



Waste Services IIS Infrastructure Delivery Composite - Capital Funding Request

City Operations | Waste Services
City of Edmonton

Capital Profile: CPP# CM-81-2045

Project Number: CP# / OP#- Various

Project Owner: Ellen Tian

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CHANGE HISTORY

Version #	Date	Author	Description
1.0	7/20/2018	Alison Abbink	Version submitted for Team Lead, General Supervisor and Working Group review
2.0	8/1/2018	Alison Abbink	Revised version submitted for Director review
3.0	8/15/2018	Alison Abbink	Revised version submitted for Branch Manager review
4.0	9/11/2018	Alison Abbink	Revised version submitted for Branch Manager and Utility Advisor review
5.0	10/12/2018	Alison Abbink	Revised version submitted to Business Partner review



SUBMITTED BY:

Version #	Submitter Name	Title	Submission Date
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5.0	Ryan Kos, General Supervisor, Business Strategy Planning & Performance		10/12/2018
5.0	Cameron Grayson, Director Business Integration		10/12/2018
5.0	Keith Knoblauch, Operational Controller Business Financial Analytics		10/12/2018

APPROVED BY:

Version #	Approver Name and Title	Signature	Signing Date
5.0	Ellen Tian, Director Technical Services		10/12/2013
5.0	Michael Labrecque, Branch Manager Waste Services		10/12/2013

1. Executive Summary

1.1. IIS Project Development and Delivery Model (PDDM) composite renewal

The composite profile CM-81-2045 provides a level of funding for Waste Services capital projects that are intended to be delivered by Integrated Infrastructure Services - Infrastructure Delivery Branch in the 2019 - 2022 capital budget cycle. The approach is consistent with Administration's implementation of the Project Development & Delivery Model (PDDM) as well as the Capital Project Governance Policy C591¹ that was adopted by Council in April 2017.

Adherence to both the PDDM process and Policy C591 will ensure that sufficient information is prepared in advance of the capital budget process to support informed investment decisions, provide adequate resources for planning and design to ensure appropriate level of planning and design is incorporated into budget submissions and provide an overall framework to guide the management of Waste Services' capital projects.

As PDDM has previously been adopted by Council, this capital funding request establishes funding prioritization for Waste Services projects anticipated to enter the project delivery stage within a checkpoint system with strategic controls on budget and schedule. The PDDM approach is a gated process for capital projects to ensure that projects are properly developed before they are funded for delivery.

While approval for funding in this profile is required to establish the initial 2019 - 2022 capital budget and projected utility rate increases over the 4 year period, approved funding for this profile does not indicate final budget or funding for any specific capital project.

This capital funding request provides information at a concept level that pertains to the budget for projects that are anticipated to be delivered during the 2019-2022 budget cycle. Details of the individual projects listed in this profile, including budget and scheduling will be further disclosed once the project has reached checkpoint 3 and a detailed business case has been developed for approval from Utility Committee and Council.

This profile requires funding for Waste Services capital projects that are intended to be delivered by Integrated Infrastructure Services - Infrastructure Delivery Branch in the 2019 - 2022 capital budget cycle. The four year capital projection for this profile is approximately \$96 million. A high level list of projects and estimated budget allocations is listed in Appendix A.

2. Background

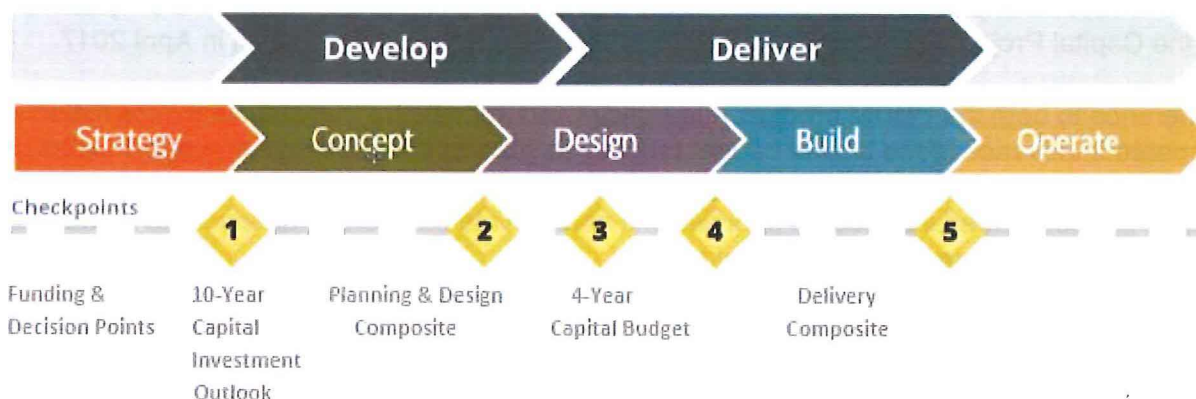
In 2016, the Integrated Infrastructure Services (IIS) Transformation program developed the PDDM which was endorsed by the Council in 2017. The PDDM is a framework to manage all capital infrastructure projects and represents the best practices in project management from the

