



Recycled Aggregate Program Business Case

Waste Services | City Operations
City of Edmonton

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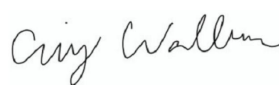

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Document Approval


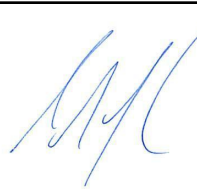
REVIEWED BY:

Reviewer Name and Title	Signature	Signing Date
Neil Kjelland - Director, Sustainable Waste Processing	Neil Kjelland	May 9, 2022

External Review:

Approver Name and Title	Signature	Signing Date
Craig Walbaum - Branch Manager, Building Greater Neighborhoods		May 6, 2022
Jason Meliefste- Branch Manager, Infrastructure Delivery		May 6, 2022

APPROVED BY:

Approver Name and Title	Signature	Signing Date
Denis Jubinville - Branch Manager, Waste Services		May 6, 2022
Gord Cebryk - Deputy City Manager, City Operations		May 20, 2022

Executive Summary

The City of Edmonton has owned and operated the Aggregate Recycling program for over 40 years. The program is part of the non-regulated lines of business within Waste Services, with Integrated Infrastructure Services as the primary customer. In this arrangement, linear infrastructure projects completed by the City of Edmonton have been able to meet high sustainability goals.

The Aggregate Recycling program has been reviewed several times in recent years. In particular, Waste Services identified the need to review the financials of the program in 2021 as a result of reduced income and increased costs that it was experiencing. Management in Waste Services and Integrated Infrastructure Services discussed the need for this review, and this business case was developed to provide options to ensure that the program was viable moving forward, or to suggest other outcomes if necessary.

Upon completion of the business case, Integrated Infrastructure Services advised Waste Services that they made the decision to begin transitioning away from the City's provision of recycled aggregate in their contracts, and that they see value and intended to further transition away going forward. Since Integrated Infrastructure Services will no longer acquire recycled aggregate from the program, Waste Services has two options to consider; operate exclusively in the open market or wind down the program. Winding down the program is recommended due to the direction provided by Utility Committee that Waste Services not compete with private industry in the non regulated environment. With the approval of this recommendation, Waste Services will stop operating the facilities, begin liquidating its current stockpiles, and work to accommodate staff in other areas of Waste Services.

1. Introduction

The City of Edmonton has operated an Aggregate Recycling Program for 43 years. At present, the program is operated by Waste Services and is part of the non-regulated lines of business. The primary customer for the products is Integrated Infrastructure Services (IIS) for use on linear infrastructure projects; however some material is sold to private-sector customers as well. Waste Services has recently conducted a financial analysis and an asset assessment, and the results of these studies have suggested that there is currently a need to review the status-quo operations of the facility or to consider alternatives.

The financial analysis, conducted yearly as part of the budgeting processes, revealed that the net revenues generated from the program are becoming insufficient to overcome the program's expenses. While Waste Services has implemented changes to keep program expenses low since 2018, some expenses (specifically those related to external services) have escalated. To increase the net revenues, the price for recycled aggregate needs to be increased.

The asset assessment (see Appendix A) suggests that investment into the program's infrastructure is required to maintain an ongoing safe and efficient operation. Such a commitment only makes sense if the program is going to continue for a reasonable period.

The decision to increase prices for the services and the requirement for a long-term commitment to the program to facilitate maintenance spending were discussed by Waste Services and IIS management in September 2021. Both parties agreed that a business case be undertaken to determine whether ongoing operations of the Aggregate Recycling Program by Waste Services should continue, or whether there are alternatives for the provision of recycled aggregate on IIS projects.

2. Profile Background

2.1. Aggregate Recycling Program History

Within Edmonton there is an estimated over one million tonnes of waste disposed of yearly, with an estimated 770,000 tonnes of waste originating from the non-residential sector^{1,2}. This includes industrial, commercial and institutional waste as well as construction and demolition waste.

