1 &WL1)	$19 M	Construction	• Dry pond construction work is completed and Construction Completion Certificate (CCC) issuing work is on progress. • Approx. 90% of 49A St drainage construction work has been completed by Whissell Contracting Ltd. • 28 Avenue drainage construction work is 50% completed.

Project	Project Forecast	Status	Update
Malcolm Tweddle & Edith Rogers Dry Ponds	$65 M	Detailed Design	• Sent final Dry Ponds RFQ documents to Procurement. - Working with Procurement and HSE on minor revisions to the HSE requirements in Dry Ponds RFQ documents.
Morris Pond	$18 M	Preliminary Design	• PO issued to Golder for Geotechnical investigation Preliminary drawings developed Project schedule updated
Program: Sanitary Service Strategy Fund			
SESS SA1A	$28 M	Construction	• In-House tunnel construction work Construction Completion Certificate (CCC), has been issued
SESS SW4	$27 M	Construction	• The crew continued working on patching, cleaning and dismantling procedure along the tunnel. • The TBM has been lifted up and removed from the recovery shaft in middle of October. • We are still working on the installation of concrete manhole structure at the intermediate shaft in October.
NEST NC2 & NC3	$42 M	Construction	• 1,149m of tunnel segments have been installed in total for Phase 2 (total of 2.4km) as of October 31, 2018. • The construction of NC2 temporary pump station started on Sept 20, 2018. • Forcemain was completed in Sept. power cable was installed in October. The construction will be completed in this December. • Phase 1 epoxy coating was completed on September 10, 2018 and passed the CCC coating inspection by RAE Engineering on October 26, 2018.
SESS SA10A	$31 M	Construction	• Working Pit construction is currently in progress, 120 out of 120 piles have been installed. Dewatering wells have been completed. The first level of excavation is complete (1/4). • Procurement process for pump station and forcemain has started.

Appendix B: Performance Measures Definitions

1 Environmental Index

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. EWSI conducts its business in a responsible and open manner that is environmentally, socially, and economically sustainable.

Due to the transition to EPCOR, Drainage Services needed to split its Approvals to Operate from City of Edmonton facilities. In 2018, Drainage Services 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.

The Environmental Index is comprised of the following four equally weighted factors:

- Stormwater Flow Monitoring
- Environmental Incidents
- Flooding Risk
- Biosolids Inventory Reduction

1.1 Stormwater Flow Monitoring

Stormwater Flow Monitoring measures the percentage of developed catchment areas where discharges are monitored. Flow measurement at outfalls is part of EPCOR's requirement for load measurement to satisfy Alberta Environment and Parks (AEP) Approval requirements.

Stormwater flow estimation is also done for a portion of the city area. Working towards a higher level of monitoring will decrease reliance on estimation and help with flow model calibration. This measure maintains EWSI's regulatory compliance and environmental leadership through supporting the development of the Total Loading Plan and SIRP.

1.2 Environmental Incidents

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 collection system. Reportable incidents are determined as

per the Guidance Document for Reportable Environment and Public Health Incidents for EPCOR Drainage Services – November 16, 2018. 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.

Since transferring to EPCOR, Drainage Services is focused on alignment of reporting, tracking of incidents with other utilities and operational groups within EPCOR, and to continue to promote the reporting of internal incidents within the framework of the ISO 14001:2015 registered EMS in Drainage Services. One of EWSI's 2017-2021 PBR performance measures for Wastewater Treatment is environmental incidents that are deemed to have been both preventable and reportable. Preventable incidents are those incidents that involve a failure to meet performance limits, or 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, will develop the criteria and exceptions to be able to measure internal environmental incidents deemed both reportable and preventable for the 2022-2027 PBR Rate Application.

1.3 Flooding Risk

As part of the Stormwater Integrated Resource Plan (SIRP), a number of sub basins will be risk ranked based on its location in the city dependant on Health & Safety, Environmental, Social, and Financial risk. The final result of the sub basins are ranked within the major or extreme in likelihood and consequence denoted as Risk Rank A to E. This measure determines the percentage of sub basins ranked A to E for likelihood and consequence.

This measure will determine the success of Drainage Services related to flooding risk. This will also be used to provide updates to Utility Committee and the public in a simple but effective manner by looking at the current and past risks. Risk ranking will be updated at a minimum every two years and will change based on the infrastructure added, degradation of asset conditions, or better modeling data, etc.

1.4 Biosolids Inventory Reduction

This measures the biosolids inventory reduction (dry tonnes) in the Clover Bar lagoons. Biosolids are the nutrient-rich organic by-product of domestic wastewater treatment that contains essential plant nutrients and organic matter. When the biosolids beneficial reused amount is greater than the amount of biosolids generated, stored biosolids are removed from the Clover Bar lagoons, which helps to minimize odours and potential impacts on the environment.

This measure reflects Drainage Services' commitment to reducing its impact on water, land, and air through continuous improvement toward minimizing pollutants and contaminants. This demonstrates efforts to protect the health of our people and our ecosystem and ensure the landscape in which we live can be enjoyed by all members of our community. It is also reflective of the efforts to improve odour control by increasing the tonnes of biosolids that are beneficially disposed each year and reducing biosolids stored in lagoons. We are committed to maintaining environmental leadership through innovative improvements to environmental programs.

2 Customer Service Index

The customer service index is a composite measure of the customers' perception of satisfaction with our service and 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 we serve the citizens. Serving customers well means that citizens feel they receive good value for the cost of drainage services, which includes uninterrupted and seamless service, flood risk reduction, and timely and enthusiastic customer support.

