



Business Case

Materials Management Facility

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Section

1

Executive Summary

Materials Management Facility

Development of a County-owned transfer station continues following recommendations outlined in the County's 20-year Solid Waste Management Strategy and subsequent direction from County Council in 2014 with presentation of a preliminary financial analysis. A location for transfer is an integral part of a waste management system – the link between a community's collection operations and moving material to final waste disposal/processing locations. Now referred to as the County's Materials Management Facility (MMF), it will provide a location for consolidation of waste from multiple collection vehicles into larger, higher-volume transfer vehicles for more economical shipment to disposal/processing sites or end markets.

Since 2014, project development has been furthered and following a comprehensive siting process, 2976 Horseshoe Valley Road West, Springwater, was determined to be the preferred site for this facility and the County's Organics Processing Facility (OPF). With direction to co-locate the two facilities at a multi-purpose Environmental Resource Recovery Centre (ERRC), more technical information on site-specific conditions, and new information on the Waste-Free Ontario Act (WFOA), this updated Business Case has been prepared.

Currently, the County transfers approximately 25,000 tonnes per year of curbside garbage for processing, 11,000 tonnes per year of source-separated organics, and over 25,000 tonnes per year of recycling (paper fibres and containers) at a private transfer station located in Barrie, Ontario. Future requirements for transfer will change with the closure of County landfills, development of the OPF, and changes to the blue box recycling program under the province's WFOA. This report considers that by 2029, all County garbage will require consolidation at a common transfer location for export to final disposal or processing facilities, organics will be processed at the OPF by 2021, and the County will have no responsibility for blue box recycling after 2022. These conservative assumptions are discussed throughout this report and have great impact on the financial analysis.

For this analysis, revised, site-specific capital costs for development of the MMF were provided by the County's project consultant, GHD Limited. They have increased from the previous financial analysis presented to County Council in 2014. Some increased costs are attributed to site-specific development expenditures such as paving, site servicing, and County Road 22 improvements which will be required at this location. Co-locating both the MMF and OPF, however, has mitigated the impact of these costs significantly as they are shared between both projects. It is noted, however, that the overall size of the building has increased from the 2014 analysis and has resulted in increased estimated capital. Conceptual design has now considered site-specific conditions (such as topography), operational considerations, and odour and noise mitigation measures.

Based on the financial analysis and assumptions outlined in this report, development of a County facility to manage the long-term transfer of garbage and blue box recycling until 2022 would have the lowest total costs over the 20-year period. During the 20-year operating period, the analysis indicates considerable annual savings for this option as greater tonnages of garbage are managed with the closure of County landfills. Although continued contracting transfer had the lowest 20-year Net Present Value (NPV), this was based on assumptions regarding consistent, long-term pricing for this service. As contracted services are procured over the long-term, there is risk that pricing will be greater than

forecasted in this analysis – resulting in a significant impact to the financial outlook. This was clearly evident in the sensitivity analysis undertaken for this option.

In regard to the qualitative analysis, there are noted advantages to pursuing County-owned transfer infrastructure. Operationally, development of the MMF would provide secure, long-term control of our own waste. This would have a positive impact on collection operations, management of outbound material, and flow control. Without development of new in-County disposal or processing capacity for garbage, it would allow the County control over some costs and management of garbage in the long-term. In addition, this space would allow for consolidation of Solid Waste Management operations – including space for truck servicing, an administration area (including meeting space), and an education centre.

Final design of the MMF will remain flexible given the anticipated blue box transition. It is noted that although more storage space would be required to manage this material, the addition of blue box recycling would have a positive impact on the MMF project – the benefit of economies of scale. The MMF would significantly benefit from additional revenue and cost sharing of annual operational expenses.

Furthering development of County-owned transfer capacity still remains the recommended approach in preparation for long-term, secure management of our waste. Final design of the facility will occur as the Planning process is furthered and all comments are received and discussed with the various agencies and the Township of Springwater. It is anticipated over the coming months as this work is undertaken, there will be greater clarity on the implications of the WFOA. It is recommended that staff continue monitoring the transition and provide opportunity for on-going discussion with the Continuous Improvement Fund (CIF). As information becomes clear and development of the project is furthered (including building sizing and design), sections of this Business Case will be updated and provided to County Council. In regard to CIF funding, staff will continue to submit documents to meet the required deadlines. Should delay in approvals jeopardize meeting funding deadlines, this will be communicated to County Council and the implications on the financial analysis discussed further.

Section

2

Background**Introduction**

A transfer facility is an integral part of a waste management system – the link between a community's collection operations and moving material to final waste disposal/processing locations. Transfer facilities provide a location for the consolidation of waste from multiple collection vehicles into larger, higher-volume transfer vehicles for more economical shipment to disposal/processing sites or end markets. There is no long-term storage of materials at these facilities. Currently, the County transfers approximately 25,000 tonnes per year of curbside garbage for processing, 11,000 tonnes per year of source-separated organics, and over 25,000 tonnes per year of recycling (paper fibres and containers) at a private transfer station located in Barrie, Ontario.

Short- and long-term waste disposal options and diversion programs for a 20-year planning period are outlined in the County of Simcoe's Solid Waste Management Strategy (Strategy) (approved in 2010, updated in 2016). With respect to transfer operations, the Strategy outlined various options related to development of County-owned transfer infrastructure. At the time, it was noted that transfer requirements would be impacted by other Strategy recommendations – including changes to the management of recycling and direction on exporting a portion of the County's curbside garbage.

With the establishment of new contracts in 2013 for curbside collection, transfer of recycling, and waste export, the County's long-term transfer needs and the cost to contract this service were clearer. A financial analysis for a County-owned transfer facility was presented to County Council in 2014 (*Item CS 14-253 – Transfer Station Analysis*, August 12, 2014). It outlined the contracted costs for transfer, the estimated capital costs for the building, and the potential for funding from Continuous Improvement Fund (CIF). The financial analysis determined that a County transfer station, a Materials Management Facility (MMF), could save approximately \$13 million over the next 20 years compared to the current system, with a payback of 5.5 years considering the CIF funding.

With County Council direction, development of the MMF was initiated in late 2014. The Development Strategy outlined that siting would be undertaken first, followed by design, application for an Environmental Compliance Approval (ECA), and construction. Comprehensive siting work was undertaken by the County's consultant, GHD Limited (GHD), over 2015/2016 with 2976 Horseshoe Valley Road West, Springwater, being the preferred location for the facility. This exercise, undertaken concurrently with siting work for a proposed County Organics Processing Facility (OPF), determined that this location could host both facilities – combined to form the Environmental Resource Recovery Centre (ERRC).

Given County Council direction on the site for the MMF and that it could be co-located with the OPF, the purpose of this Business Case is to refine cost estimates for the MMF in this formal format. It will reassess the 2014 estimates for capital (including site-specific improvements related to the development) and operating and maintenance costs. This report will also examine the impact on transfer given direction from Council during the 5-year update of the Solid Waste Management Strategy (SWMS) and anticipated changes to the County's waste management system as the province moves forward with Bill 151 – Waste-Free Ontario Act.

Current System

Garbage

The County landfills curbside-collected garbage at three of its remaining open landfills and, in addition, exports a portion for processing. Approximately 25,000 tonnes is exported under contract with Walker Environmental Group (WEG). Transfer is managed by Waste Connections of Canada (Waste Connections) (formerly Progressive Waste Services Inc.) at their transfer facility in Barrie, Ontario. The exported garbage is hauled to Emerald Energy from Waste (EEFW) in Brampton, Ontario for processing. This garbage export contract, which began in 2013, followed County Council direction to initiate export of a portion of the County's curbside-collected garbage (*Item CS 13-008 – RFP 2012-096 for Garbage Disposal, Transfer and Haulage, January 9, 2013*). This contract will expire in 2018.

Drop-off garbage collected at the County's eight waste receiving facilities is transferred from each of the facilities and hauled to Site 2 – Collingwood where it is shredded (this garbage is bulkier than curbside garbage) and ultimately landfilled.

Organics

Currently, the County exports source-separated organics (SSO) to AIM Environmental in Hamilton, Ontario for processing. The transfer location for curbside-collected material is dependent on the collection day, with material being transferred from either the Waste Connections transfer station or from one of three County landfill sites (Site 10 – Nottawasaga, Site 11 – Oro or Site 13 – Tosorontio) to facilitate the County's collection operations and timing constraints.

Drop-off organics from waste receiving facilities, the County's Administration Centre, and the Simcoe County District School Board building, and County long-term care facilities is collected in 4 yd³ bins which are picked-up in a regular route via a front-end truck. This route brings material to Site 11 – Oro for transfer and haulage to the end processor.

In addition, the County currently has a pilot program underway to manage the transfer and haulage of commercial organics collected at Casino Rama. In 2016, the County facilitated the transfer and haulage of 490 tonnes of this material from Site 11 – Oro.

Blue Box Recycling

Two stream curbside recycling (fibres and containers) is collected by Waste Connections and brought to their transfer station in Barrie, Ontario for consolidation, transfer, and haulage to processing locations in Toronto, Ontario (fibres) and Guelph, Ontario (containers). In addition, the County hauls blue box material collected at the eight waste receiving locations to the Waste Connections transfer station for consolidation with the curbside material. The current contract with Waste Connections for recycling transfer was extended in 2017 and is set to expire in spring 2019.

Tables 2.1 and 2.2 below provide a summary of transferred tonnages and associated costs from 2013 to 2016.

Table 2.1 – Summary of Transferred Tonnages – 2013 to 2016

Material	2013 ¹	2014	2015	2016
Curbside garbage (exported to EEFW)	24,560	25,270	25,729	25,091
Organics ²	10,064	9,516	10,344	10,862
Blue box recycling ³	20,492	25,920	25,724	26,711

1. Waste export and blue box recycling transfer/haulage/processing contracts began in April 2013. From January to March 2013, waste was exported to Algonquin Power under a short-term waste export contract.
2. Includes curbside-collected organics and material collected at waste receiving facilities, the County's Administration Centre, the Simcoe County District School Board building, County long-term care facilities, and the Casino Rama pilot program.
3. Includes both curbside-collected and drop-off material.

Table 2.2 – Summary of Annual Transfer Costs for Contracted Service – 2013 to 2016

Material	2013 ¹	2014	2015	2016
Garbage	\$331,153	\$345,097	\$360,885	\$359,372
Organics	-	-	-	-
Blue box recycling	\$481,976	\$626,969	\$638,875	\$677,380
Total	\$813,129	\$972,066	\$999,760	\$1,036,751

1. Contracts began in April 2013.
2. Note that under the County's current arrangement with Waste Connections, transfer costs for SSO are not assessed against the County to facilitate efficient collection operations.
3. Costs include non-refundable HST.

Future Requirements – Tonnage

Planning Period

For the purpose of this analysis, a 20-year planning period is assumed. Options outlined further in this report will consider management of materials from January 1, 2020 to December 31, 2039. This period assumes that a County-owned Materials Management Facility would be constructed by the end of 2019 – utilizing the approved Development Strategy timeline. Although there is some indication that this will be delayed as approvals are sought, this analysis is based on the most current information available at this time.

Garbage

In the recent Strategy Update, the County's consultant, HDR Inc. (HDR), noted that the County has limited options for long-term garbage disposal and processing. In the five years since the Strategy was approved, no viable options for partnering in the development of new in-County energy-from-waste capacity have come forward to the County. It was recommended by HDR that a new contract for the transfer, haulage, and processing/disposal of a portion of curbside garbage be procured with the end of the current contract in 2018.

In forecasting tonnages and long-term transfer requirements for curbside garbage, the following considerations were applied:

- 2% population growth – noting that this is based on information from County Planning (the Hemson Consulting Ltd. population projections). This is consistent with projections undertaken completed by HDR in the Strategy update;
- 1% increase in waste generation for curbside-collected garbage (noting that this was not applied to drop-off garbage based on observed annual trends);
- consistent export of 25,000 tonnes of curbside garbage annually until County landfills reach capacity. Considering growth and the preservation of one year of capacity at Site 11 – Oro, it is anticipated that the last landfill accepting curbside waste will reach capacity in 2028;
- County Council direction on the export of drop-off garbage from the 8 waste receiving facilities upon closure of Site 2 – Collingwood. It is estimated the current capacity of this landfill has been extended to approximately six years, with anticipated closure in 2023; and
- direction from County Council on program changes. Further to the Strategy Update early 2017, County Council approved furthering six specific initiatives, with two specific initiatives set to impact the County's garbage (and subsequently organics program) directly – strict enforcement of standard-sized garbage container (i.e. removing the variability of container sizes set-out curbside) and addition of pet waste and diapers. In forecasting future tonnages for the purpose of this financial assessment, implementation of both of the initiatives above were considered. Capture rates were estimated based on information provided in the update by HDR and other municipalities currently collecting pet waste and diapers as part of their green bin program.