Historically, Edmonton dealt with waste by putting it in landfills; however, the landfill crisis in the mid-1980s³ highlighted the need to divert waste from landfills. As this crisis was emerging, the City of Edmonton started operating an Aggregate Recycling Program in 1978 as one component of landfill diversion.

The Aggregate Recycling Program is responsible for recycling concrete and asphalt from household renovations, reconstruction projects, and private demolition. With the establishment of the Aggregate Recycling Program, the City of Edmonton took a leadership role in providing recycled aggregate activities that were not widely available by private contractors at that time. In doing so, horizontal infrastructure projects in the City of Edmonton could be completed with a high level of sustainability. The City of Edmonton's tax-supported Transportation Branch operated this program until late 2016. Subsequently, the program was transferred to the Waste Services Utility where it is part of the non-regulated business line.

2.2. Aggregate Recycling Program Overview

The Aggregate Recycling Program is operated out of two sites that accept incoming material and provide crushing services:

- Southeast Aggregate Recycling site located at 5221 17 Street
- West Aggregate Recycling site located at 18403 107 Avenue

¹ CO00231 Industrial, Commercial and Institutional Sector Waste Management Update

² The Way We Green

³ [The Globe and Mail](#)

Formal historical documentation of the two sites is not readily available, however it is believed that these locations were designed and constructed as temporary sites approximately 12 years ago. In the current operation, Waste Services owns and operates crushing equipment at the West Aggregate Recycling site, whereas crushing operations and equipment are sub-contracted at the Southeast Aggregate Recycling site (the sub-contracted crushing operations are periodically used at the West Aggregate Recycling site to supplement Waste Services' activities). The City of Edmonton owns the land at both locations.

Since there are limited weigh scale options at the sites, no inbound tip fee is charged for waste material dropped off at either location. The material delivered to the sites is stockpiled, stored, and eventually processed (crushed) primarily into 63mm aggregate⁴. The 63mm aggregate can either be sold to customers or further screened to produce a 25mm aggregate. The program provides a source of aggregates that are used to build and maintain the City's roadways and sidewalks and results in significant diversion from landfill.

In a typical recent year, 150,000 to 225,000 tonnes of 63mm aggregate and up to 5,700 tonnes of 25mm aggregate were produced and sold. Historically, approximately 85 percent of the product was sold to the City of Edmonton's IIS Department for city projects (i.e. road paving and sidewalks) while the rest was sold privately (see Table 1). Specifically, the IIS Department required contractors to deliver the demolition rubble to one of the Aggregate Recycling Program sites, and also to acquire recycled aggregate from those locations. These specifications were in place on many horizontal infrastructure projects. In doing so, City of Edmonton projects achieved its sustainability goals.

As discussed above, IIS is in the process of removing the requirement for their contractors to purchase crushed aggregate from Waste Services and is replacing the amount by enabling the purchasing from the private sector. Table 1 below shows a decrease in annual tonnage purchased of approximately 95,000 tonnes, from 2019 to 2021. Due to this change in purchasing strategy, the ratio of the amount of aggregate sold to internal versus external

⁴ "63mm aggregate" and "25mm aggregate" refers to aggregate that meets the City of Edmonton construction specification 02060 table 02060.1 Designation 3-63 and Designation 3-25 for grain size distribution.

customers has diminished to approximately 50 percent in 2021 despite consistently high reservations made by IIS for receipt of the material (see Table 2). Continuing to reserve high amounts of aggregate without purchasing that material resulted in unnecessary crushing and handling costs, requiring Waste to make additional sales to external customers to recover costs. Waste Services' understanding of the reason for the change to the amount of internal sales was a decision by the IIS Department in 2021 to transition away from using products from the Aggregate Recycling program. This change in practice was recently communicated to Waste Services (March 2022) and was not reflected by a change in the reservations made by IIS.

Table 1: Quantity of recycled aggregate sold to internal (City of Edmonton) and external customers.

