

# WASTE MANAGEMENT DESIGN PLAN

*for*

The Proposed Mixed Use Residential Building at  
805 Dundas St. East Mississauga ON

Prepared for:  
KJC Properties Inc.



Prepared by:

**PragmaTech Waste Solutions**



KJC Properties Inc.

August 26, 2022

RE: Waste Management Design Plan for Proposed Residential Building at 805 Dundas St. East

Thank you for the opportunity to prepare a report and provide guidance on the waste management design of the multi-Residential 805 Dundas St. East Mississauga ON Proposed Residential Building.

The PragmaTech team has completed a waste stream analysis for this project based on the documents and architectural drawings provided. Using this information, the PragmaTech team has developed a comprehensive report that includes findings from our analyses with respect to service frequencies, room sizing, and equipment considerations for all agreed upon waste storage and retrieval areas, with careful consideration for the perspectives of primary stakeholders, including tenants, operations staff, and service providers.

The analyses, guidance, and recommendations provided in this report are based on an optimized source-separated waste management program for multi-residential buildings and have been developed within the legislative context of the province of Ontario and the Regional Municipality of Peel ("Peel Region").

PragmaTech is a full-service environmental sustainability consulting firm with over 30 years of experience in the waste management industry. Our team of Environmental Consultants, Project Managers, Certified Waste Auditors, Technicians and Analysts are well equipped to support the next stages of this project and provide guidance for the implementation of optimal waste management decisions throughout the course of the project. Subsequent sections of the Scope of Work will be delivered over the agreed upon timeline.

We would be happy to provide additional information or participate in further discussion on how PragmaTech can continue to be of service during this project.

Kind Regards,

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## 1.0 Introduction

PragmaTech Waste Solutions (“PragmaTech”) was retained by KJC Properties Inc. to prepare a waste management design plan and provide recommendations on the creation of an optimal waste management program pertaining to waste generation, equipment, room space, optimal bin maneuvering, and regulations for the project at 805 Dundas St. East Mississauga ON. The proposed Multiuse Residential Building consists of four buildings (A, B, C, D) with a total of 419 units.

Project direction, architectural drawings, and information regarding the proposed multi-residential development and waste management plans were provided by KJC Properties Inc. The analysis and recommendations provided in this report are based on an optimized source-separated waste management program and have been developed within the legislative context of Peel Region and the province of Ontario.

**Disclaimer:** During the preparation of this report, PragmaTech Waste Solutions developed recommendations for appropriately sized equipment to adequately reach the goals of an optimal waste management program. Although recommendations have been provided with respect to specific pieces of equipment, these are simply suggestions to provide context to the report.

Please note that PragmaTech holds no bias towards specific manufacturers or their equipment. Further, waste generation volumes may vary (e.g., increase) depending on building occupancy rates (e.g., number of tenants in each dwelling).

### Design Requirements

- Recycling materials must **NOT** be compacted
- If a chute system is used, then separate chutes must be provided for garbage and recycling, or MUST be equipped with an automated mechanical separation system to direct garbage and recycling into separate front-end bins
- A concealed collection point on private property must be provided. The concealed collection point must have direct and safe access that does not require waste collection vehicles to back onto a municipal road following collection.
- A minimum of 18 meter straight head-on approach to the collection point is required. This approach is to be level and solid (maximum of 2% slope) and the same width as the collection point.
- A minimum clear height of 7.5 meters from the concrete pad must be provided at the collection point. The clear height of 7.5 meters must be free of obstructions such as sprinkler systems, ducts, balconies, wires, and trees.
- Outside the collection point, a clear height of 4.4 meters from the top off the access road must be provided along the waste collection vehicle access and egress route. The clear height of 4.4 meters must be free of obstructions such as sprinkler systems, ducts, balconies, wires, and trees.
- The minimum width of the collection point must be 3 meters for each front-end bin. The minimum depth of the collection point must be 2 meters for a 3-cubic yard front-end bin and 3 meters for a 4 and 6 cubic yard front-end bin. Please refer to Appendix A Design Manual and Appendix 7 for the bin dimensions. However, where these requirements cannot be met, reliance on the property management staff to facilitate waste collection will be considered at the commissioners’ discretion, subject to the following conditions:
  - I. The driver is not required to exit the waste collection vehicle to facilitate collection;

- II. Property management staff is responsible for jockeying of front-end bins during collections;
  - III. The Region will not be responsible for emptying bins that are inaccessible to the waste collection vehicle; and
  - IV. Property management staff must be visible to waste collection vehicle on approach to the site, otherwise the waste collection vehicle will not enter the site.
- The collection point including the number and size of front-end bins to be used for garbage and the number, size and type of recycling receptacles (front-end or cart) are to be clearly shown and labelled on drawings (e.g., site plan, ground floor plan etc.). The drawings must also show the waste collection vehicle's route through the development and the radius of every turn must be labelled. (Please refer to Appendix A Design Manual - Appendices 14 and 15 for sample drawings)