¹ <https://www.edmonton.ca/documents/PoliciesDirectives/C591.pdf>

industry and comparable municipalities. It aims to achieve the following outcomes²:

- (1) Better information to make capital investment decisions
- (2) Improved project schedule and budget estimates through increased level of design to ensure realistic expectations are set prior to project tendering and construction
- (3) Systematic evaluation of projects against the initial project business case and scope.

The PDDM flow chart is as below:



IIS delivers Waste Services capital projects using the PDDM process.

2.1. Problem / Opportunity

The current council directed approach will assist Waste Services in the management of capital projects in alignment with the PDDM process. The PDDM process offers a gated system where budget for comprehensive planning and design can be released in advance and once complete, decisions can be made regarding investments pertaining to the delivery of the projects rather than releasing the project budget as a whole upfront, as was prior practice. Without the additional details from a comprehensive planning and design process, the project estimates contained high value contingencies and the accuracy of the schedule and budget estimates varied significantly. Following the PDDM process will mitigate this risk and improve project and budget management practices for Waste Services. Projects included in this composite profile will address a number of Waste Services business needs such as the renewal of assets that have reached the end of their useful life, mitigation and elimination of safety and environmental risks and the need and opportunity for growth and continuous improvement.

2.2. Current Situation

Prior to the implementation of the PDDM approach, the project delivery budget of any capital profile was approved as part of the whole project. However, without the additional details from a comprehensive planning and design process, the project estimates contained high value contingencies and the accuracy of the schedule and budget estimates varied significantly.

² Integrated Infrastructure Services report CR_4120

Waste Services began utilizing the PDDM approach under the direction of Council in 2017. Under this model, funding for project delivery is budgeted in a composite profile consisting of concept estimates for projects expected to be undertaken in the capital budget cycle.

While Integrated Infrastructure Services will manage the projects, Waste Services will provide subject matter expertise as part of a project team to inform work at all checkpoints throughout the PDDM process. Waste Services will continue to follow this approach in the future.