Organics

In 2013, County Council approved furthering development of a County-owned Organics Processing Facility (OPF). With direction to advance the OPF at 2976 Horseshoe Valley Road West, Springwater, consideration has been given on how this would impact the short-term management of organics. In forecasting future transfer requirements, the following considerations were applied:

- as per the approved Development Strategy, the OPF would be brought on-line in 2021. From 2019 to 2021, organics would require transfer and haulage to a contracted processor. It is noted that delays are most likely as the Planning approvals process is advanced. However, for the purpose of this Business Case, the approved timeline was utilized in the financial analysis;
- 2% population growth – as with garbage, this is consistent with County Planning forecasts;
- 1% increase in waste generation; and
- direction from County Council on program changes. Calculations undertaken assumed that in 2021, the County would implement the standard-sized garbage container and the addition of pet waste and diapers. Capture rates were estimated based on information provided in the update by HDR and other municipalities currently collecting pet waste and diapers as part of their green bin program.

Blue Box Recycling

The Waste-Free Ontario Act (WFOA) outlines major changes to the blue box recycling program and this will have great impact on how this material is managed by the County. Short- and long-term planning must consider that in the near future, brand owners and first importers (referred to as the Producers) will take full responsibility for the management and incurred costs of blue box recycling. There is recent indication that the transition could be sooner than expected – noting that it could likely come by 2023 or earlier should agreements be reached with the municipalities and Producers.

In the 2014 financial analysis for a County transfer facility (*Item CS 14-253 – Transfer Station Analysis*, August 12, 2014), consideration was given to long-term management of blue box recycling. However, given the advancement of the WFOA and current information, the following considerations were applied to forecasting blue box recycling tonnages:

- 2% population growth – as with garbage and organics, this is consistent with County Planning forecasts;
- 1% increase in waste generation; and
- given information outlined in the Provincial Strategy (supporting documentation for the WFOA), the blue box recycling program is identified to be transitioned to full Producer responsibility in 2022. As outlined in *Item CCW 17-232 – Update on the Waste-Free Ontario Act* (September 12, 2017), this transition could be sooner – however, for the purpose of the financial analysis, 2023 was assumed to be the first full year that the County would not be responsible for the collection, transfer, haulage, or processing of this blue box recycling.

Summary

In summary, estimated tonnages for transfer over the 20-year planning period are as follows:

Table 2.3 – Forecasted Annual Tonnages for Transfer (tonnes/year)

Material	2016 (base)	2019	2022	2024	2029	2034	2039
Curbside garbage (total collected)	39,997	40,292 ¹	38,537 ²	40,884	47,396	54,945	63,696
Curbside garbage (exported)	25,091	25,000	25,000	25,000	47,396 ³	54,945	63,696
Facilities garbage (exported)	-	-	-	17,460 ⁴	19,278	21,284	23,499
Organics	10,850	15,527	-	-	-	-	-
Blue box recycling	27,146	29,663	32,414 ⁵	-	-	-	-

1. 2019 assumed to be the first full year of implementing the standard-size garbage container. Impact – less garbage, additional organics.
2. 2021 assumed to be the first full year of implementing the addition of pet waste and diapers to the organics program.
3. Based on current projections on remaining County landfill capacity, it is assumed that in 2029, all curbside-collected garbage will be exported for disposal/processing.
4. Based on current projections on remaining landfill capacity at Site 2 – Collingwood, it is assumed that in 2024, all drop-off garbage collected at County waste receiving facilities will be exported for disposal/processing.
5. Current indication is that 2022 will be the last full year of County responsibility for blue box recycling given changes outlined in the WFOA.

Future Requirements – MMF Design Capacity

Forecasted Maximum Daily Tonnage

Planning for transfer not only considers forecasted annual tonnages but must account for days with increased tonnages based on seasonal fluctuations, program changes (such as “double up” days for garbage), or issues with curbside collection. As a large percentage of the County’s population is seasonal, increased daily curbside tonnages are observed in summer months. Of note, increased daily tonnages of organics are also noted in early November, coinciding with the addition of pumpkins to the organics stream. Design of a County facility must include some contingency for fluctuations in daily collected tonnages and storage capacity.

Analysis of actual daily collected tonnages over 2016 indicates that applying a “peaking factor” of 20% to the daily collected average is reasonable for planning purposes. Table 2.4 below summarizes the forecasted maximum daily tonnages for transfer over the 20-year planning period. These tonnages consider growth, the above-noted program changes, and landfill closures.

Table 2.4 – Forecasted Maximum Daily Tonnages for Transfer (tonnes/day)

Material	2016 (base)	2019	2022	2024 ¹	2029 ²	2034	2039 ³	2049 ⁴
Garbage	185	186	178	269	308	352	402	527
Organics	51	72	-	-	-	-	-	-
Fibres	78	86	94 ⁵	-	-	-	-	-
Containers	47	51	56 ⁵	-	-	-	-	-

1. First year of export of drop-off garbage from County waste receiving facilities.
2. First year of export of all County curbside garbage.
3. 20-year forecast.
4. 30-year forecast.
5. Current indication is that 2022 will be the last full year of County responsibility for blue box recycling given changes outlined in the WFOA.

Tippling/Storage Floor Space

Project Options outlined further in this report for development of a County facility will consider forecasted maximum daily tonnages and the floor space required to accommodate each of the various materials. Calculation of floor space required for storage (which will be a factor in design discussions) considers the following:

- storage capacity. Although facility operations will ideally transfer material off-site daily, multiple storage days are planned for contingency in the occurrence that material would require short-term storage (inclement weather or highway issues, for example, prevent material from leaving the site). For this analysis, 1.5 storage days are assumed – noting that this will be considered further during final design of the facility. This is a conservative assumption given that it is applied to forecasted tonnages which have already considered 2% growth, 1% increase for waste generation, and a “peaking factor”. There will be greater contingency in the early years of the facility as the County generates less than the 20-year tonnages;

- estimated on-floor density. Densities for garbage, fibres, and containers were based on the 2012 Genivar study (*Transfer Station and Fibre Processing Analysis Final Report*, Genivar Inc., March 2012) and confirmed with the County's current project consultant, GHD. The density of on-floor organics were based on calculations of current collected material, confirmed with GHD; and
- pile height and geometry. Pile heights and geometry (45 degree angle of repose on the open side) were assumed based on the 2012 Genivar study and confirmed with GHD.

Forecasted floor space required for various materials is outlined below in Table 2.5.

Table 2.5 – Forecasted Floor Space Required for Storage (m²)

Material	2016 (base)	2019	2022	2024	2029	2034	2039	2049 ¹
Garbage	320	325	310	470	535	610	700	920
Organics	45	65	90	-	-	-	-	-
Fibres	230	250	270	-	-	-	-	-
Containers	410	445	490	-	-	-	-	-

1. 30-year design capacity for garbage in Project Options 2 and 3 as discussed in Section 6.

Current Opportunity

Development of a County-owned transfer station, the MMF project, continues following direction from County Council in 2014 to pursue development of this infrastructure (via Item CCW 16-253). The MMF would be a location for collection vehicles to bring garbage, organics, and blue box recycling for consolidation and this material would be transferred into larger trucks for transport to end disposal/processing locations.

Following a comprehensive siting process, 2976 Horseshoe Valley Road West, Springwater, was determined to be the preferred site for this facility and the County's Organics Processing Facility. With direction to co-locate the two facilities, more technical information on site-specific conditions, and new information on the Waste-Free Ontario Act, this updated analysis has been undertaken for discussion and direction.

Purpose of Business Case

The purpose of this Business Case is to refine cost estimates for the MMF in utilizing the County's standard business case template now that the siting process is complete. It will reassess the 2014 estimates for capital (including site-specific improvements related to the development) and operating and maintenance costs. Various scenarios will be considered – including maintaining the status quo and continuing to contract transfer services.

In addition, given changes to the blue box recycling program under the WFOA, two scenarios will be discussed in consideration of design capacity of the facility.

Section

3

Materials Management Facility Project**Development of Transfer Capacity**

Solid Waste Management Strategy – County of Simcoe, Stantec Consulting Ltd., June 2010

At the time of the Strategy's development, long-term transfer requirements were not clear. Other factors such as the new collection contract, processing options for both organics and recycling, and the potential for waste export would impact the County's transfer needs. It was recommended that the County assess transfer requirements based on the status of developing in-County processing capacity and waste export.

In the short term, a decentralized transfer model using the Transtor system was deemed to be the most appropriate option for the County. Transtors are hydraulic bins that receive and store incoming material until it can be off-loaded into an open top transfer trailer to be hauled to the end destination. Through review of a study undertaken by the Continuous Improvement Fund (CIF), the County determined that the Transtor units proposed in the Strategy would not be suitable since the projected tonnages exceeded the upper threshold for which they would be effective, and instead recommended conventional clear-span buildings with loading platforms at multiple transfer station locations.

Item CS 11-103 – Recyclables Transfer Facilities Funding Application, June 15, 2011

The County began working towards securing funding for the construction of three transfer facilities at Site 10 – Nottawasaga, Site 11 – Oro, and Site 13 – Tosoronto. The County submitted a funding application to CIF, which was created to help Ontario municipalities undertake best practices initiatives to improve the effectiveness and efficiency of blue box recycling programs (*Item CS 11-103 – Recyclables Transfer Facilities Funding Application, June 15, 2011*). The application initially assumed a decentralized model, transferring at various existing waste management facilities as had been outlined in the Strategy. It became clear upon discussions with CIF that a single, central transfer point would be most efficient, resulting in greater economies of scale and reduced operating costs. As CIF funding would be contingent on the potential for the facility to be jointly utilized by other local municipal jurisdictions (regionalization of services for cost efficiency) on a cost recovery basis, the most central existing waste management facility, Site 11 – Oro, was selected for further analysis.

Transfer Station and Fibre Processing Analysis Final Report, Genivar Inc., March 2012

Genivar Inc. was retained as the County's consultant in late 2011 to conduct an engineering review and options analysis for the transfer of two-stream recyclables and garbage from a central transfer location. The study outlined the quantities and characteristics of the materials to be transferred, transfer station design considerations, site considerations, approvals requirements, implementation timelines, and recommended next steps.

Site 11 – Oro was used as the basis for the study, however, the transfer facility's components were developed using a generic approach such that the study findings could also be applied to another site should one be identified. Based on the cost estimates, area footprint and other facility aspects presented, the study recommended that the County determine if Site 11 – Oro or another location could be used for the proposed MMF. The study also recommended that the County determine if the facility should be a transfer station and fibres processing facility or just a transfer station.

Item CO 12-023 – Results of Initial Analysis of Request for Proposal Responses for Recycling Transfer Options for Budget Consideration, November 27, 2012

In November 2012, County Staff prepared a report for Council consideration with respect to the capital budget required for a proposed County blue box transfer facility (*Item CO 12-023 – Results of Initial Analysis of Request for Proposal Responses for Recycling Transfer Options for Budget Consideration, November 27, 2012*). The purpose of the report was to obtain funding for development of a County facility as part of the 2013 budget process. Given that the facility would not be constructed in time for the start of a new collection contract (April 2013), a temporary contracted arrangement was required.

With respect to the transfer and haulage component of the procurement process, bids were received and compared with estimated capital, equipment and operating costs for a County owned and operated transfer operation. Through staff analysis, it was determined that there were a number of scenarios that showed a potential benefit to the County, should they develop their own transfer capacity. Staff noted that the analysis reflected County blue box tonnages only; however, the proposed facility and processing arrangements reviewed would allow for additional tonnages from neighbouring municipalities, thereby reducing operating costs per tonne and realizing economies of scale.