	Product	2018	2019	2020	2021
External Sales (tonnes)	63mm	27,384	50,419	50,419	74,235
	25mm	60	223	0	0
	Total External*	27,444	50,642	50,419	74,235

Internal Sales (tonnes)	63mm	172,563	175,604	113,813	80,231
	25mm	5,665	1,902	0	1,176
	Total Internal*	178,228	177,506	113,813	81,407

Total Sales (tonnes)	63mm	199,947	226,023	164,232	155,642
	25mm	5,725	2,125	0	1,176

* Additional aggregate products are produced and handled in addition to these total values. Since the amounts of these products are small in comparison and secondary to the provision of 63mm and 25mm aggregate, these totals are not shown.

Table 2: Quantity of recycled aggregate reserved for City of Edmonton projects.

	2018	2019	2020	2021
City of Edmonton (IIS) Reservation of 63mm (tonnes)	218,000	204,000	213,000	197,000
Percentage of Reservation Purchased	82%	87%	53%	41%

2.3. Program Service Review

In 2017, the City of Edmonton's Program and Service Review (PSR) team undertook a high-level review of the Aggregate Recycling Program. The PSR evaluated the performance of the program against two primary stated objectives from Waste Services:

- Objective 1 - Provide a financial contribution to the regulated services.
- Objective 2 - Encourage diversion of non-residential waste material from landfill.

While the Aggregate Recycling Program met Objective 2 by achieving 100 percent diversion of the materials, the PSR found that Objective 1 was not met due to an operating loss of \$0.8 million in the prior year (2017).

In addition to evaluating the program against Waste Services' stated objectives, the PSR revealed additional value that the program was providing: at the time the IIS Department felt that the program was providing downward pressure on private sector pricing in the market and was producing a higher quality product versus competitors.

Since the program was creating value to the City of Edmonton projects, and since the program had room for improvement to meet Waste Services' objectives, this line of business was continued. The PSR recommended the following changes to the operating model to improve effectiveness and efficiency:

- Decrease Costs through:
 - Partial outsourcing of activities (including crushing and pile management).
 - Implementation of seasonal closures.
 - Installation of a scalehouse and related monitoring and tracking equipment.
- Increase Aggregates revenue by:
 - Marketing and selling aggregate products both within the City organization and within the local market.
 - Creating a formal pricing model that includes the full costs of the Aggregate Recycling Program line of business.

The PSR recommendations (with the exception of the installation of a scalehouse) were implemented to varying degrees of success, and the program has continued to the present without incurring systemic losses (discussed further in Section 3.2).

3. Aggregate Recycling Program Business Analysis

3.1. Program Pricing

In 2018, at the recommendation of the PSR, an internal cost of service study was completed and pricing for 63mm aggregate was set to \$19 per tonne for internal (IIS) customers and \$23 for external customers. Since then, the prices have been adjusted as shown in Table 3 below.

Table 3 - Historical pricing for 63mm recycled aggregate.

	Internal	External
2018	\$19	\$23
2019	\$19	\$20
2020	\$19	\$20
2021	\$19	\$20

The price change reduction for external customers in 2019 yielded an over 100 percent increase in sales (from approximately 27,000 tonnes to approximately 64,000 tonnes, as per Table 1), suggesting that the market rate for the sale of 63mm recycled aggregate in 2019 was at or near \$20 per tonne. This corresponded to market scans conducted at that time that showed a price range from \$20 to \$23.50 per tonne being sold by private contractors.

An additional 88 percent increase in external sales that occurred in 2021 (from approximately 40,000 tonnes to approximately 76,000 tonnes) could suggest that the market rate for the sale of recycled aggregate in 2021 was above \$20 per tonne. Again, this corresponded to the results of a market scan conducted in fall 2021 that showed a range of prices between \$19.50 and \$23.50 per tonne being sold by private contractors.

In addition to product pricing, the market scans revealed that there are four suppliers in the

region that can supply crushed recycled aggregate at similar volumes (approximately 100,000 tonnes per year).