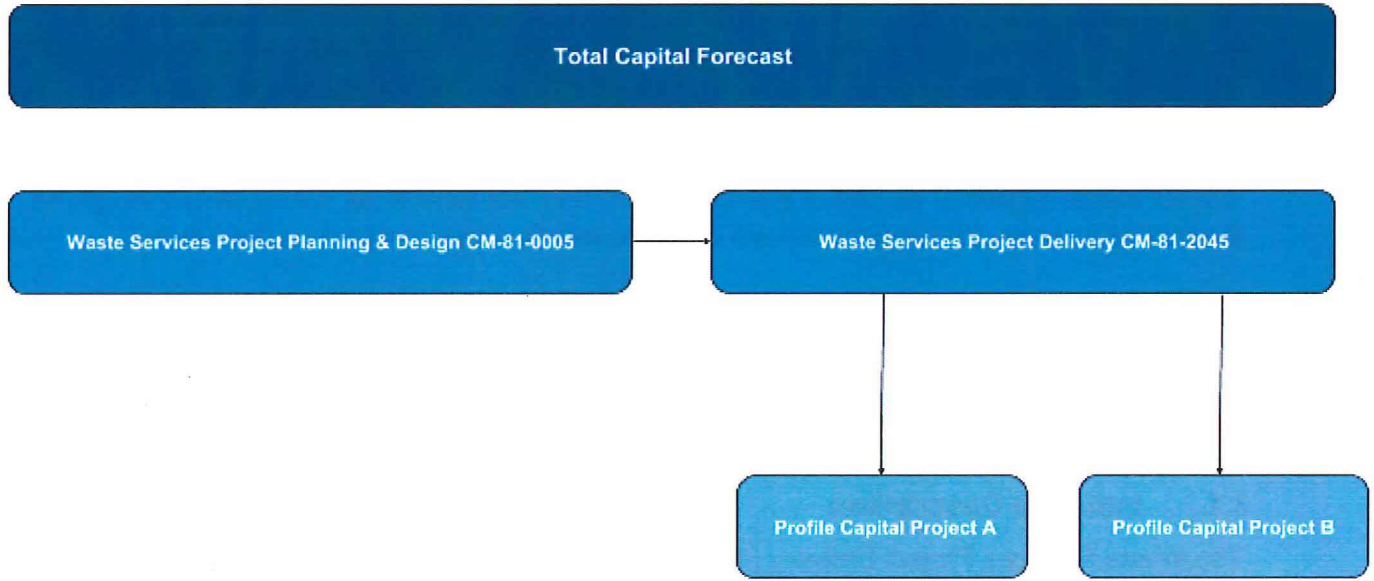
3. Initiative Description

3.1. Initiative Description

The Waste Services Project Delivery (IIS managed) CM-81-2045 composite capital profile sets the 2019 - 2022 capital budget for Waste Services for those capital projects that are anticipated to reach the third checkpoint in the PDDM process within the budget cycle. Once a capital project reaches this stage, a detailed standalone business case will be developed and brought to Utility Committee and Council for approval.

This approval will result in a capital budget adjustment that transfers budget from this profile to the newly created standalone profile. Until this transaction occurs, no funds are authorized to be spent on the delivery of a capital project.

This approach is consistent with Administration's implementation of the Project Development & Delivery Model as well as the Capital Governance Policy C591 that was adopted by Council in 2017.



Funding in the profile will be used to support project delivery work for the capital initiatives of Waste Services anticipated to be delivered in the 2019-2022 budget cycle, including but not limited to:

- Organics processing
- EWMC site civil servicing
- Materials Recovery Facility (MRF) renewal
- Anaerobic Digester process to further reduce pathogens
- EWMC site security audit upgrades
- Refuse Derived Fuel facility enhancement
- Compost cure site resurfacing
- Residential Transfer Station (RTS) building upgrade.

The projects listed above were identified by way of a Project Intake Request Form (PIRF), which was submitted by the project managers to Technical Services, indicating the project scope, justifications, schedules, risks and estimates. These were then evaluated, ranked and prioritized based on the strategic and operational criteria set by the Technical Services. Appendix A - Waste Services Internal Project Intake Request Process outlines the PIRF process and criteria.

As the project costs used for requesting and evaluating the projects are estimates, they will be reviewed and validated in the early part of the budget period to assess the alignment with the long term asset strategic framework and plan that are being developed by Waste Services. Additional information regarding these projects can be found in Appendix B.

3.2. Urgency of Need

The need to effectively deliver capital projects is essential for Waste Services to achieve its commitment to deliver quality sustainable waste management services to the City of Edmonton

as well as effectively meet the changing needs of its customers. Projects that are anticipated to reach the third checkpoint in the PDDM process within this budget cycle have been identified and prioritized based on strategic criteria such as environmental impact, health and safety and alignment with Branch and Corporate goals. Delivery of these concept level projects within this profile will be fundamental to Branch operations and will help to ensure continued delivery of sustainable waste collection and processing services.

As Waste Services capital budget is supported by the utility rate, capital funding request for both planning and delivery phases of approved capital projects within the PDDM approach are required in order to have funds allocated to the composite profile and determine the utility rates required to support the capital budget. While approval for funding in this profile is necessary to determine capital budget and utility rates, approved funding for this profile does not indicate final budget or funding for any specific capital project.