Item CCW 14-253 – Transfer Facility Assessment, August 12, 2014

A financial analysis was conducted comparing the continuation of the current system of contracting transfer services (also known as the status quo option) and construction of a County transfer facility. The analysis considered changes in tonnages with the closure of County landfills and growth, capital costs of both the building and equipment, and estimated annual operating expenses over a 20-year period.

The financial analysis determined that a County MMF could save approximately \$13 million over the next 20 years compared to the current system. The payback period for a County-owned facility was estimated to be between five and six years (dependent on funding) and would bring additional benefits such as security in managing materials in-house and the flexibility to respond to collection changes.

Based on the financial analysis, it was recommended that siting a transfer facility allow for potential expansion to incorporate a Materials Recovery Facility (MRF) (which would include both fibres and containers processing) should it prove to be a viable option in the future. It should also be noted that CIF funding is contingent on the facility being able to expand to a full MRF.

County Council direction was received to move forward with development of this infrastructure.

Item CCW 14-344 – Transfer Facility Funding Update, August 26, 2014

Pursuant to the updated financial analysis of transfer costs, staff met again with CIF to discuss the status of the funding application, the availability of funding, and moving forward. CIF confirmed that funding was available with the following contingencies:

- submission and approval of a monitoring and measurement plan;
- County Council approval of a facility to be jointly utilized by other local municipal jurisdictions on a cost recovery basis;
- that the County will seek a letter of intent from the other local municipal jurisdictions with respect to utilizing capacity at the facility on a cost recovery basis to the satisfaction of the CIF;
- provision in the facility Environmental Compliance Approval to permit transfer of blue box materials from other municipalities across Ontario, to be done on a cost recovery basis;
- design of the facility to allow for its potential future expansion to accommodate a full material recovery facility (MRF) operation and involvement of CIF staff in the design; and
- documentation and evidence of savings achieved, including baseline data collection on the current system, to the satisfaction of the CIF.

The County received notice from CIF in late 2014 that the funding and associated terms and conditions had been approved, guaranteeing funding of 47% of blue box-related project costs to a maximum limit of \$2,187,840. The finalized agreement expected to be in place by early 2015. In addition, letters of intent have been received from the Cities of Barrie and Orillia confirming their intent to incorporate the County's proposed recycling transfer facility as an option for consideration in the procurement of their next collection and processing contract(s).

Siting Process

With County Council direction to advance development of transfer infrastructure, the scope of work assigned to the County's consultant on the Organics Processing Facility (OPF) project, GHD Limited, was extended to provide engineering services for siting the Materials Management Facility (MMF). This work was undertaken with the OPF, realizing obvious synergies and cost savings to advance siting the two projects concurrently.

A comprehensive siting process for both the OPF and MMF was undertaken in 2015/early 2016 which included the evaluation of 502 potential sites. A short list of sites was presented for public, Aboriginal, and stakeholder consultation in fall 2015, followed by a detailed comparative evaluation completed by the County's consultant. This evaluation was also extended to consider the option of co-locating both facilities on a single site. On March 22, 2016, County Council approved furthering development of a co-located OPF and MMF at 2976 Horseshoe Valley Road West, Springwater.

Table 3.1 below summarizes related staff reports presented during this development phase of the MMF project.

Table 3.1 – MMF Development – Siting Reports

Item No. and Date	Title	Description of Milestone
January 13, 2015 Item CCW 15-020	Infrastructure Projects – Update	Update on public information sessions held on December 2, 2014 which presented information on the MMF project, outlined the proposed siting process and methodology for the facility, and obtained public feedback on site evaluation criteria.
February 26, 2015 Item CCW 15-078	Materials Management Facility – Siting Methodology and Evaluation Criteria	The siting methodology and evaluation criteria for the MMF endorsed by County Council.
June 23, 2015 Item CCW 15-229	Solid Waste Management Infrastructure Projects – Siting Process Update	An overview of the projects was provided in preparation for presentation of the short list of sites.
November 24, 2015 Item CCW 15-397	Infrastructure Projects – Consultation Update	Overview of consultation undertaken in regard to the short list of sites.
March 8, 2016 Item CCW 16-054	Solid Waste Management Infrastructure Projects – Final Siting Report	Recommendation to co-locate both the OPF and MMF at 2976 Horseshoe Valley Road West, Springwater, endorsed by County Council.
May 24, 2016 Item CCW 16-191	Solid Waste Management Infrastructure Projects – Public/Stakeholder Engagement Update	Summary of the engagement process undertaken to date and a summary of information sessions held following release of the preferred site.

Environmental Resource Recovery Centre

The co-located facility is planned to house the OPF and MMF, the Solid Waste Management truck servicing area, potentially a public education centre, and area for potential expansion for recycling processing (a Materials Recovery Facility (MRF)). For ease of reference, the complex is referred to as the County of Simcoe's Environmental Resource Recovery Centre (ERRC). Figure 3.1 provides an overview of the conceptual site layout and facilities to be constructed as part of the ERRC.

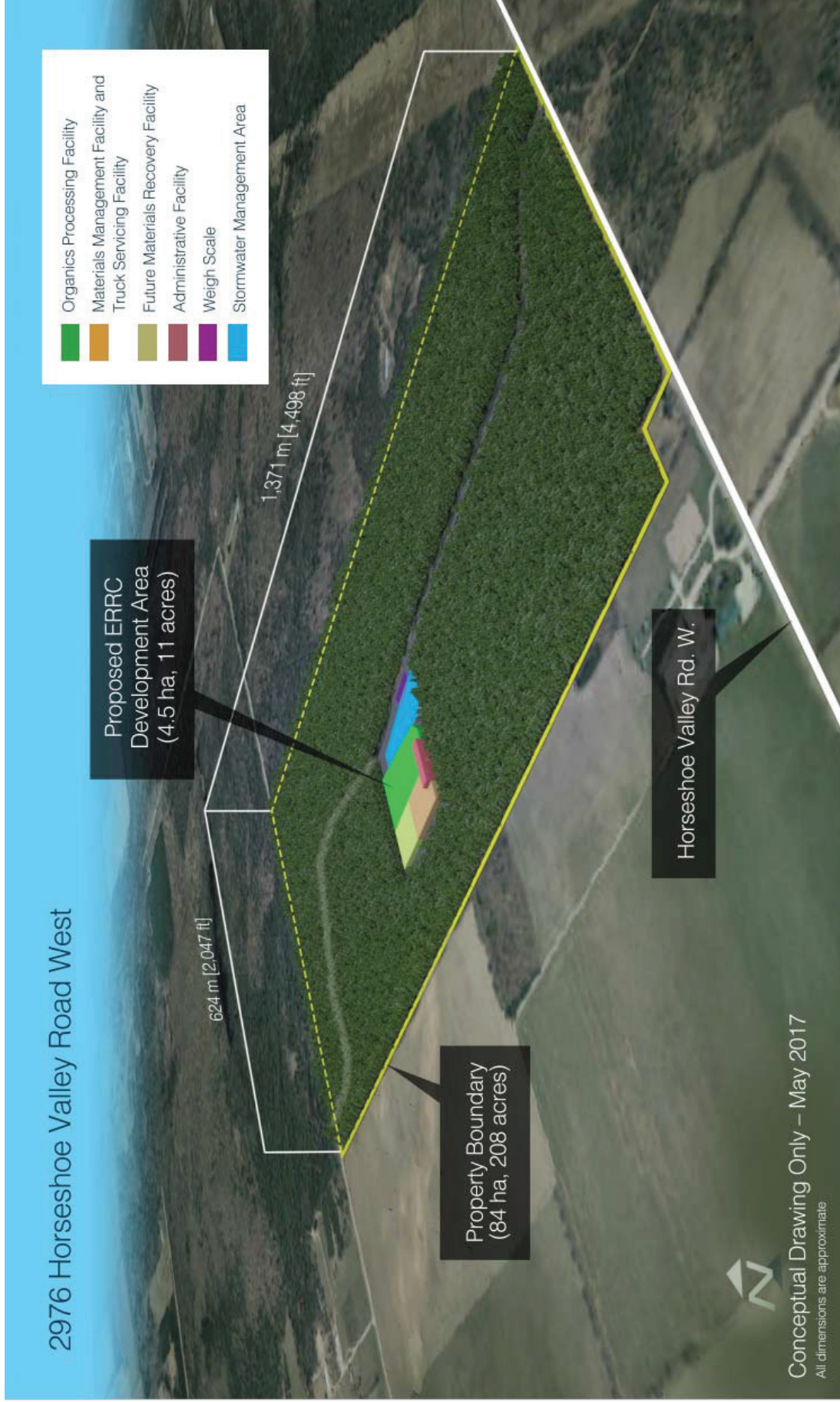
With direction to co-locate the two facilities at 2976 Horseshoe Valley Road West, Springwater, GHD was retained to provide an updated work plan that considered the more complex project delivery of two facilities at one location. This was presented and subsequently updated (reflecting an 80 day delay due to additional study work on the site) in the following staff reports:

Table 3.2 – MMF Development – Co-located Facility Reports

Item No. and Date	Title	Description of Milestone
May 24, 2016 Item CCW 16-165	Solid Waste Management Infrastructure Projects – Development Strategy	The project Development Strategy for development of the co-located OPF and MMF at 2976 Horseshoe Valley Road West, Springwater, endorsed by County Council.
September 13, 2016 Item CCW 16-301	Solid Waste Management Infrastructure Projects – Project Update	Provided an update on the projects – including details on preparations for Planning applications, the Community Engagement Committee, and correspondence recently received.
November 8, 2016 Item CCW 16-376	Environmental Resource Recovery Centre – Project Update	Update on development of the Environmental Resource Recovery Centre (ERRC) – including information on further archaeological work that was undertaken on the property, details on the conceptual site plan currently being prepared for submission with Planning applications, and presentation of an updated Development Strategy timeline.

The Development Strategy and conceptual timeline was based on GHD's experience in developing similar facilities. It was noted that this timeline is expected to be a living document and will likely evolve over time as various milestones are completed. As outlined, the project plan considers that developing infrastructure at this location will require amendments to the County Official Plan as well as the Township of Springwater Official Plan and Zoning By-law. In addition, the MMF and OPF will be advanced with different delivery methods. Co-location must consider the timing of both procurement processes, timing of the business case for the OPF, obtaining an Environmental Compliance Approval (ECA), and construction of two facilities on the same footprint.

Figure 3.1 – Conceptual Site Layout



Project Update – Planning, Waste-Free Ontario Act

On November 18, 2016, applications were submitted to the Township of Springwater to further the required local Official Plan (OP) and Zoning By-law amendments for 2976 Horseshoe Valley Road West, Springwater. These applications and a County-initiated County Official Plan Amendment (OPA) are currently following the process as outlined in the Planning Act following notification from the Township on December 16, 2016 that the applications to the Township have been deemed complete.

The following technical studies were undertaken as part of the Planning process (outlined further in *Item CCW 17-038 – Environmental Resource Recovery Centre – Project Update*, January 24, 2017):

- Planning Justification Report
- Agricultural Impact Assessment Report
- Scoped Environmental Impact Study (includes Hazard Land Assessment)
- Facility Characteristics Report (includes Conceptual Site Plan, Functional Servicing Study, Stormwater Management Study, Noise Assessment, Odour Assessment)
- Hydrogeological Assessment
- Stage 1 & 2 Archaeological Assessment
- Stage 3 Site Specific Archaeological Assessment
- Stage 3 Site Specific Archaeological Assessment – Supplementary Documentation
- Cultural Heritage Resource Assessment: Built Heritage Resources and Cultural Heritage Landscapes
- Traffic Impact Assessment

A follow-up report was presented in June 2017 (*Item CCW 17-174 – Environmental Resource Recovery Centre – Project Update*, June 22, 2017). This item outlined that although the process and facility concepts remain very positive initiatives for the County, the analysis and approval stages are at a critical juncture. Specifically, the report outlined the implications of two recent pieces of provincial legislation that could potentially impact project timelines for development – Growth Plan 2017 and Bill 151 – the Waste-Free Ontario Act (WFOA).