Based on the market scans and the sales related information, it can be concluded that IIS has been receiving 63mm aggregate at or below market value for several years. In addition, the stagnant prices do not reflect the regional context of increasing costs. Over this same time period, inflation in Alberta was 9.1 percent (between January 2018 through December 2021⁵) and City of Edmonton residential taxes increased by 7.6 percent⁶.

3.2. Program Financials

The net position of the Aggregate Recycling Program since 2018 is shown in Table 4.

Table 4: Aggregate Recycling Program yearly net position.

	2018	2019	2020	2021
Net Profit (Loss)	\$162,396	(\$588,699)	\$533,242	(\$469,361)

The fluctuation of profits and losses year-over-year is related to the amount of aggregate produced versus the amount of sales within a given year. A detailed breakdown of the 2020 and 2021 expenses for the program are shown in Table 5 below.

⁵ Consumer Price Index, monthly, not seasonally adjusted, Alberta, All items - Statistics Canada. [Table 18-10-0004-01 Consumer Price Index, monthly, not seasonally adjusted](#)

⁶ [City of Edmonton Historical Municipal Tax Breakdown](#)

Table 5 - Aggregate Recycling Program detailed financial information.

	2020 Expenses	2021 Expenses
Personnel	\$1,158,745	\$1,154,657
Material & Equipment	\$769,344	\$940,568
External Services	\$261,720	\$101,786
IDB Expenses	\$129,933	\$185,863
Fleet Services	\$355,753	\$284,201
Utilities	\$27,950	\$24,311
Amortization	\$178	\$355
Other Financing & General	-\$1,239	\$0
Facility Maintenance Charges	\$33,687	\$48,052
Total	\$2,736,071	\$2,739,793
Produced - 63mm (tonnes)	146,502	127,119
Cost of Product (\$ / tonne)	\$18.68	\$21.55

When considered against the amount of aggregate produced, the current total program cost is \$21.55 per tonne. This amount increased from \$18.68 in 2020 primarily due to a 22 percent increase in third-party equipment costs that was procured in 2021. Neither of these program costs include an allocation to build up a reserve for ongoing capital replacement of assets (discussed further in Section 3.5).

In addition to the costs above, Integrated Infrastructure Services incurs costs to provide quality assurance testing as the aggregate is being crushed.

3.3. Inventories

As of December 3, 2021, both Aggregate Recycling Program sites had inventories of materials as follows (approximate values):

Table 6 - Existing inventories of raw, uncrushed material and 63mm aggregate.

	Raw, Uncrushed Material (tonnes)	63mm Aggregate (tonnes)
Southeast	107,000	53,000
West	55,000	69,000
Total	162,000	122,000

Comparing these values to recent sales listed in Table 1 suggests that the combined raw material and crushed 63mm material could supply the crushing operations and sales for approximately 1 to 1.5 years of the program without any further receipt of raw materials from customers internal or external to the City of Edmonton.

The existing inventory is valued at \$2,514,000 and is expected to realize future revenue between \$2,379,000 and \$2,867,000 depending on the sale price of \$19.50 - \$23.50 per tonne.

3.4. Facility Assessment / Asset Management

Since 2008, the sum acquisition value of assets (not including land) used by the Aggregate Recycling Program is \$3,782,000 with a remaining book value at the end of 2021 of \$687,000.

In 2021, a third-party consultant was commissioned by Waste Services to perform a condition assessment of the existing Aggregate Recycling Program assets, and to provide a 10-year capital replacement plan based on the assets' expected remaining service life. Table 7 shows the condition ratings assigned to the components of the program (divided by purpose/discipline), and below is a high-level summary of the findings from the assessment.

Table 7 - Condition ratings for components of the Aggregate Recycling Program.