This index is comprised of four equally weighed factors:

- Service Maintenance Calls
- Emergency Dig Ups – Service Restored
- Service Connections
- Sewer Odour Hotspots

2.1 Service Maintenance Calls

This is the percentage of service maintenance sewer trouble calls resolved within 24 hours. Sewer trouble occurs when there is an interruption of service as a result from pipe deficiency or blockage within the main service line. Sewer trouble calls will be 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.

During a major storm event, 311 notifications 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 CB's; eaves troughs starting to overflow; sewers are almost full.

Drainage Services is committed to improving service and responsiveness to customer sewer troubles.

2.2 Emergency Dig Ups – Service Restored

When a customer no longer has use of their sanitary and/or storm service, Drainage Operations responds and determines whether the service can be repaired by Drainage Operations or if it must be excavated to make the necessary repairs to restore the customer's service. If the issue must be excavated to repair, it is transferred to Open Cut Construction to 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.

This measure improves customer processes and work delivery. 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 as such restoration is required as soon as possible.

2.3 Service Connections

This measure tracks the average time it takes to complete the installation of new sanitary, storm, and common trench water service connection (<50mm) projects. This metric will not include water service connections greater than 100mm as this is new work for Drainage Services in 2019 requiring a separate trench and as such it is not possible to establish a benchmark for performance. This improves service to customer through improvement to service connection time, better work delivery and improved customer processes.

2.4 Sewer Odour Hotspots

The development of a Sewer Odour Mitigation Strategy is one of the key deliverables in the Drainage Services Operational Plan. Please see Sewer Odour Mitigation Strategy on page 21. This measure aligns with the strategy by determining the percentage of city wide coverage area of sewer odour hotspots. It will only apply if the strategy is approved.

A sewer odour hotspot is a region where the odour report spatial density exceeds a defined threshold of 10 reports per square kilometer. Report density is calculated based on the number and location of properties and sewer assets where odour reports were received.

The baseline report density will include the combined number of both customer and EPCOR field staff odour reports from 2015 to 2020 inclusive. 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 2023, odour reports from the years 2018 to 2023 (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 Sewer Odour Mitigation Strategy.

3 System Reliability and Optimization Index

The system reliability index is a measure of the confidence that customers can place in the reliability of the drainage system.

This index is comprised of the following three equally weighted factors:

- Blocked Sewers
- Sewer Renewal
- Infrastructure Condition Rating – Minimum Level

3.1 Blocked Sewers

This measures the number of blocked sewer mains in the sanitary and combined sewer systems. 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. Drainage Services executes a Preventive Maintenance Program which involves 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.

3.2 Sewer Renewal

Sewer Renewal measures the number of kilometers of sewer pipes that have been renewed. Renewing a sewer pipe extends the lifetime of the pipe and improves the capacity of the pipe to reduce flooding. This can be done as part of the following programs:

- Neighbourhood Renewal Program: Renewal and replacement of aging sanitary and storm sewers in mature neighbourhoods.
- Local Sewer Rehabilitation Projects: Renewal and replacement of aging local sanitary and storm sewers on a location by location basis around the city.
- Arterial and Collector Renewal Coordination Program: Rehabilitates the sanitary and storm sewers system infrastructure as it ages on major arterial and collector roads around the city.

This measure is reflective of EWSI's 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.

3.3 Infrastructure Condition Rating – Minimum Level

This measure provides information on the condition assessment of sewer assets, shown as a percentage of total sewer assets assessed to be in fair or better physical condition. This measure can improve asset management practices by ensuring there is a focused effort on rehabilitation of the right assets, to achieve the desired level of service for the least cost. It is also a basis for rehabilitation decision making and capital planning.

4 Safety Index

EPCOR and Drainage Services are committed to a safe, healthy workplace and demonstrate this through care and concern for people. We 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.

Drainage Services is proposing that the Safety Index be comprised of the following four equally weighted factors which are the same safety measures in both Water and Wastewater Treatment 2017-2022 PBR Rate Applications:

- Near Miss Reporting
- Worksite Inspections/Observations

- Lost Time Frequency Rate
- All Injury Frequency Rate

4.1 Near Miss Reporting

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.

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.

EWSI has developed a formal near miss reporting program including an automated reporting process available to all staff.

4.2 Worksite Inspections and Observations

Worksite inspections and observations measures 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 assist in maintaining safe working conditions and the removal of any potential hazards that arise in the workplace. EWSI’s worksite inspection programme ensures that comprehensive inspections are conducted throughout the work environment including buildings, structures, grounds, excavations, tools, equipment and machinery.

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, project managers, hygienist, etc.), and should include a worker health and safety representative. Inspections are physically observed conditions on worksites, while observations are behaviour based on actions, i.e. how the work is done.

4.3 Lost Time Frequency Rate and All Injury Frequency Rate

Both of these measures have a standardized reporting protocol that is 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 that are required to use the CEA guidelines. 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.

Lost Time Frequency Rate:

In order to clearly define lost time, EWSI has adopted the guidelines developed by the CEA. The Lost Time Frequency factor is a measure of the effectiveness of EWSI's safety programs as related to disability injuries and illnesses. It measures the frequency or number of lost time injuries per hours of exposure. Exposure Hours are defined as the total number of hours employees are exposed to the work site.

All Injury Frequency Rate:

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.