3.3. Anticipated Outcomes

In alignment with the PDDM approach, Waste Services will realize the achievement of branch goals through working with Integrated Infrastructure Services to effectively manage the delivery of capital projects. Effective asset management will ensure that Waste Services has the resources to achieve its objectives by aligning its vision, mission and strategic plan with daily activities to achieve its goals. Waste Services envisions the following outcomes:

Outcome /Deliverables
Better information to make capital investment decisions: Through a structured and integrated process, administration will ensure that projects identified as priorities by Waste Services receive robust evaluation of alternatives and scope identification. Through the PDDM process, project maturity is regularly assessed to ensure that projects are ready to advance to the next stage of development
Improved project schedule and budget estimates: Following industry best practices, a control budget and schedule is established on the basis of a completed design to ensure realistic expectations are set with IIS prior to tendering and construction
Reliable facilities and infrastructure that enable sustainable waste management in a cost effective manner.
High levels of customer service delivered in both an efficient and effective way through leading-edge waste processing facilities that use current and emergent technology to enable high rates of diversion of waste from landfill
Facilities that can be operated in a safe manner, protecting employees, customers and contractors
Capitalize on opportunities to reduce cost to operate and process waste in an environmentally and fiscally responsible way

3.4. Scope

The scope of this capital funding request includes the detailed design, construction and project closeout stages, which subsumes work after completing Checkpoint 3 through Checkpoint 4 (Authorization for Construction expenditure) and Checkpoint 5 (Authorization for closeout) for all authorized Capital projects being led by IIS on behalf of Waste Services.

Checkpoint 4: Final check before the project goes to tender, to verify the project is ready to be tendered and develop a refined control budget. This will include an assessment of readiness and a final scope review. If the project is within the approved scope, schedule, and budget, an Internal Control Budget, Control Schedule and Authorization for Expenditure will result. If it is not, it will either be forwarded for a Change Request or will be sent back for revision. Approved projects are authorized to spend up to their control budget levels.³

Checkpoint 5: This checkpoint is to verify that the project is ready for the final closeout within Integrated Infrastructure Services. Closeout will ensure that the scope has been met satisfactorily and that all closeout activities have been completed⁴.

3.5. Out of Scope

Project planning and design phase of the PDDM approach is out of scope for this capital funding request. (This includes Checkpoint 1 (Project initiation), Checkpoint 2 (Authorization for Design Expenditure) and Checkpoint 3 (Approval for Capital Budget) of the PDDM approach.

3.6. Critical Success Factors

Critical success factors include:

- Efficient, consistent and accurate communication between Waste Services and IIS
- Regular check-ins with the Waste Services Branch Leadership team to align with the strategic direction and branch goals
- Accurate and sufficient data and cost analyses to support high level budget estimate and informed decision makings for the projects
- On time, on budget delivery of capital projects within the PDDM approach.

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts between the goals and the corporation to make an impact towards achieving the vision. As

³ Source: <https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-4>

⁴ Source : <https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-5>

these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens. This profile aligns with the following new strategic goals of the City of Edmonton.

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with community and personal wellness that embodies and promotes equity for all Edmontonians.	Edmonton neighbourhoods are more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Edmonton grows prosperity for our Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	Edmonton is a city transitioning to a low- carbon future, has clean air and water and is adapting to a changing climate.

In addition to this overarching corporate alignment structure, individual projects approved within this composite profile will align with the City of Edmonton’s Waste Management Policy C527 and Waste Management Utility Fiscal Policy C558A as well as the Capital Project Governance Policy C591. This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

5. Context Analysis

Requested funding for project delivery for capital projects is consistent with Administration's implementation of the Project Development & Delivery Model as well the Capital Project Governance Policy C591 that was approved by the Council in April 2017.

6. Organizational Change Impact

Waste Management Services staff, reporting through the Technical Services section, work closely with the Integrated Infrastructure Services as part of a project team to plan, develop and deliver approved capital projects. No change to organization is expected.

6.1. Stakeholder Impact

The table below identifies the stakeholders and the potential impacts for the PDDM process followed by Waste Services.