Condition	Structural	Mechanical (Process)	Mechanical (HVAC)	Electrical
Very Good	19%	0	0	15%
Good	27%	0	82%	21%
Fair	16%	67%	9%	3%
Poor	32%	33%	0	41%
Very Poor	6%	0	9%	21%

Structural / Architectural - Includes steel frames, trusses and connections for hopper, conveyors and screen structure, retaining walls, foundations, trailer building envelopes, cladding, walls, doors, windows, and interior partitions.

- The conditions of inspected facilities and structures differ on each component and vary from Very Good to Very Poor with Priority Rating Very Low to Emergency.
- A common issue to all of the structures is their poor and damaged wooden foundation supports and planks, lack of properly designed and constructed concrete foundations.
- There are also some corroded steel members on conveyors, which require cleaning and re-painting. Some cracking in welds was encountered in hopper crusher, which requires additional welding.
- The most critical item is the damaged crusher retaining wall, which requires immediate replacement with new design and installation.

Mechanical Processing Equipment - Includes systems for aggregate processing.

- The processing equipment at the Aggregate Site is very modular and can be kept in service for a long time by replacing critical components.
- The hydraulic breaker appears to have exceeded its expected useful life and is recommended for replacement.
- All other equipment has more than 10 years of useful life remaining and can continue operating, provided that identified issues are addressed and maintenance continues.

Mechanical HVAC - Includes the heating and ventilation equipment and plumbing systems for the various trailers and equipment on site.

- The review recommended repairs to facilities due to water leaks in trailers, repairs to insulation around drain pipes leading to septic tanks, and the installation of air filtration systems in various locations.

Electrical - Includes electrical distribution, lighting and branch wiring, communications, generators and security.

- The existing electrical connections were established for temporary purposes in mind.
- For continued safe operations of the facilities, multiple Canadian Electrical Code violations need to be addressed and components need to be replaced, repaired, or rerouted.
- The power to the crusher and conveyors is provided by a diesel generator, and there is an opportunity to save money long-term by connecting these components to a permanent electrical source.
- The outdoor area and task lighting is inconsistently located and mounted, leading to non-ideal and inconsistent illumination value over the site.

3.5. Capital Replacement

Based on the asset assessment, the third-party consultant made recommendations for replacing the capital equipment and facilities at the sites to maintain ongoing operations of the program. These recommendations were reviewed by Waste Services' Asset Management group, and Table 8 summarizes the estimated future capital investments required.

Table 8 - Approximate estimated costs of capital equipment and facility replacements over a 10 year period (2021 through 2031).

Item	Estimated Cost Over 10 Years
Electrical	\$1,000,000
Mechanical Process	\$2,535,000
Mechanical / HVAC	\$84,000
Structural / Architectural	\$1,141,900
Retaining Wall Reconstruction	\$300,000
Electrical Servicing	\$527,000
Mobile Equipment Replacement	\$900,000
Total	\$6,487,900

The estimated costs shown in Table 8 reflects the need for investment to perpetually operate the Aggregate Recycling Program. It includes an estimated \$1.3 million investment in structural / architectural and electrical assets in 2031, and approximately \$2.4 million investment in mechanical process components in 2029. These are expenditures that would be made to ensure efficient and safe operations for the subsequent years of the program (2032 through 2042), but would not be made if the program was not intending to operate through that period. The remaining approximate \$2,797,000 is a required investment for the operating years of 2022 through 2031.

The existing capital replacement reserve of \$1.4 million could be partially used to finance the above costs / activities, however additional funds would need to be retained through aggregate sales. With an assumption of 150,000 tonnes per year in sales, the following additional surcharge on the price of 63mm can be considered:

- To expend \$2,797,000 to enable safe and efficient operations for the coming 10 years only - \$0.93 per tonne
- To expend \$6,487,900 to enable safe and efficient operations perpetually - \$3.39 per tonne

If a decision is made to raise funds for the coming 10 years only, financing options can be explored to allow for the remaining additional expenditures in the future if ongoing operations

are desired.