The report noted that preparation of this Business Case was being complicated by uncertainty from the potential delays from the Planning approvals process and changes to the blue box recycling program under the WFOA. In summary, the following will be discussed further in this analysis:

- given the potential that the County will not be responsible for the management of blue box recycling after 2022, consideration has been given to prudently size the MMF to manage garbage and organics but have contingency for transfer capacity should the Producers ultimately wish to utilize the County facility as a regional transfer centre for blue box recycling on a cost recovery basis;
- should Planning approvals delay commissioning of the MMF, there is the risk that funding from the Continuous Improvement Fund (CIF) (over \$2M) could be lost. The funding agreement with CIF outlines that the facility must be substantially built by September 2019 – noting that given the anticipated transition of the blue box recycling program by 2023, there may be limited room to negotiate extensions in the timelines and any missed deadlines could impact the agreement;
- increased legal and consulting costs as the Planning approvals process is furthered; and
- that development timing is critical from a waste system perspective as the County prepares to export all facilities' garbage in 2024 with closure of Site 2 – Collingwood and all curbside garbage in 2029 with the anticipated closure of the last County landfill.

Scope

This analysis considers transfer requirements and costs related to garbage (both curbside and drop-off), organics, and blue box recycling. It excludes consideration for cost of collection, haulage, and disposal/processing. In addition, it excludes transfer of other facility drop-off materials (such as construction and demolition material) which is transferred directly from each of the County's waste receiving facilities.

Section

4

Strategic Alignment**Solid Waste Management Strategy**

As noted above, at the time of the Strategy's development, long-term transfer requirements were not clear. Other factors such as the new collection contract, processing options for both organics and recycling, and the potential for waste export would impact the County's transfer needs. It was recommended that the County assess transfer requirements based on the status of developing in-County processing capacity and waste export.

County of Simcoe – Strategic Plan

In 2015, the County of Simcoe developed its Strategic Plan in order to communicate, educate, and promote an understanding of the County's Vision, Mission, Core Values and Strategic Directions. The Strategic Plan provides a clear outline of the preferred methods for achieving its goals and the cost to implement. It also serves as a framework for the 10-year planning period, 2018 – 2027, such that County departments may align their goals and strategies, in order to make budgetary decisions more consistent, sustainable, and transparent.

The County's vision statement, "Working Together to Build Vibrant, Healthy, Sustainable Communities", aims to help to guide decisions and align priorities to shape the future of the County. Strategic directions, which represent the priorities and desired results that are to be achieved in support of the vision, include:

- Growth Related Service Delivery
- Strengthened Social, Health and Educational Opportunities
- Economic & Destination Development
- Environmental Sustainability
- A Culture of Workplace and Operational Excellence
- Responsive and Effective Governance

As part of the Strategic Plan, the Long Term Financial Plan forecasts previously approved strategic directions and new initiatives approved by County Council. The Long Term Financial Plan was developed for both the operating and capital programs and was based on the forecasted needs for each program and/or service delivery areas. The following Solid Waste Management Department initiatives were provided as key inputs and assumptions in the projected Long Term Financial Plan (*Item CCW 17-159 – 2017 Long Term Financial Plan*, June 27, 2017):

- construction of an Organics Processing Facility (OPF) for \$25M is planned for 2021 – 2022 and operational in 2022; and
- the Materials Management Facility (MMF) was previously reserved and is forecasted to be completed in 2019 – 2020 and operational in 2020.

Section

5**Situational Analysis**

The current status of transfer infrastructure available to the County is virtually unchanged from what it was at the time the Strategy was developed and the need to develop transfer capacity was identified. Currently, there are few large-scale transfer facility options that would be available to the County. Known transfer stations capable of managing residential collection trucks within a 100 km radius are listed below:

- Mid Ontario Disposal (Orillia)
- Waste Connections of Canada, formerly Progressive Waste Solutions (Barrie and Bracebridge)
- Miller Waste Systems (Markham, Georgina, and Newmarket)
- Green For Life (Orangeville)

Many larger municipalities such as the City of Toronto, City of Hamilton, Region of Peel, York Region, and City of Guelph operate their own transfer facilities as they offer many operational and financial advantages.

Continuous Improvement Fund (CIF) – 2012 Optimization Study

In 2012, StewardEdge prepared *A Study of Optimization of the Blue Box Materials Processing System in Ontario* for Waste Diversion Ontario (now referred to as the Resource Productivity and Recovery Authority). The objectives of the study were to produce a model that would indicate a cost-effective, efficient, and successful recovery system for blue box materials (paper fibre materials and containers/packaging) and be a useful tool in decision-making towards an optimized system for transfer, hauling, and sorting of the blue box materials for market in Ontario.

The study provided a model of an optimized system of Materials Recovery Facilities (MRFs) and transfer stations and identify any gaps in the existing infrastructure. It provided options to guide the transition to an optimized system. For modelling purposes the province was split into four regions: Eastern Ontario, Central Ontario and the Greater Toronto Area (GTA) (this included the County of Simcoe), Southwestern Ontario, and Northern Ontario. A key variable in the model was the distance blue box materials could be transferred from a transfer station to a hub MRF essentially creating a hub and spoke system. The most efficient options identified generally had the fewest MRFs overall. Further, the analysis identified options and variations for infrastructure in each of the four regions with the need for a MRF or transfer station in or around the Barrie area.

CIF Funding Submission

In March 2011, the County submitted an application for funding to the Continuous Improvement Fund (CIF) through the 2011 Request for Expressions of Interest for CIF Funding under the *MRF Regionalization and Transfer Station Construction* category.

The original funding application was based on a decentralized transfer model which included multiple, smaller-scale transfer facilities. Further analysis was undertaken for CIF to determine if this was the most efficient scenario. A drive time analysis was completed which compared multiple travel points selected throughout the County. Based on results of this analysis, the evaluation of 20-year projected tonnages, capital and operational costs for multiple facilities, and consideration of best practices (CIF funding would

be contingent on the potential for the facility to be jointly utilized by other local municipal jurisdictions on a cost recovery basis), it was determined a single centralized location would be the most beneficial.

A formal funding report and presentation was prepared for CIF seeking final approval on the viability of the project. Based on the results of the Regional Transfer Study and the identification of the need for a hub transfer station and potentially a MRF, CIF approved funding for a transfer station – noting the potential benefits of economies of scale and regionalization of transfer services.

Section

6**Project Options**

In the financial analysis presented in 2014, 20-year management of garbage and recycling was examined. Completed prior to the siting process, it outlined future contract costs, estimated land purchase and site development costs (based on development at an industrial location), and preliminary capital costs for the building. As some time has passed since this was completed and the siting process has now been undertaken, additional information is available on site development costs. In addition, there has been provincial changes to waste management which will impact the financial analysis.

Project Options examined in this analysis are reflective of uncertainty at this time regarding the changes in the blue box recycling program under the Waste-Free Ontario Act (WFOA). For the purpose of this Business Case, it is assumed that the Producers will take full responsibility for the management – and incurred costs – of blue box recycling by the end of 2022. This has obvious implications for the County on current expenditures related to the collection, transfer, haulage, and processing of this material and for this Business Case, impacts the status quo options and payback related to a County-owned facility. It is assumed that there may be opportunity to provide transfer service to the Producers and recover some revenue for the facility. However, at this time, there is no certain commitment of this. Project Options will only consider the management of blue box until the end of 2022. This is noted to be the most conservative approach to the updated analysis given the information on the transition received to date.

Project Option 1 – transfer status quo, OPF commissioned in 2021

This option is reflective of County current transfer operations and considers long-term, contracted transfer costs for garbage. Organics transfer is considered only until 2022 to coincide with development of the County's OPF. Starting in 2022, curbside organics would be brought to the OPF directly. In regard to blue box recycling, this option considers that the County will continue to contract transfer service until the end of 2022, receiving approximately 50% funding for this cost.

Project Option 2 – develop the MMF for long-term garbage, OPF commissioned in 2021

Given the changes to the blue box recycling program, this option considers development of a smaller transfer facility to meet only the County's long-term transfer needs for garbage. There would be excess capacity until 2022 to transfer organics until the OPF is brought on-line. However, it is noted that at this smaller facility, there would be no capacity to transfer blue box recycling even until 2023 (this material is voluminous and takes significant floor space for storage). This service would continue to be contracted until the end of 2022, when the Producers assume responsibility for blue box.

This Project Option would forfeit funding from the Continuous Improvement Fund (CIF) (approximately \$2M) as the funding is for blue box-related expenses.

Project Option 3 – develop the MMF for long-term garbage, space for blue box recycling until 2023, OPF commissioned in 2021

This option considers development of the MMF for the long-term transfer of garbage but consideration of some additional floor space for the short term storage and transfer of blue box recycling. Organics would be taken directly to the OPF after 2021. Following transition of the blue box program (projected for 2022), no blue box recycling would come to this facility. It is noted that this will impact the capital cost for development as the building would need to be increased in size from Project Option 2 to accommodate the additional material. It is assumed that this Project Option would, however, qualify for the CIF funding.

In summary, the Project Options presented herein are summarized as follows:

Table 6.1 – Transfer Project Options for Analysis

Option	Description	Materials Considered	Considerations
Project Option 1	continue to contract transfer service for garbage, organics, and blue box recycling	<ul style="list-style-type: none"> garbage organics until 2022 blue box recycling until 2023 	<ul style="list-style-type: none"> analysis assumes current contracted pricing for transfer – risk of uncertain future market conditions and pricing
Project Option 2	develop MMF with long-term capacity for garbage	<ul style="list-style-type: none"> garbage organics until 2022 	<ul style="list-style-type: none"> without recycling capacity, no CIF funding (\$2M loss) would require contracting transfer for blue box until 2023
Project Option 3	develop MMF with long-term capacity for garbage, blue box capacity until 2023	<ul style="list-style-type: none"> garbage organics until 2022 blue box recycling until 2023 	<ul style="list-style-type: none"> would require additional capital for sizing facility to accommodate blue box materials CIF funding could be applied

Conceptual Design

Given changes to the blue box program since the first project plans were prepared in 2014, GHD was retained to work alongside County staff and provide assistance on conceptual designs for Project Options 2 and 3 and the related capital for each of the options. This work is a continuation of consulting services provided for siting, preparation of the Development Strategy, and technical studies undertaken at 2976 Horseshoe Valley Road West, Springwater (including a *Facility Characteristics Report*, November 2016). Their technical memorandum, *Conceptual Layout and Estimated Costing for the Materials Management Facility* (GHD Limited, August 23, 2017), is provided for reference in **Appendix A**.

As outlined in this memorandum, the design and technology range for the MMF is limited as it will be a conventional waste management facility, mostly reliant on space for consolidation of waste from smaller collection vehicles into larger vehicles with no processing of the materials. The main components of the proposed MMF will include:

- access/egress lanes for curbside collection vehicles;
- tipping floor;
- storage bunkers; and
- loading area for transfer trailers.

In addition, initial design includes incorporating an administrative area for operations staff and the truck servicing facility for the County's fleet of Solid Waste Management vehicles. The truck servicing facility will consist of a workshop, storage area, and two service bays.

Depending on the final design, the MMF will likely be a multi-storey building approximately 10 to 15 metres (m) high, consisting of a pre-engineered steel frame structure with exterior walls of concrete and steel sheeting. The use of internal support columns will be minimized in order to provide clear spans that allow for the unrestricted movement of materials and vehicles inside the building. Roll-up doors will provide vehicle access inside the building where materials will be loaded and unloaded. A concrete tipping floor and push walls will allow for materials to be segregated and moved around using a wheeled loader.

Project Option 2 – Conceptual Design No. 1

Conceptual Design No. 1 represents design space for garbage only. The facility was sized based on 30-year capacity requirements for garbage, requiring a bunker storage area of approximately 1,000 m². It is noted that the proposed MMF will also need to transfer organics until the proposed commissioning of the OPF in 2021. The bunker storage area requirements are estimated to be approximately 350 m² for garbage and 100 m² for organics in 2021. Since this material would require much less space than the proposed design, the MMF would be able to easily accommodate organics in the interim as the OPF is commissioned.

Conceptual Design No. 1 has the MMF sized at 3,450 m² – including bunker storage, tipping floor space, loading areas, and the additional space for administrative and truck servicing areas.