Stakeholder Requirement
Stakeholder 1: City of Edmonton Waste Services Branch (primary internal)
<ol style="list-style-type: none"> 1. To establish well defined and consistent process in alignment with rest of the City. 2. To act in an enhanced consultation, recommendation and approval role for Delivery checkpoints for Waste projects managed by IIS as part of a project team.
Stakeholder 2: Integrated Infrastructure Services (primary internal)
<ol style="list-style-type: none"> 1. Enhanced Project Management role for approved Capital projects utilizing input from Waste Services. 2. Improved process for capital funding for projects in composite profile for Waste Services
Stakeholder 3: City Council (primary internal)
<ol style="list-style-type: none"> 1. Increased transparency, accuracy, reliability of project schedule and budget estimates 2. Ability to provide political direction and have access to accurate project information
Stakeholder 4: City of Edmonton public (secondary external)
<ol style="list-style-type: none"> 1. Maintenance of stable/low utility rate through the delivery of capital projects 2. Minimal disruption to service levels through delivery process.

6.2. Business and Operational Impact

The table below identifies the business and operational impacts for the PDDM approach to the delivery of Waste Services projects.

Business & Operational Impact & Description
Waste Services (Internal)
<ol style="list-style-type: none"> 1. Longer process with the addition of multiple checkpoints.

2. Dedicated project management resources to provide consult, recommend and approve functions as part of a project team.
Integrated Infrastructure Services (internal)
1. Allocated resource of Project Management team for the detailed design, construction and project closeout. Checkpoint 4/5 documents

7. Cost Benefits

7.1. Tangible Benefits

The following tangible benefits will be realized by following the new approach:

- Accurate information to make better capital investment decisions
- More accurate project budget and schedule estimate at checkpoint 3 for decision making
- Increased adherence to budget and schedule estimates
- Improved efficiency in project management
- Increased accuracy of forecasting capital expenditure thus allowing for more certainty in utility rates.

7.2. Intangible Benefits

Following intangible benefits will be realized by following the new approach:

- Structured process to evaluate readiness, scope and prioritization
- Increased project accountability
- Increased project awareness and controls
- Closer integration of City departments
- More efficient and consistent procurement process.

7.3. Costs

REQUEST	2019	2020	2021	2022	TOTAL PROFILE BUDGET
Budget Request (note: funded by Utility Pool)	\$3,250,200	\$14,908,750	\$35,680,032	\$42,189,781	\$96,028,763

7.4. Assumptions

- Projects in this composite profile have allocated budget amounts that are based on high level project estimates. The actual costs of the approved capital projects in this composite profile may vary once the design stage is completed by IIS.
- All of the proposed projects in this composite profile have been prioritized based on the approval of Waste Services proposed program changes pending decision of Utility Committee and City Council.
- Projects listed in this capital funding request are at a concept level only. The individual project details, budget and schedule will be outlined in a full business case to be presented to Utility Committee and Council for funding.

8. Resourcing

All capital projects in this composite profile will be managed by the Infrastructure Delivery Branch within Integrated Infrastructure Services. Where outside resources are required, the tender process and external vendor relationship will be managed by IIS. Subject matter expertise will be contributed by Waste Services to the project teams from current staff complement. There will be no addition to the current approved Waste Services FTE complement.

9. Key Risk(s) and Mitigation Strategy

RISK(S)	IMPACT	MITIGATION STRATEGY
PDDM is a gated process and the additional steps required in this new process may increase timelines or compromise scheduled completion dates.	Medium	<ul style="list-style-type: none"> • Waste Services will work closely on the project team with IIS and other parties to ensure project planning process is started in advance, timely review and approval is occurring and schedules are adhered to.
Emerging priorities may cause projects scheduled to proceed to delivery stage to be delayed	Low	<ul style="list-style-type: none"> • Profile project list is concept level only, allowing for allocation changes, however in order to

		<p>foster continuity of information, project team will be informed of updated branch priorities</p> <ul style="list-style-type: none"> Waste Services and IIS through project teams will have regular meetings to ensure integration and implementation of planned projects as well as responding to emergent projects
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10. Conclusion and Recommendations

10.1. Conclusion

This capital funding request outlines the overall capital budget requirement for capital projects anticipated to move into the Project Delivery phase of the PDDM approach for the 2019-2022 budget cycle. These capital projects are proposed to receive budget under the composite profile Waste Services Project Delivery (IIS Managed) CM-33-2045 for a total capital budget of approximately \$96M. Projects moving into the delivery phase will be allocated budget through a detailed project level business case and a budget adjustment pending approval from Utility Committee and Council. Adherence with the PDDM approach is expected to improve project schedule adherence and improve budget estimates through increased level of design to ensure realistic expectations are set prior to project tendering and construction.