4. Problem / Opportunity

In order for the Aggregate Recycling Program to continue to be operated viably by Waste Services with the loss of the program's largest customer, the entire business model would have to be revisited, including but not limited to a review of the assets, the viability of operating two sites and would also require increases to net revenues, which would affect the price of aggregate sold.

At the same time, a commitment to the long-term operations of this program is also required prior to the investment into capital renewal items. A decision to continue operations could trigger investment that would be "sunk" if an alternative decision is made a short time later.

To assist with these decisions, three high-level alternatives for the future of the Aggregate Recycling Program have been detailed. Items for consideration common to the alternative are described, and then a comparison table is presented.

4.1. Alternatives

The three high-level alternatives that have been identified for consideration regarding the ongoing operation of the Aggregate Recycling Program:

1. Status Quo (continued operation)
2. Open Market Operation
3. Program Wind-Down

Note that the Status Quo option requires IIS to continue as the program's primary customer. While IIS has indicated that this is not its future intention, the option is included for completeness and for comparison of alternatives to the prior operations.

These alternatives are described below:

Alternative 1 - Status Quo

Waste Services can continue operations of the Aggregate Recycling Program with IIS as its primary client. This arrangement would mostly follow the existing practice where IIS requires that contractors engage with the City of Edmonton Recycled Aggregate program for the disposal of raw, uncrushed concrete material, and for the supply and provision of recycled aggregate on City of Edmonton projects. It is known that IIS intends to discontinue its direct specification of aggregate arriving from the Aggregate Recycling Program, however this alternative remains an option until a formal decision and next steps are implemented on the program.

Based on a review of recent financials, operations, sales, and assets for the Aggregate Recycling Program, the program can remain viable into the future with an increase to revenues. Increased revenue amounts can be obtained by increasing the price for aggregate sold or by introducing a fee to dispose of raw, uncrushed material at one of the locations, or both.

- If an increase in aggregate price only is to be considered, the 2022 fee should be set to \$22.50 per tonne of 63mm aggregate for both IIS and external customers. This includes a base amount of \$21.55 per tonne for the direct costs to provide the service as well as a \$0.95 surcharge to build an ongoing capital renewal fund that would allow continual investment in the operations to ensure safety and efficiency. At historic consumption rates of 80,000 to 175,000 of recycled aggregate used by IIS projects in a year, a \$3.50 per tonne increase over current price represents a yearly internal recovery increase of \$280,000 to \$612,500.
- Revenue generation through the implementation of disposal fees is possible, however none of the other private-sector operations providing recycled aggregate use this mechanism. Implementation of such fees would likely reduce the amount of incoming rubble (thereby reducing the Aggregate Recycling Program's ability to meet its customer's volume requirements), and/or reduce the quality of incoming materials (resulting in higher cost for processing, lower end-product values, and more residuals). As such, this revenue mechanism is not recommended.

Alternative 2 - Open Market Operation

Waste Services can operate the Aggregate Recycling Program without IIS as its primary client. In this arrangement, Waste Services would operate exclusively in the private market, and would receive uncrushed aggregate and sell the recycled aggregate to the private sector. IIS could still allow its general contractors to source material from any supplier they choose.

Alternative 3 - Program Wind-Down

Waste Services can discontinue operations of the Aggregate Recycling Program and wind-down its activities in a controlled manner. During the wind-down, existing contracts where IIS has specified contractors to source recycled aggregate from Waste Services would be honored, while the remaining inventory would be sold to other clients. The lack of an ongoing provision of recycled aggregate into the market by the City of Edmonton would hopefully foster expanded efforts from current vendors or new entrants interested in supplying this product.

During the wind-down, the existing inventories would generate an expected total revenue of between \$2,379,000 and \$2,867,000 (depending on the established sale prices), however additional operational costs would be incurred as part of the storage, marketing, and sales process.

Once the wind-down is complete, Waste Services would dispose of or properly account for the remaining value of equipment. It is likely that some or all of the existing capital replacement reserve would be required for the disposal or write-off of equipment and assets and in resolving any liabilities remaining, although those costs are currently unknown.