Project Option 3 – Conceptual Design No. 2

Conceptual Design No. 2 is based on the same long-term design capacity for garbage as Conceptual Design No. 1, but with additional short-term capacity for blue box recycling. With the implementation of the Waste-Free Ontario Act likely transitioning the management of blue box materials away from the County in the coming years, it is assumed that the management of these materials will cease after 2022. As such, the total bunker storage area requirement for all materials to the end of 2022 is anticipated to be approximately 1,585 m².

Conceptual Design No. 2 has the MMF sized at 4,450 m², increasing the size by approximately 1,000 m² from Conceptual Design No. 1.

Figures 1A, 1B, and 2 are provided in **Appendix A** illustrating configurations for both conceptual designs.

Section

7

Cost/Benefit Analysis**Quantitative Analysis – Financial Costs & Benefit**

For the quantitative analysis of the Project Options, various costs were compiled for inclusion in a financial model – project costs to date, capital costs for development of the MMF, and project operating costs for the facility. Again, it is noted that a 20-year Planning period was assumed – 2019 to 2039. This coincides with the approved Development Strategy for the MMF which outlines an approvals, design, and construction period from 2017 to 2019. For the purpose of the analysis, it was assumed that the commissioning of the facility would occur at the end of 2019, with operational expenses incurred in January 2020.

The following summarizes various assumptions related to each of the various components considered in the financial model.

Project Costs to Date

Project costs to date were considered in the financial model. Since 2014, consulting services have been retained to further the siting process for the MMF – this includes services related to reporting and consultation. In addition, a series of technical studies for the required Planning amendments have been undertaken as outlined in Section 3. Table 7.1 outlines project costs to date that were considered in the financial model – noting that these were allocated to Planning and Construction – Year 1 (see Table 7.5) for Project Options 2 and 3.

Table 7.1 – Project Development Costs Incurred to Date (Year 1)

Description	Cost
Consulting services – siting	\$86,000
Other siting-related costs (consultation events, advertising, facilitation services, etc.)	\$24,500
Consulting services – preparation of project Development Strategy	\$5,100 ¹
Consulting services – technical studies for 2976 Horseshoe Valley Road West, Springwater	\$285,300 ¹
Planning amendments – application fees, peer review of studies, etc.	\$7,300 ¹
Other charges – Planning approvals (Public Meetings, signage, etc.)	\$600
Consulting services for Business Case – conceptual design, updated capital costing	\$18,900
Total – Year 1 costs	\$427,700 ²

1. Costs for technical studies and expenses related to the Planning amendments have been shared between the OPF and MMF projects. These costs have been considered in the Preliminary Business Case for the OPF.
2. As noted in Table 7.5, these project development costs to date have been allocated to Year 1 – Planning and Construction.

It is noted that additional expenses relating to furthering the Planning and environmental approvals are forecasted as described below in *Capital*.

Capital

As outlined in Section 6, the County's project consultant, GHD, were retained in spring 2017 to work alongside County staff to determine site-specific development and building costs for the MMF. As outlined in GHD's technical memorandum (provided in **Appendix A**), two conceptual design options were provided as part of this analysis based on the two Project Options relating to development of a County-owned facility. Capital estimates were provided by GHD for both Conceptual Design No. 1 (Project Options 2) and Conceptual Design No. 2 (Project Option 3) – noting the additional tipping/storage floor space required for the later. Again, site development costs are considered shared costs with the OPF project and these were also considered in the Preliminary Business Case for this project.

Costs associated with recommendations and comments from various agencies reviewing the Planning applications (including the Ministry of Environment and Climate Change and Nottawasaga Valley Conservation Authority) have been included in this analysis. To date, this has included additional studies required on the site, cost of potential land for forest compensation, design measures such as odour mitigation, and increased legal and consulting costs to further the complicated Planning approvals process. It is noted that this is an evolving project and as additional details are confirmed in regard to required mitigation measures, design features, land purchase related to compensation, etc., specific capital costs will be refined as the project moves from approvals to final design.

Tables 7.2 and 7.3 summarize the capital estimates for both Project Options 2 and 3, noting where development costs are shared with the OPF (these have been provided to Ernst & Young for inclusion in the Preliminary Business Case for the OPF). In addition, equipment costs were also included in the analysis. This included two front-end loaders based on current costs (and escalated by 2% annually to get replacement values at Operating Year 10).

Table 7.2 – Summary of Estimated Capital Costs for Project Options 2 and 3 (Year 2)

Description of Capital Expense	Project Option 2	Project Option 3
Site Development Costs (shared with OPF project) ¹		
Approvals process (including consulting fees, legal, etc.)	\$97,500	\$97,500
Site services	\$360,000	\$360,000
Stormwater management	\$353,500	\$399,500
Grading and paving	\$774,500	\$774,500
Grounds work (including stumping and grubbing, fencing, signage, lighting, etc.)	\$304,500	\$312,000
County Road 22 improvements ²	\$794,500	\$794,500
Potential land purchase for compensation ³	\$62,500	\$62,500
Fees and permits (including ECA application)	\$84,500	\$84,500
HST and contingency ⁴	\$187,900	\$191,500
TOTAL	\$3,019,400	\$3,076,500
TOTAL – Year 2 costs, including applied 2% inflation ⁵	\$3,079,800	\$3,138,000

1. Costs for site development have been split between the OPF and MMF projects. These costs have been considered in the Preliminary Business Case for the OPF.
2. County Road 22 (CR22) improvements other than the recommended intersection improvements will not be costed into either the MMF or OPF Business Case as they are warranted by the future background traffic not the ERRC project (as outlined in the Traffic Impact Study).
3. Estimated Solid Waste Management costs included for potential land purchase and tree planting as mitigation – noted in 2017 comments from the Nottawasaga Valley Conservation Authority in regard to studies undertaken for the required Planning amendments.
4. Costing includes consideration for 1.76% non-refundable HST and 5% contingency.
5. As noted in Table 7.5, site development costs have been allocated Year 2 – Planning and Construction – noting that 2% annual inflation was applied accordingly to future costs.

Table 7.3 – Summary of Estimated Capital Costs for Project Options 2 and 3 (Year 3)

Description of Capital Expense	Project Option 2	Project Option 3
MMF building (includes pre-engineered steel building, concrete foundation and walls, overhead doors, area for truck servicing, etc.)	\$6,300,000	\$8,131,000
Administrative area, scales, and education centre ¹	\$312,500	\$312,500
Engineering services (includes design, construction oversight, permitting and approvals, etc.)	\$250,000	\$375,000
Administration costs, mobilization/demobilization, etc.	\$648,000	\$771,000
HST and contingency ²	\$514,300	\$656,700
Equipment	\$750,000	\$750,000
TOTAL	\$8,774,800	\$10,996,200
TOTAL – Year 3 costs, including applied 2% inflation ³	\$9,129,300	\$11,440,400

1. Costs for the administrative area, scales, and education centre have been split between the OPF and MMF projects. These costs have been considered in the Preliminary Business Case for the OPF.
2. Costing includes consideration for 1.76% non-refundable HST and 5% contingency.
3. As noted in Table 7.5, building and equipment costs have been allocated to Year 3 – Planning and Construction – noting that 2% annual inflation was applied accordingly to future costs.

It is noted that capital estimates for both Project Options 2 and 3 are substantially greater than 2014 estimates. The financial assessment presented in 2014 estimated a capital cost of \$4.2M for the facility (not including equipment or replacement costs). It is noted that this was before siting work was initiated and was based on the following assumptions – a 1,700 m² facility, sited on a small industrial site that would not require considerable paving, significant site servicing costs (for items such as stormwater management), or a lengthy access distance. Although it considered funds for land purchase (\$800,000), it did not include additional consulting work related to siting or technical studies for Planning amendments. This updated assessment considers site-specific improvements required for 2976 Horseshoe Valley Road West, Springwater – some of which are considerable. Although mitigated by co-locating the OPF and MMF at this location, site development costs applied to the MMF project are estimated at \$2.8M.

The greatest impact on the updated capital cost estimate, however, is related to facility sizing. Refined capital estimates now consider a modified conceptual design that considers a building with mitigation for odour and noise. Based on conceptual designs completed by GHD, a drive-through design would remove the need for outdoor reversing and, in addition, all loading and unloading at the transfer facility would be facilitated indoors – increasing the size of the facility for both Project Options to over 3,000 m². The impact of facility sizing and conceptual design on the overall financial analysis will be discussed further in Section 8 of this report.

Operating

Operating costs for a County facility have been estimated and projected for Project Options 2 and 3. These costs, compiled in consultation with County Finance and based on working knowledge of other County operations, includes the following:

- staffing requirements. For this analysis, it was assumed that the facility would employ one fulltime supervisor. The number of required equipment operators was estimated based on the annual tonnage of material managed at the facility and the time to unload/load this material at the site. A preliminary operations plan was assumed which would have outbound trailers loaded in the morning, staff managing inbound curbside collection trucks in the afternoon;
- utilities and fuel;
- building and facility maintenance; and
- other general expenses such as insurance and property taxes.

For the purpose of this analysis, property taxes were estimated by assuming an assessment value and applying a 2017 property tax rate of 1.94% (based on an assumed property classification), increased 2% annually. In regard to the assessment value, other comparable facilities in this area were examined to estimate a reasonable value – noting that determining the final annual property taxes for this complex will require further study and consultation with MPAC and the Township of Springwater upon development.

Although there is the potential that as the OPF is brought on-line it could provide the MMF with heat and power, long-term costs for utilities were included in the operating costs.

CIF Funding

CIF funding may only be applied to the MMF's blue box-related costs. Given the changes to the blue box recycling program under the WFOA (as discussed in Section 3), this funding has become an important consideration in development of the MMF. Only Project Option 3 would be eligible for this funding as in this option, the facility would be designed to accommodate blue box recycling until the end of 2022. Some additional capital would be required for tipping/storage floor space (considering the voluminous nature of this material).

As per the County's funding agreement with CIF, they will fund 47% of the blue box-related costs to a maximum of \$2,187,840. As the MMF would also transfer garbage and organics, consideration was provided to the percentage of the facility capital which would be eligible. As outlined in the funding agreement, the calculation was based on the tipping/storage floor space required for fibres and containers. Based on GHD design, it was estimated that this would be 45% of the facility in 2022. The funding calculation was therefore applied as follows – noting it was to the maximum allotted value:

$$\text{CIF funding} = 47\% \times 45\% \times \text{capital expenditure}$$

Again, as detailed in Item CCW 17-174, should Planning approvals delay commissioning of the MMF, there is the risk that this funding could be lost. The funding agreement outlines specific milestones – including having the facility substantially completed by 2019. Given the anticipated transition of the blue box recycling program, there may be limited room to negotiate extensions in the timelines and any missed deadlines could impact the agreement. However, for the purpose of this analysis, it is assumed that funding will be received in Project Option 3.

Development Charges

As outlined in Hemson Consulting Limited's (Hemson) 2016 report on Development Charges (DCs) (*Item CCW 16-222 – County of Simcoe Development Charge By-law, May 24, 2016*), on December 3, 2015, the province passed Bill 73, Smart Growth for Our Communities Act, 2015, which amended the Development Charges Act and Planning Act. Among the changes introduced to the legislation was the introduction of certain waste management functions as eligible services. Under the previous iteration of the legislation, all waste management functions were an ineligible service. Now, only landfill and waste incineration activities are listed as ineligible.

Based on current legislation, this analysis considered that for both Project Options 2 and 3, the facilities would be ineligible for DC funding as they would primarily be constructed for the management of garbage (i.e. not divertible materials). It is noted that although Project Option 3 will manage some blue box recycling until the end of 2022, the short-term nature of this capacity would likely make it ineligible for growth-related funding. Should the future of the blue box program change the conceptual design, the eligibility for applying DCs will be reconsidered.

Avoided Costs – Truck Servicing

As the conceptual design and capital estimate has assumed some space for truck servicing in the MMF building, avoided costs for this service was considered. Currently, space is rented in the Township of Springwater and budgeted costs for truck servicing space includes rent, utilities, maintenance, and snow removal. In Table 7.5, Project Options 2 and 3 included these avoided costs – escalated by 2% annually and noted as revenue in the cash flow analysis.