10.2. Recommendations

Waste Services recommends continuing to follow the PDDM approach and release funds for project delivery phase for all capital projects handled by IIS. This will lead to higher control on the project scope, schedule, budget and delivery.

10.3. Project Responsibility and Accountability

The project sponsor and budget owner for all approved capital projects in this composite profile is the Branch Manager of Waste Services. The delivery of capital projects within this composite profile will be overseen by the Branch Manager of Infrastructure Delivery, Integrated Infrastructure Services . Individual projects are led by Project Managers within Infrastructure Delivery.

11. Implementation Approach

The Waste Services Project Delivery (IIS managed) CM-81-2045 composite capital profile sets the 2019 - 2022 capital budget for Waste Services for those capital projects that are anticipated to reach the third checkpoint in the PDDM process within the budget cycle. Once a capital project reaches this stage, a detailed standalone business case will be developed and brought to Utility Committee and Council for approval.

This approval will result in a capital budget adjustment that transfers budget from this profile to the newly created standalone profile.

From that point, respective project managers from IIS will utilize approved funds in those standalone profiles for project execution, which will be governed by the gated project management system of the the PDDM process.

12. Review and Approval Process

The following review and approval process was followed for this capital funding request:

Review Step	Reviewer
Review 1	Team Lead of Business Integration, General Supervisor of Business Integration and General Supervisor of Technical Services
Review 2	Operational Controller for Waste Services, Director of Business Integration, Director of Technical Services, IIS Supervisor for Waste Services and Branch Manager Waste Services
Review 3	Deputy City Manager
Review 4	Communications
Review 5	City Manager & Utility Advisor
Review 6	Utility Committee report presented

13. Appendices

Appendix A: [Waste Services Internal Project Intake Request Process \(PIRF\)](#)

Appendix B: [Waste Services Delivery Project Description- 2019-2022 Projects](#)

Appendix C: [Financial Analysis Summary \(Waste Services Delivery composite profile\)](#)

Appendix D: [Costs - Revenue Requirements](#)

Appendix A: Waste Services Internal Project Intake Request Form Process (PIRF)

The following list outlines the PIRF process:

1. Business needs are identified for all branch areas and a Project Intake Request Form (PIRF) is created for each proposed project for planning and design or delivery within budget cycle years (2019-2022)
2. Each PIRF is categorized as one of the following: High Priority Major Projects, Operational Efficiency Improvements, and Asset Management (Renewal).
3. Projects for each category is then evaluated based on defined strategic and operational criteria and assigned a score.
4. Projects are then prioritized within each category based on criteria score.
5. Budget is allocated to each category, with each category being assigned a percentage of the total budget:
 - a. 92.5% to High priority Major Projects, 2.5% to Operational Efficiency Improvements, and 5% to Asset Management (Renewal)
6. Projects are recommended based on prioritization with budget estimates.
7. Waste Services Leadership Team will review and approve the final list. Waste Services Leadership Team can adjust the project list according to the Branch priority.

The following table shows a sample scoring criteria for projects within the PIRF process

Strategic Criteria (50 pts)				Operational Criteria (50 pts)				
Legislated, Mandated, or Required by Law (20)	Health and Safety (15)	Energy and Climate (5)	Council Mandate (10)	Project Coordination (10)	Organization Impact (10)	Change in Demand (10)	Level of Service (10)	Strategic Risk (10)

Appendix B - Waste Services Delivery Project Description- 2019-2022 Projects:):

Profile Name	Profile #	Project Name	Project Description
Waste Services Project Delivery (IIS Managed)	CM-81-2045	19-33-2045 Organics processing	Project will deal with the repair or replacement to the ECF as well as the expansion of the Organic Processing Facility (OPF) tip floor to accommodate direct delivery of Source Separated Organics (SSO) program.
		19-33-2046 EWMC Site Civil Servicing	Project supports the development of an integrated master plan for the EWMC site, including items such as stormwater, groundwater, roads, parking lots, working areas and underground utilities among other and will be further aligned with existing plans such as groundwater diversion plan, and leachate management plan.
		22-33-2020 Material Recovery Facility Renewal (MRF)	A long term strategy is under development for the Materials Recovery Facility (MRF). This project will support the delivery of the recommended option stemming from the long term strategy
		Anaerobic Digester Process to Further Reduce Pathogens	Project supports waste diversion and enhances digester output material characteristics by adding additional heat exchangers to the facility and incorporate post-processing screening to the finishing circuit processes.
		EWMC Site Security Upgrade	Project supports upgrading EWMC site security to meet the corporate standards and includes but is not limited to replacing existing camera systems, installing new and replacing old fencing, increased signage, replacing existing card access system to the site and buildings and addressing some site access points.
		Compost Cure Site resurfacing	This project exists to facilitate the renewal of the existing cure site; the current site is approaching the end of its lifecycle and major maintenance and/or repair work