The land upon which the Aggregate Recycling Program operates at the two sites is owned by tax-supported operations of the City of Edmonton (not the Waste Services utility). As such, assets at these locations would be removed and the land could be made available for other uses.

For future IIS projects, contracts would continue to require recycled aggregate to be used, but contractors would be required to source the aggregate on the open market.

4.2. Considerations

4.2.1. Policy / Directive Alignment

The 25-Year Waste Strategy states that 90 per cent diversion of waste from landfill and circular economies were goals across all sectors in Edmonton. This includes the Industrial, Commercial, and Institutional sector in which the Aggregate Recycling Program operates. The strategy, however, specifies that Waste Services would play a direct role in the residential sector, but would focus on the goals in other sectors through policy mechanisms vs direct involvement. This was reinforced when the Utility Committee directed that Waste Services no longer provide service to the Industrial, Commercial and Institutional waste sector. During a Utility Committee discussion of the June 25, 2022 City Operations Report CO00581 Multi-Unit Strategy, the Utility Advisor also advised that the Waste utility should not operate in areas where the private sector can provide the service in a manner that continues to serve the public good.

So, while the ongoing operation of the Aggregate Recycling Program is aligned to the outcomes listed in the 25-Year Waste Strategy, Waste Services' direct involvement in operating the program is outside the approved mandate set by the Utility Committee. This incongruence is considered to be minimal if the program is financially viable and providing value to City of Edmonton projects (similar to our Parks and Roads Litter collection service), but it becomes misaligned if the program is not solvent or if the program operates on behalf of external clients only.

If Waste Services discontinues its operation of the Aggregate Recycling Program, IIS could continue to pursue its sustainability goals through the acquisition of recycled aggregate from private sector suppliers.

4.2.2. Supply Chain Risks (Quantity, Quality, Cost of Products)

Organizations worldwide routinely make decisions regarding how they manage risks with their supply chain. Some manufacturers will “vertically integrate” by purchasing companies that supply key inputs used for their product. This allows them to control the source of the incoming

components, thus reducing supply, price, and quality risks. Other organizations will elect to diversify their supply chains by working to increase the number of suppliers whom they engage for their products. This activity reduces the risk of component shortages and incentivises competition over price and/or quality.

When the Aggregate Recycling Program was originally established, there were no (or few) private firms who could supply recycled aggregate for City of Edmonton projects. This resulted in the City of Edmonton taking a leadership role in providing this product. In doing so, the City of Edmonton vertically integrated its supply chain of aggregate materials into roadway or sidewalk projects. The benefits of this integration were certainty and control of supply, quality, and cost of the material.

At present, there are four private companies that can provide recycled aggregate at the scale required for City of Edmonton projects. If the Aggregate Recycling Program was discontinued, additional capacity in the market could be fostered with a controlled wind-down of Waste Services' operations and the continued requirement for recycled aggregate use on IIS projects. This activity would represent an outsourcing and diversifying of the supply chain, which could result in the development of a diverse and robust market. If the market does not develop as hoped, however, risks to the availability, price, and quality of recycled aggregate supplied to City of Edmonton projects would be introduced. In addition, the cost to dispose of construction and demolition waste could also be introduced to IIS projects.

4.2.3. Tracking / Administration

With Waste Services operating the Recycled Aggregate program, all information regarding the materials delivered to and from the sites is tracked and available to City of Edmonton staff. If the use of recycled aggregate is specified in future IIS projects, and if those materials are acquired from a source other than Waste Services, then presumably some level of tracking/confirmation would be required to ensure that the product being supplied meets the sustainability requirements. Presumably, this would occur as part of ongoing checks to ensure that the material meets other specification requirements that already occur.