Financial Assumptions

The financial model has been prepared as an annual cash flow during both the planning and construction and operating phases of the project. Cash flows were assumed to occur at the end of the period in which they are incurred. Each financial year was assumed to end on December 31. Other assumptions that were applied to the financial model are outlined below in Table 7.4.

Table 7.4 – Time Value Assumptions

Time Value Assumptions	Value
Operating inflation factor	2%
Discount rate	4%
NPV base date	June 1, 2017
Design and construction start date	June 1, 2017
Design and construction end date	December 31, 2019
Operating and maintenance period start date	January 1, 2020
Operating and maintenance period	20 years
Operating and maintenance period end date	December 31, 2039

A terminal value, the anticipated value of the asset at a certain point in time, was considered in this analysis. The calculation was based on a 50-year, straight-line depreciation of the asset and considered at Year 20 (noting that there would still be 30 years remaining on the life of building). This methodology was consistent with that applied to the OPF Preliminary Business Case completed by Ernst & Young.

Quantitative Analysis – Discussion

Table 7.5 provides a summary of the results of the analysis, noting the annual costs associated with continued contracted transfer (Project Option 1) and planning, construction, and operating costs for development of a County-owned transfer facility (Project Options 2 and 3). Total costs and a 20-year Net Present Value (NPV) were calculated.

It is noted that the analysis has significantly changed from the 2014 analysis – where development of a County facility was expected to yield a breakeven point (payback) of 5 years. The financial benefit of developing a County transfer facility has been impacted significantly with the anticipated changes to the blue box recycling program. This infrastructure would no doubt benefit from the economies of scale brought by management of significant blue box tonnage – either by cost avoidance for transfer services or as a potential revenue source. This is observed by comparing Project Options 2 and 3. Construction of a facility even with short-term capacity for blue box recycling has some increased financial benefit to developing a facility to manage only garbage.

Based on the financial analysis and assumptions outlined in this report, Project Option 3 would have the lowest total costs over the 20-year period – with costs for Project Options 1 and 2 being relatively the same. During the 20-year operating period, the analysis indicates considerable annual savings of a County facility as greater tonnages of garbage are managed with the closure of County landfills (noted by increased transfer costs for Project Option 1 in Years 5 and 10).

Without consideration for long-term management of blue box recycling, Project Option 1 has the lowest 20-year NPV at \$13.9M (based on a conservative 4% discount rate). Given this option assumes only an annual 2% increase for inflation on existing contracted transfer rates, a sensitivity analysis was undertaken to consider the impact on the 20-year NPV with higher increases in transfer rates. It is noted that as contracts expire, there is associated risk with procuring transfer services – with no guarantee that rates will remain the same over the long-term. Should transfer costs increase by 3%, for example, the 20-year NPV for Project Option 1 would increase to \$15.8M. An annual increase of 4% would increase the 20-NPV to \$18.1M – aligning with Project Options 2 and 3.

The impact of blue box recycling on development of the MMF is noted in the breakeven point as the time frame for both Project Options 2 and 3 has increased to 36 and 33 years, respectively. Again, should contracted transfer costs increase by more than 2% annually, a better breakeven point for Project Options 2 and 3 would be realized.

Qualitative Analysis – Non-Financial Costs & Benefit

Waste management decisions, particularly related to development of supporting infrastructure, are complex and benefit from a full cost accounting or a “triple bottom line” approach – examining social, environmental, and economic criteria. Economic feasibility is considered holistically, for example, with impact to waste management operations.

Table 7.6 below compares Project Options for transfer based on key qualitative factors, acknowledging that certain impacts and benefits cannot be captured through financial analysis alone.

Table 7.6 – MMF Project Options – Summary of Business and Operational Impacts

Business and Operational Impact	Project Option 1	Project Option 2	Project Option 3
Alignment with County's Solid Waste Management Strategy – recommended development of County transfer capacity	Disadvantage	Major Advantage	Major Advantage
Public ownership and control	Disadvantage	Major Advantage	Major Advantage
Long term viability of Project Option	Neutral	Advantage	Advantage
Timeliness of implementation	Advantage	Disadvantage	Disadvantage
Permitting – resources required for Planning and Environmental approvals	Advantage	Disadvantage	Disadvantage
Impact on curbside collection operations – ability to adjust to collection changes and timing, inspect inbound materials, and manage operational data/recordkeeping	Disadvantage	Major Advantage	Major Advantage
Control of outbound material – loading and compaction, flow control, timing of outbound loads	Disadvantage	Major Advantage	Major Advantage
Ability to adjust to changes in material composition or tonnages	Neutral	Advantage	Major Advantage
Potential for service disruption	Neutral	Advantage	Advantage
Potential for revenue generation – considers utilizing excess capacity at a County facility for merchant capacity	Disadvantage	Advantage	Major Advantage
Allow for truck servicing, administration, and public education space	Disadvantage	Major Advantage	Major Advantage
Environmental impact	Neutral	Neutral	Neutral
Impact on diversion – ability to improve curbside performance	Neutral	Advantage	Advantage

Major advantage – Project Option fully meets the objective of the criterion

Advantage – Project Option substantially meets the objective of the criterion

Neutral – Project Option has no advantage or disadvantage over other options

Disadvantage – Project Option substantially does not meet the objective of the criterion

Qualitative Analysis – Discussion

As outlined above in Table 7.6, development of a County facility (Project Options 2 and 3) would be most advantageous to County waste management operations based on the qualitative analysis. Long-term control of transfer would have a positive impact on collection operations – allowing staff to daily monitor curbside loads for contamination (blue box recycling in the garbage, for example), control weigh scale data and recordkeeping, and facilitate seasonal fluctuations in tonnages and inbound truck times. It is noted that currently, Waste Connections holds contracts for curbside collection, transfer of blue box recycling, and is subcontracted to Walker Environmental Group for transfer of garbage. This may not be the case in the future as contracts expire. Should different contractors manage collection and the transfer of various materials, waste operations would be more challenging to manage and monitor.

Other advantages to development of a County facility include:

- outbound loads could be consistently monitored and compaction and flow control managed by County staff. It is anticipated that this would positively impact outbound shipments and relationships with external processors;
- excess capacity at the facility would allow flexibility to manage seasonal fluctuations in waste volumes and allow for contingency should there be an issue at the OPF;
- additional space to consolidate operations – including space for truck servicing, an administration area (including meeting space), and education centre; and
- with the potential to monitor material collected curbside by contractors, greater control on curbside diversion performance.

Section

8

Conclusions & Recommendations**Comparative Evaluation of Alternatives**

Table 8.1 summarizes the detailed analysis presented in Section 7.

Table 8.1 – Comparative Analysis of Project Options

Option	Description	20-year Costs	Summary of Qualitative Analysis
Project Option 1	continue to contract transfer service for garbage, organics, and blue box recycling	\$24.4M	<p>Disadvantage</p> <ul style="list-style-type: none"> County would have no control over transfer operations or long-term pricing sensitivity analysis indicates small increases to transfer costs would impact the 20-year outlook substantially no direct ability to monitor inbound or outbound material
Project Option 2	develop MMF with long-term capacity for garbage	\$24.5M	<p>Advantage</p> <ul style="list-style-type: none"> long-term control over transfer operations, costs, and flexibility to adjust operations ability to monitor curbside-collected material and outbound loads consolidation of waste operations – space for truck servicing, administration and education areas
Project Option 3	develop MMF with long-term capacity for garbage, blue box capacity until 2023	\$21.7M	<p>Major Advantage</p> <ul style="list-style-type: none"> long-term control over transfer operations, costs, and flexibility to adjust operations ability to monitor curbside-collected material and outbound loads consolidation of waste operations – space for truck servicing, administration and education areas additional space to adapt to material changes

Conclusions

Planning for long-term transfer capacity in the County was recommended in the Solid Waste Management Strategy (Strategy). Further analysis by the Continuous Improvement Fund (CIF) indicates a lack of regional transfer capacity in this area.

Development of the County's Materials Management Facility (MMF), a transfer facility, was furthered based on recommendations within the Strategy and County Council direction following a financial analysis undertaken in 2014. With siting completed and more technical information on site conditions now available, it is prudent at this time to provide this updated analysis.

Future Transfer Requirements

With the direction for no new landfills in the County, preparation for long-term transfer of garbage to final disposal or processing locations is increasingly important. It is anticipated that the last County landfill will close by 2029. Given the lengthy approvals process for waste management infrastructure, it is imperative that planning for future transfer continue.

Transfer requirements for organics and associated costs would be eliminated by 2021 with development of the Organics Processing Facility (OPF) (noting that timing will be dependent on the approvals process). Based on the central location and co-located transfer facility proposed at 2976 Horseshoe Valley Road West, Springwater, it is assumed that collection vehicles would go directly to the OPF for drop-off.

Anticipated changes to the blue box recycling program under the Waste-Free Ontario Act (WFOA) have complicated long-term planning for transfer infrastructure. Given the voluminous nature of blue box materials and associated floor space required to manage it, design of the MMF will be impacted greatly by provincial direction. Most recent indication is that the Producers will assume control of the program by the end of 2022. Given this, the Business Case for the MMF has been updated to assume no transfer requirement for this material after that date – this being the most conservative assumption for the purpose of this analysis.

At this time, it is uncertain how the Producers will manage the blue box system. Should they desire control over only processing, there may be potential for the County to manage the collection and transfer of the material – acting as a regional transfer hub on a cost recovery basis.

Cost Projections

Revised, site-specific capital costs for development of the MMF were provided by the County's project consultant, GHD Limited. They have increased significantly from the previous financial analysis presented to County Council in August 2014.

Some increased costs are attributed to site development expenditures such as paving, site servicing, and County Road 22 improvements which will be required at 2976 Horseshoe Valley Road West, Springwater. Co-locating both the MMF and OPF, however, has mitigated the impact of these costs significantly as they are shared between both projects.

Conceptual design of the MMF furthered for this analysis considered site conditions (such as topography), operational considerations, and odour and noise mitigation measures. This has increased the overall size of the building from the 2014 analysis – and resulted in increased projected capital costs for the building itself.

Results of Analysis

Based on the financial analysis and assumptions outlined in this report, development of a County facility to manage the long-term transfer of garbage and blue box recycling until 2022 would have the lowest total costs over the 20-year period. During the 20-year operating period, the analysis indicates considerable annual savings for this option as greater tonnages of garbage are managed with the closure of County landfills.

Without blue box material and assuming consistent, long-term pricing for contracted transfer services, the “status quo” option has the lowest 20-year Net Present Value (NPV). However, a sensitivity analysis indicates significant risk associated with assumptions on long-term pricing for contracted services. Should procurement of transfer services increase pricing even slightly, the 20-year projections would be considerably impacted – and the NPV analysis uncertain.

In regard to the qualitative analysis, there are noted advantages to pursuing transfer infrastructure. Operationally, development of the MMF would provide secure, long-term control of our own waste. This would have a positive impact on collection operations, management of outbound material, and flow control. Without development of new disposal or processing capacity for garbage, it would allow the County control over costs to manage our garbage in the long-term. In addition, this space would allow for consolidation of Solid Waste Management operations – including space for truck servicing, an administration area (including meeting space), and education centre.

Design of the MMF should be flexible at this time given the anticipated blue box transition. It is noted, however, that although more storage space would be required to manage this material, the addition of blue box recycling would have a positive impact on the MMF project – the benefit of economies of scale. The MMF would significantly benefit from additional revenue and cost sharing of annual operational expenses.

Recommendations

The County will benefit by managing our own transfer operations. This was clearly outlined in the Strategy and confirmed by CIF when funding was allocated to this project. Furthering development of County-owned transfer capacity still remains the recommended approach in preparation for long-term, secure management of our waste.

Final sizing and design will be contingent on forthcoming details regarding the transition of the blue box program. This will not delay work on advancing the project as Planning Act applications for the Environmental Resource Recovery Centre (ERRC) complex at 2976 Horseshoe Valley Road West, Springwater, will take some time.