			needs to be done with regard to the site liner and site drainage.
		RDF Enhancement	Project supports the supply and installation of a second pre-shredder at the RDF facility as well as an alternative RDF offloading system.

Appendix C Costs - Financial Analysis Summary (Waste Services Delivery Composite Profile):

Waste Services Project Delivery Composite Profile (2019-2022)	Follow PDDM for delivery
Total Capital Cost	(\$96,028,763)
Total Revenues	\$0
Total Operating and Maintenance Costs (Note 1)	\$0
Total Lease Costs	\$0
Project Net Inflows (Outflows)	(\$96,028,763)
WACC Discount Rate	5.41%
Net Present Value	(\$82,951,673)

Note 1: Capital projects within this profile are presented at a concept level and as such, associated operating and maintenance costs are not identified at this time. These costs for each project will be considered and included in the individual standalone business cases.

Appendix D Costs - Revenue Requirements

Reference	Alternatives
	ALTERNATIVE 1- Follow PDDM for delivery
Base Year	2018
In-Service Year	Various

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1- Follow PDDM for delivery
CPV @ Yr 5	10,559,090
CPV @ Yr 10	33,157,857
CPV @ Yr 15	49,304,820
CPV @ Yr 20	60,574,552
CPV @ Yr 25	68,171,524
CPV @ Yr 30	72,943,113

Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1- Follow PDDM for delivery
Equipment	35,028,763
Building	61,000,000
Other (engineering/PM/etc)	0
Total base costs	96,028,763

Note: this does not include Planning & Design Costs

Add: contingency, inflation	
Contingency	0
Inflation	0
Total Capital	96,028,763

Note: these are already included in above base costs

Economic Assumptions

Inflation (compounded each year) 0.00%

Contingency

Analysis is based on 35 years to capture the full life cycle costs of the assets

Assumes borrowing required at 84% (based on current Utility split) at 4%

Appendix D Costs - Revenue Requirements (Continued)

Note: Planning and Design costs have been added to the PDDM Delivery capital funding request costs for revenue requirement calculation purposes below in order to demonstrate the full project spending. Revenue requirements below only include estimated amortization and interest; O&M will be determined at stage of detailed design.

Revenue Requirement Summary (Cumulative Present Value)

Year	Calendar Year	Alternatives
		ALTERNATIVE 1- Follow PDDM for delivery
0	2018	\$0
1	2019	\$289,903
2	2020	\$1,117,481
3	2021	\$3,120,647
4	2022	\$6,319,634
5	2023	\$10,559,090
6	2024	\$15,685,707
7	2025	\$20,492,125
8	2026	\$24,995,554
9	2027	\$29,212,308
10	2028	\$33,157,857
11	2029	\$36,846,862
12	2030	\$40,293,224
13	2031	\$43,510,120
14	2032	\$46,510,039
15	2033	\$49,304,820
16	2034	\$51,905,636
17	2035	\$54,323,272
18	2036	\$56,567,659
19	2037	\$58,648,400
20	2038	\$60,574,552
21	2039	\$62,354,693
22	2040	\$63,996,956
23	2041	\$65,509,045
24	2042	\$66,898,262
25	2043	\$68,171,524
26	2044	\$69,335,387
27	2045	\$70,395,058
28	2046	\$71,356,566
29	2047	\$72,212,620
30	2048	\$72,943,113

**Project Title: PDDM Composite Renewal: Delivery
Cost Impact**

Cumulative Present Value of Revenue Requirement

Note: includes PDDM Planning & Design Costs, however O&M costs will be determined when individual project business cases are prepared.