4.2.4. City of Edmonton Staff Impacts

The Aggregate Recycling Program is operated directly by 8 full time staff and 3.25 full time equivalent positions for temporary, seasonal recruitments. All of these positions are union related (CUPE 30). Waste Services' continued operation of the Aggregate Recycling Program would maintain the ongoing employment of the individuals in the full time positions, whereas a wind-down would require the dismissal or re-allocation of those staff members as per the procedures outlined in the CUPE 30 collective agreement.

4.2.5. Contractor Accountability

At present, if IIS specifies where a contractor obtains its aggregate source from, the contractor may try to blame the source for any future issues that may arise with its end product. For example, if a roadway fails due to poor compaction of the sub-grade, the contractor may suggest that the raw material was the cause of this lack of compaction, rather than the level of compaction effort they provided.

The risk of diminishing a contractor's accountability is currently mitigated through the quality assurance program implemented by Waste Services and IIS. At present, IIS tests the aggregate at the aggregate recycling sites after every 500 tonnes of crushing production. An additional test is required for every 500 tonnes of aggregate supplied to a job-site. If a contractor blames an end-product failure on the aggregate, there is evidence available to corroborate or disprove those statements, although it requires effort from IIS to do so.

If IIS were to require that recycled aggregate be used from any source that the contractor chooses, then the accountability for making sure that the aggregate meets all specifications would be borne by the contractor.

4.3. Comparison

Table 9 shows the combined merits of each option to both IIS and Waste Services relative to the status quo (Alternative 1) based on the high-level description of the alternatives and the items of

consideration common to each described above.

Table 9 - Alternative summary.

Consideration	Alternative 1: Status Quo (Continue Operation)	Alternative 2: Open Market Operation	Alternative 3: Program Wind-Down
Policy / Directive Alignment	N/A	Negative	Neutral
Supply Chain Risks	N/A	Neutral	Negative
Tracking / Administration	N/A	Negative	Negative
City of Edmonton Staff Impacts	N/A	Neutral	Negative
Contractor Accountability	N/A	Positive	Positive

5. Recommendation / Decision

IIS confirmed in a meeting in March 2022 that it has decided to move away from acquiring aggregate from the City of Edmonton's Aggregate Recycling program and has been issuing contracts that don't include the use of Waste Services Aggregate. The Branch Manager of Infrastructure Delivery and the Branch Manager of Building Great Neighbourhoods explained that their decision results from the private market availability for recycled aggregates that currently exists in the Edmonton region. In their engagement with industry, combined with their IIS experience, contractors prefer to have private market options in their suppliers rather than being mandated by contract to purchase from City of Edmonton Waste Services' Aggregate Program. They have also found that the mandated requirement exposes the City to liability when the performance of the contractor work is found to be deficient. There are also additional

impacts in using City product as contractors are required to mobilize equipment to the City yard and operate within the defined hours of the City program. Based on these considerations, IIS has made the business decision to allow contractors to both retain raw products from demolition on City projects and to source finished products for new applications on City projects.

Based on the fact that IIS will no longer mandate the use of Waste Services recycled aggregates, Alternative 1 (Status Quo - Continued Operation) is not available to Waste Services. As such, the available alternatives are to operate the program and sell the aggregate to third-party customers on the open market (Alternative 2) or wind down the program (Alternative 3). While it is believed that the program could be viable and valuable to the construction community in Edmonton now and into the future, Waste Services' operation in the open market is outside the mandate set by Utility Committee (as described in 4.2.1). As a result, Waste Services recommends winding the program down in a careful and cost-effective manner to extract the remaining value of the inventories and to follow the collective bargaining agreements in any staff realignment requirements.

The stages of the wind-down would generally occur in the following order:

1. Communicate with staff and union representatives regarding the decision.
2. Communicate the decision to the members of the Utility Committee.
3. Stop receiving incoming raw, uncrushed rubble.
4. Market the existing inventories to contractors to liquidate the piles.
5. Reassign, sell, or dispose of existing assets on site.
6. A final net financial position will be determined for the Recycled Aggregate Program and any final surplus will be transferred to the Tax Levy while any loss will be funded by the Tax Levy.