Discussions with GHD have indicated that there will be opportunity during the design phase of the project to consider potential alternatives for transfer at the ERRC. This may include modifying design of the OPF to include some tipping and storage capacity for garbage in one combined building or, alternatively, the MMF could be designed on a smaller scale or in a modular fashion (i.e. allowance for potential modifications/ additions to the building to accommodate future tonnages). There is the potential at this site for flexibility given the 1 ha that was allocated for the MMF on the footprint.

Section

9

Implementation

Project Risk and Mitigation Strategy

As with any project, there is some inherent risk in continuing to advance the MMF project. Outlined below in Table 9.1 are various considerations and planned mitigation measures. These risks are associated with the recommended approach outlined in Section 8 – that development of the MMF continue but final sizing and design be flexible until more information is known on the transition of the blue box program under the WFOA.

Table 9.1 – Summary of Risks and Proposed Mitigation

Risk	Description	Proposed Mitigation
Planning and Construction Phase		
Site approvals and permitting	<ul style="list-style-type: none"> risk of delays or additional costs related to site approvals and permitting (including planning, environmental approvals, and building permits) 	<ul style="list-style-type: none"> staff will continue to monitor costs and impact to development timeline through the approvals stage (Planning and Environmental) and regularly report back to County Council impact of delays to the CIF funding to be discussed with them and outcomes communicated to County Council
Planning for long-term management of various materials (including blue box recycling)	<ul style="list-style-type: none"> risk that the Project Option does not allow the County to make long-term adjustments to waste operations 	<ul style="list-style-type: none"> as discussed in this report, MMF sizing and design would be flexible and finalized with direction on the blue box program ERRC footprint has allocated 1 ha for transfer – this area will allow for flexibility in design and long-term capacity co-location with the OPF may allow for a modified OPF/transfer building
Long-term delay in commissioning	<ul style="list-style-type: none"> risk that there could be a delay in commissioning of the MMF (anticipated for 2019) 	<ul style="list-style-type: none"> going forward, contracts for waste export (which includes transfer) and transfer of blue box recycling will assume 2019 commissioning and have the potential for extensions arrangement with Waste Connections for managing organics transfer will be maintained in the interim as approvals are furthered impact of delays to the CIF funding to be discussed with them (including potential for extensions), any impacts to be communicated to County Council

Table 9.1 – Summary of Risks and Proposed Mitigation *continued*

Risk	Description	Proposed Mitigation
Construction costs not as estimated	<ul style="list-style-type: none"> risk that construction costs are higher than anticipated/estimated 	<ul style="list-style-type: none"> numerous technical studies have already been completed on the site – site conditions are understood final design and costing to be completed by consultant, updated financial analysis and budgetary impacts to be presented to County Council note that as the Planning process is furthered (including site plan approval), there may be need to update projected site development or building costs based on agency/public comments
Operating Phase		
Net operating costs are not as estimated	<ul style="list-style-type: none"> risk that net operating costs are higher than anticipated 	<ul style="list-style-type: none"> operating cost estimates are based on knowledge of current operations – including known salaries and staffing requirements should projected operating costs be refined with design, this will be reflected in updated financial analysis
Short-term availability of facility/services	<ul style="list-style-type: none"> risk that the facility will not be available to receive waste in the short-term (1-2 weeks) resulting in downtime 	<ul style="list-style-type: none"> a contingency plan will be prepared – material could be transferred in the short-term at one of the County’s waste receiving facilities
Long-term availability of facility/services	<ul style="list-style-type: none"> risk that the facility will not be available to receive waste in the long-term 	<ul style="list-style-type: none"> given the nature of a transfer facility (i.e. a simple building), the risk of long-term disruption in service is low
Asset obsolescence	<ul style="list-style-type: none"> risk that buildings, facility and equipment may become obsolete 	<ul style="list-style-type: none"> given direction on no new disposal or processing capacity to be developed in the County, the MMF will be required for long-term transfer of garbage flexible sizing and design until implications of the WFOA are known will avoid overbuilding the facility
Changes in general waste composition	<ul style="list-style-type: none"> risk of unplanned changes in composition of feedstock 	<ul style="list-style-type: none"> flexibility in the design of the building (i.e. ability to modify internal walls and bunker areas) to allow for changes in tonnages and composition
External environmental impacts	<ul style="list-style-type: none"> risk of environmental impacts including odour or noise 	<ul style="list-style-type: none"> design and operations considerations will be site-specific and may include mitigation measures such as strategic door locations, indoor unloading and loading, air control system, environmental monitoring requirements, etc. mitigation measures will be outlined in the Environmental Compliance Approval (ECA)

Risk of Not Proceeding with Project (Status Quo)

In general, continued reliance on outside contracts for transfer brings risk associated with cost increases, long-term availability, and control over our waste management operations. Currently, the County has limited control over materials once they are brought to the transfer station and has had some issues with data management and how the material has arrived at the final processing location (issues with over-compaction, for example). As the collection contractor is currently also responsible for transfer, there is limited accountability for mixing of materials or contaminated loads. Without transfer infrastructure and with closure of the last County landfill in 2029 (estimated), the County will be dependent on contractors for the complete management of our garbage.

The sensitivity analysis undertaken on the 20-year NPV for the “status quo” option clearly indicates the potential impact of increases to contracted pricing on the long-term financial analysis. With limited transfer options in this region, the County is indeed vulnerable to market supply/demand. As contracted services are procured over the long-term, there is risk that pricing will be greater than forecasted in this analysis – resulting in a significant impact to the financial outlook. This is an important consideration for moving forward with the MMF project.

Moving Forward

This updated financial analysis is complicated by uncertainty as the province transitions under the WFOA. It is anticipated, however, that over the next year, there will be some indication of how municipalities will manage blue box recycling in the future. In the interim, development will continue on the ERRC complex with final sizing and design of the transfer component remaining flexible as the Planning process is furthered.

Appendix A

Conceptual Layout and Estimated Costing for
the Materials Management Facility



Memorandum

August 23, 2017

To: Stephanie Mack

Ref. No.: 086822

BD

From: Brian Dermody

Tel: 416-866-2361

CC:

Subject: Conceptual Layout and Estimated Costing for the Materials Management Facility

1. Introduction

The County of Simcoe (County) is currently planning for the development of their Environmental Resource Recovery Centre (ERRC) proposed for 2976 Horseshoe Valley Road West, in Springwater, Ontario (Site or Property). The ERRC will include a Materials Management Facility (MMF), also known as a transfer station, for the consolidation of waste materials (e.g., garbage, recyclables, and organics) from multiple curbside collection vehicles into larger waste transfer trailers for more economical shipment to disposal or processing locations.

In support of the ongoing development of the ERRC, this memorandum presents conceptual sizing and layouts for the MMF as well as an estimation of the various costs associated with the development of the facility.

2. Conceptual Facility Layout and Sizing

2.1 ERRC Site

The detailed design of the MMF is expected to be developed by others following a Design/Bid/Spec approach. However, conceptual details of the facility were proposed as part of the Facility Characteristics Report (FCR) prepared by GHD in November 2016, and submitted in support of the Planning Application Package for the Site. The FCR included details surrounding the functional layout of the overall ERRC Site, as well as proposed general, high-level design features of the MMF building.

Other components of the ERRC Site are expected to include an Organics Processing Facility (OPF), Materials Recovery Facility (MRF), and ancillary facilities such as a truck servicing facility, administrative facility and public education space, access roads, and stormwater management facility.



2.2 MMF Design

The design and technology range for the MMF is limited as this is a conventional waste management facility that is mostly reliant on space for consolidation of waste from smaller vehicles into larger vehicles with no processing of the materials. The main components of the proposed MMF will include:

- Access lanes for curbside collection vehicles.
- Tipping floor.
- Storage bunkers.
- Loading area for transfer trailers.

In addition, initial plans are that the MMF will incorporate an administrative facility for operations staff and the truck servicing facility for the County's fleet of Solid Waste Management vehicles. The truck servicing facility will consist of a workshop, storage area, and two service bays.

Depending on the final design, the MMF will likely be a multi-storey building approximately 10 to 15 metres (m) high, consisting of a pre-engineered steel frame structure with exterior walls of concrete and steel sheeting. The use of internal support columns will be minimized in order to provide clear spans that allow for the unrestricted movement of materials and vehicles inside the building. Roll-up doors will provide vehicle access inside the building where materials will be loaded and unloaded. A concrete tipping floor and push walls will allow for materials to be segregated and moved around using a wheeled loader.

2.3 MMF Layout

Consultation with the County's staff that will ultimately oversee and/or operate the MMF is key to ensuring an efficient and functional layout. The County held internal discussions with operations staff in April 2017 to solicit their input to the overall function and features of the MMF. Initial key considerations for the facility were identified as follows:

- **Grade Separation** – the tipping floor and the loading area should be at different elevations to facilitate the loading of transfer trailers. The unloading area/tipping floor will be on the upper level, while the lower level will allow for the passage and loading of transfer vehicles from above. A grade separation of approximately 3.0 m is proposed between these levels, with a concrete wall approximately 1.3 m high at the edge of the tipping floor.
- **Drive-Through** – the layout should allow for vehicles to drive straight through the facility, reducing reversing movements wherever reasonable. Separate areas will be provided for the curbside collection vehicles and the transfer trailers, each consisting of two 5 m wide lanes with roll-up doors (3.7 m wide x 4.9 m high) at both ends.
- **Flexible Layout** – the layout of the MMF should be flexible enough to accommodate future changes in the materials (i.e., type or quantity) and the overall ERRC Site (i.e., establishment of OPF, MRF). The storage bunkers can be configured with an interlocking, modular concrete block wall system to readily allow for modifications to individual bunker sizes and configurations to best suit ongoing operations. The administrative area and truck servicing facility can be separated from the main MMF building to allow for



greater design flexibility and the ability to accommodate future needs of the ERRC (e.g., expansion, integration of administrative area for OPF). An area of approximately 15 m x 30 m has been reserved for these facilities.

2.4 MMF Sizing

The sizing of the overall MMF will be dictated in large part by the requirements for the tipping floor and the material storage bunkers. While there will be no long-term storage of materials within the MMF, the tipping floor and bunkers need to be sized to accommodate the temporary storage of materials as a contingency for temporary service disruption at downstream facilities. General sizing of these components was based on the following:

- Material quantities based on a 20% “peaking factor” applied to the daily average. This factor is applied to determine a maximum daily average – compensating for seasonal fluctuations in material.
- Material densities:
 - Garbage – 250 kg/m³
 - Organics – 490 kg/m³
 - Recyclable Fibres – 150 kg/m³
 - Recyclable Containers – 50 kg/m³
- Bunkers sized to provide 1.5 days of storage.
- Maximum pile heights of 3.5 m with 45° side-slopes were used to determine bunker area requirements.
- Tipping floor area roughly the same size as the storage bunkers to allow for unrestricted movements of the loader(s) and the curbside collection vehicles.

Commissioning of the MMF is expected to occur in 2019. The County has estimated the anticipated annual material tonnages and daily maximums out to year 2051. The overall sizing of the MMF will depend on the design service life (e.g., 30 years) and the types of materials to be transferred. To account for variation in these design parameters, two separate concepts have been developed for the MMF as follows (noting that this will be discussed in the County's business case for the facility):

- ***Conceptual Design No. 1 – design for long-term garbage, OPF commissioned in 2021.*** Given the potential changes to the blue box recycling program, this option considers development of a smaller transfer facility to meet only the County's long-term transfer needs for garbage. There would be excess capacity until 2022 to transfer organics until the OPF is brought on-line. However, it is noted that at this smaller facility, there would be no capacity to transfer blue box recycling even until 2023 (this material is voluminous and takes significant tipping floor space).
- ***Conceptual Design No. 2 – design for long-term garbage, space for blue box recycling until 2023, OPF commissioned in 2021.*** This design considers development of the MMF for the long-term transfer of garbage but allows some additional tipping floor space for the short term transfer of blue box recycling. Organics would be taken directly to the OPF after 2021. Following transition of the blue box program (projected for 2022), no blue box recycling would come to this facility.



2.5 Concepts

2.5.1 Conceptual Design No. 1

Conceptual Design No. 1 represents design space for garbage only at the MMF. The facility was sized based on the 30-year (i.e., year 2051) capacity requirements for garbage only, requiring a bunker storage area of approximately 1,000 m².

It is noted that the proposed MMF will also need to transfer organics until the proposed commissioning of the OPF in 2021. The bunker storage area requirements are estimated to be 350 m² for garbage and 100 m² for organics in 2021, or 450 m² total. Since this material would require much less space than the proposed design, the facility should be able to easily accommodate these materials in the interim.

A conceptual layout for this facility is provided in Figure 1A. An alternate layout for the bunker storage areas for this facility is provided in Figure 1B. Alternate configurations of the bunkers are possible throughout all concepts, allowing enough flexibility to accommodate variations in material storage needs in any given year.

Table 2.1 summarizes the sizing of each MMF component for Conceptual Design No. 1.

Table 2.1 MMF Sizing – Conceptual Design No. 1

Component	Dimensions	Area
Storage bunker(s)	2 x 30 m wide x 17 m deep	1,020 m ²
Tipping floor	26 m wide x 30 m deep	780 m ²
Access/egress lanes for curbside collection vehicles	2 x 5 m wide x 60 m long	600 m ²
Loading area for transfer trailers	2 x 5 m wide x 60 m long	600 m ²
Truck servicing facility	2 x 5 m wide x 20 m long	200 m ²
Administrative facility	10 m x 15 m, 5 m x 20 m	250 m ²
TOTAL FACILITY	Main MMF Area – 60 m x 50 m Truck Servicing/Admin. – 15 m x 30 m	3,450 m²

2.5.2 Conceptual Design No. 2

Conceptual Design No. 2 is based on the same long-term design capacity for garbage as Conceptual Design No. 1, but with additional short-term requirements for the storage of recyclable materials as well. With the implementation of the Waste-Free Ontario Act likely transitioning the management of recyclable materials away from the County in the coming years, it is assumed that the management of blue box recycling will cease after 2022. As such, the total bunker storage area requirement for all materials in 2023 is anticipated to be approximately 1,585 m².

Figure 2 provides a conceptual layout for this facility, which has additional space for the storage of recyclables or other materials should the County's programs be expanded in the future.

Table 2.2 summarizes the sizing of each MMF component for Conceptual Design No. 2.

**Table 2.2 MMF Sizing – Conceptual Design No. 2**

Component	Dimensions	Area
Storage bunker(s)	2 x 30 m wide x 30 m deep	1,800 m ²
Tipping floor	20 m wide x 30 m deep	600 m ²
Access/egress lanes for curbside collection vehicles	2 x 5 m wide x 80 m long	800 m ²
Loading area for transfer trailers	2 x 5 m wide x 80 m long	800 m ²
Truck servicing facility	2 x 5 m wide x 20 m long	200 m ²
Administrative facility	10 m x 15 m, 5 m x 20 m	250 m ²
TOTAL FACILITY	Main MMF Area – 80 m x 50 m Truck Servicing/Admin. – 15 m x 30 m	4,450 m²

3. Conceptual Facility Costing

Conceptual costing for the MMF has been prepared based on the proposed conceptual designs and other assumptions noted herein. The County's template for estimating capital project costs was used as the basis for determining estimated costs. Previous cost estimates were reviewed and updated as appropriate to reflect our current understanding of the facility. The estimated costs for each of the proposed conceptual design are provided in Table 3.1. Additional costing details are provided in Attachment 1.

Table 3.1 Conceptual MMF Costing

Item No.	Description	Estimated Cost	
		Conceptual Design No. 1	Conceptual Design No. 2
01	Section 1 – General Requirements	\$648,000	\$771,000
01.A	Administrative Requirements	\$216,000	\$257,000
01.B	Bonds and Insurance	\$216,000	\$257,000
01.C	Mobilization and Demobilization	\$216,000	\$257,000
02	Section 2 – Site Works	\$3,585,000	\$3,692,000
02.A	Site Services	\$720,000	\$720,000
02.B	Stormwater Management System	\$707,000	\$799,000
02.C	Grading and Paving	\$1,549,000	\$1,549,000
02.D	Grounds Work	\$609,000	\$624,000
03	Section 3 – Buildings	\$6,925,000	\$8,756,000
03.A	Scale Facility	\$300,000	\$300,000
03.B	Administrative Facility & Education Centre	\$325,000	\$325,000
03.C	Truck Servicing Facility	\$600,000	\$600,000
03.D	Materials Management Facility	\$5,700,000	\$7,531,000

**Table 3.1 Conceptual MMF Costing**

Item No.	Description	Estimated Cost	
		Conceptual Design No. 1	Conceptual Design No. 2
04	Section 4 – Engineering Services	\$250,000	\$375,000
04.A	Design/Engineering	\$150,000	\$225,000
04.B	Construction Oversight	\$100,000	\$150,000
	TOTAL COST	\$11,408,000	\$13,594,000

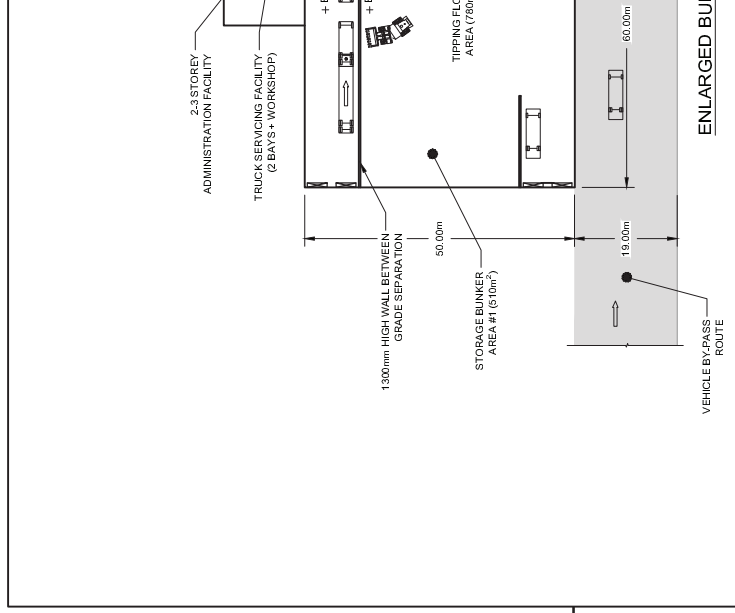
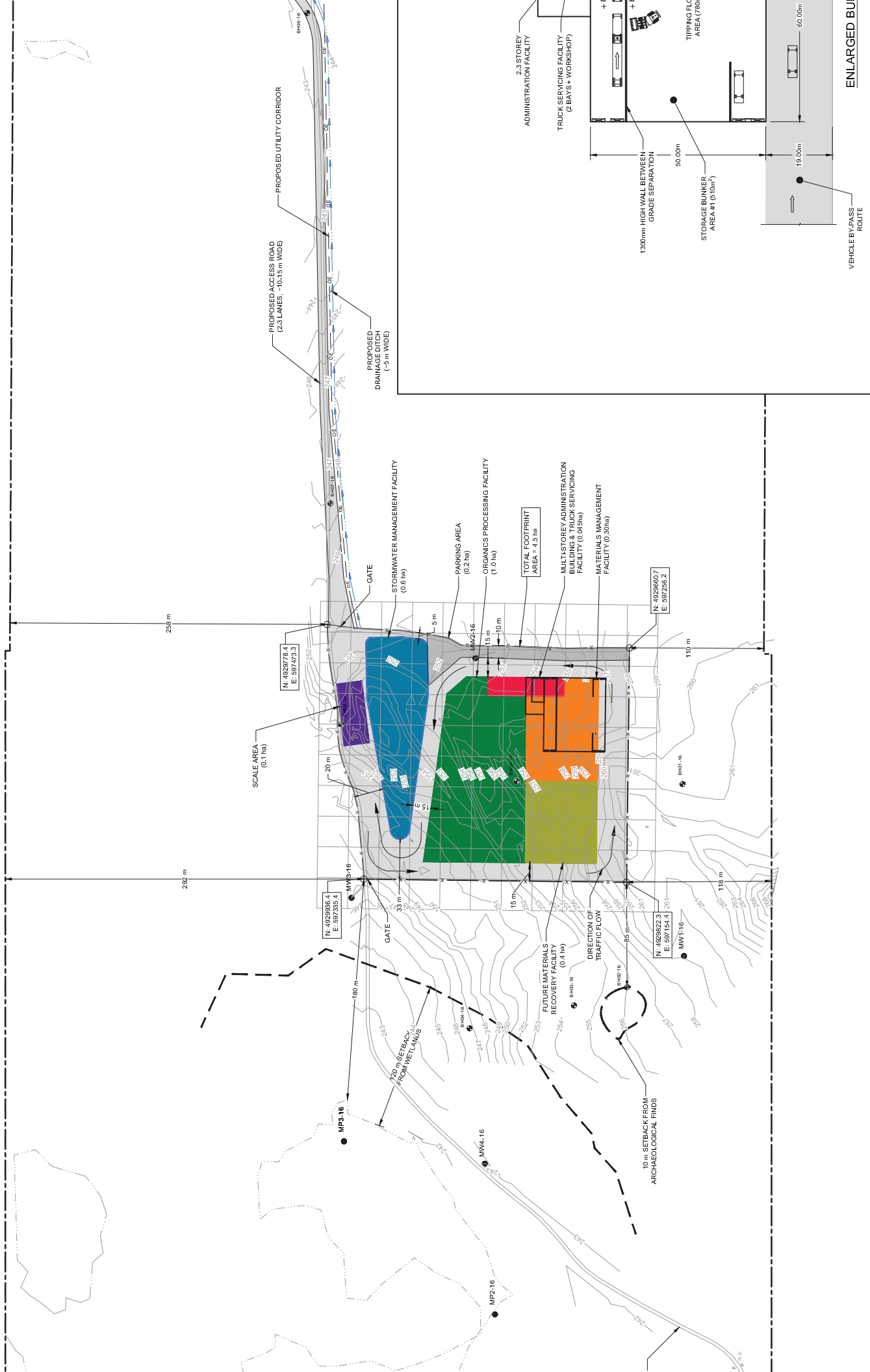
Given that the design of the MMF has yet to be completed, the costs presented have only been developed to a conceptual level of detail. While these represent a reasonable range of potential facility costs, the scope and cost of these items will need to be refined as the design of the facility is developed.

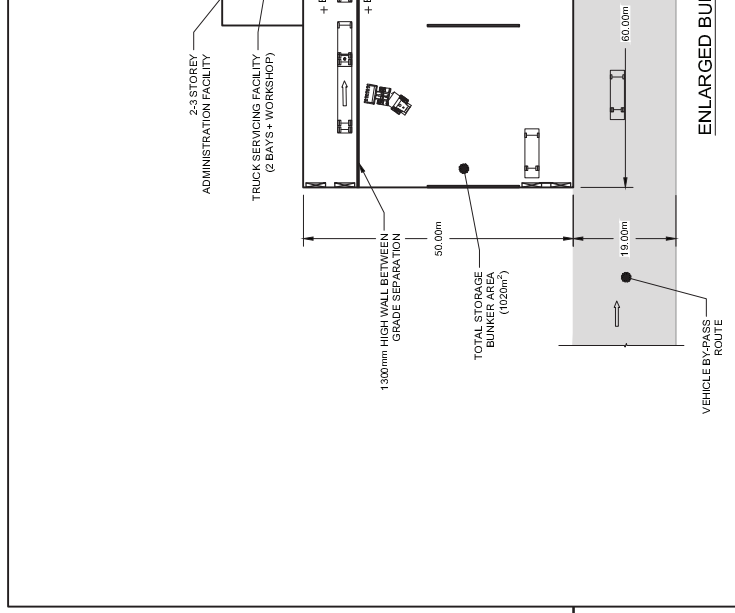
It should also be noted that other facility development costs are not included in these totals, such as:

- Development costs to date (e.g., siting).
- Consulting costs for Planning.
- Environmental Compliance Approvals.
- Upgrades to Horseshoe Valley Road.
- Compensation measures (e.g., land purchase).
- Contingency.

Cost savings may also be able to be realized by optimizing the design and reducing the overall size of the facility. Design considerations may include reducing the access area for curbside collection vehicles and the unloading area for transfer trailers to one lane each, and reducing the size of the tipping floor by only loading one vehicle at a time.

Figures





Attachment

Attachment 1