### Concealed Collection Point Requirements

The concealed collection point must be of enough area to accommodate the number of front-end bins and carts (if applicable) required for the development and to accommodate the set-out and storage of bulky items. It must be accessible to occupants and the waste collection vehicle. The design requirements for the concealed collection points include:

- A permanent three-sided structure without a roof
- A concealed collection point for a single front-end bin requires a 3-metre opening
- A concealed collection point for two front-end bins with two gates requires a 6-metre opening
- A concealed collection point for two front-end bins with four gates requires an 8-metre opening
- A concealed collection point requires a lockable gate. Hinged gates on a concealed collection point must swing open to a minimum 135 degrees. Sliding gates are also permitted. Gates must be capable of being secured in an open position.
- A concealed collection point requires a minimum of 10 square meters for the set-out of **bulky items**. The concealed collection point for bulky items can be separated from the concealed collection point for front-end.
- A solid, level (maximum of 2% slope) and reinforced concrete pad must be provided. The concrete pad must be of sufficient strength to prevent differential settlement and/or cracking that would affect waste collection.
- Bollards or a concrete curb must also be installed at the rear of the concealed collection point to protect the structural wall from damage when front-end bins are picked up or returned in place by waste collection vehicles.

A waste storage room must be of sufficient size to accommodate the required number of front-end bins and/or carts required for the development. In addition, a minimum of 10 square meters must be provided for the storage of bulky items. Please refer to Appendix A Design Manual for more information.

### Indoor Collection Point Requirements

The requirements for an indoor collection point (if applicable) are as follows:

- A solid, level (maximum of 2% slope) and reinforced concrete pad. The concrete pad must be of necessary strength to prevent differential settlement and/or cracking that would affect waste collections
- A minimum width of 6 meters for the storage of multiple front-end bins; and
- An unobstructed distance of a minimum of 18 meters must be provided to enable the waste collection vehicle to wholly enter the indoor collection point. Please refer to Appendix A Design Manual - Appendix 15.

## 2.0 Waste Generation Analysis

The following waste generation data were determined by calculating the volume of all waste materials generated on a weekly and annual basis for the proposed buildings. The analysis was conducted to determine the anticipated generation values for the following waste streams:

- Non-Recyclable Waste (garbage)
- Co-mingled Containers/Cans/Bottles/Jars/Jugs
- Cardboard/Mixed Fibers
- Organics/Compost
- Other Recycling (e-waste, batteries, scrap metals and light bulbs etc.)

The following tables provide an estimate of the waste generated per waste stream on a weekly basis, along with the total anticipated waste generation for each waste stream. Using these estimates, PragmaTech determined the appropriate equipment needs and space requirements to maximize efficient handling and disposal of each waste stream program in the building (see Section 5.0). Sample data using waste generation volumes for similar projects, along with multi-residential waste audits for properties of a similar type and relative size were used by PragmaTech to perform calculations and determine the following estimates.

### 2.1 Weekly & Annual Waste Generation

**Please Note:** The information presented in this report is based on optimal recycling practices by the residents. All calculations are based on typical occupancy per unit and may change depending on number of occupants per unit. Further, these calculations do not take into consideration initial, one-time tenant move-in waste generation volumes or bulk pickups (large items).

Table 1: Estimated Weekly Generation Volumes for Multi Residential

<b>Residential Weekly Generation</b>	<b>Kg's</b>
<b>Cans/Bottles/Glass Jars</b>	512.28
<b>Glass Bottles</b>	29.67
<b>Mixed Fibres</b>	645.50
<b>Organic/Compost</b>	997.36
<b>E-waste, Light Bulbs, Scrap Metal, Batteries</b>	4.12
<b>Non-recyclable waste</b>	557.88
<b>Total Generation</b>	2,746.80

Table 2: Estimated Annual Generation Volumes for Multi Residential

<b>Residential Yearly Generation</b>	<b>Kg's</b>
<b>Cans/Bottles/Glass Jars</b>	26,638.47
<b>Glass Bottles</b>	1,542.60
<b>Mixed Fibres</b>	33,565.90
<b>Organic/Compost</b>	51,862.88
<b>E-waste, Light Bulbs, Scrap Metal, Batteries</b>	214.25
<b>Non-recyclable waste</b>	29,009.50
<b>Total Generation</b>	142,833.60

Table 3: Estimated Weekly Generation Volumes for Retail Commercial Space

<b>Retail Weekly Generation</b>	<b>Kg's</b>
<b>Cardboard</b>	186.00
<b>Cans/Bottles/Glass Jars</b>	68.20
<b>Mixed Fibres</b>	86.80
<b>Organic/Compost</b>	99.20
<b>E-waste, Light Bulbs, Scrap Metal, Batteries</b>	6.20
<b>Non-recyclable waste</b>	173.60
<b>Total Generation</b>	434.00

Table 4: Estimated Annual Generation Volumes for Retail Commercial Space

<b>Retail Yearly Generation</b>	<b>Kg's</b>
<b>Cardboard</b>	9,672.00
<b>Cans/Bottles/Glass Jars</b>	3,546.40
<b>Mixed Fibres</b>	4,513.60
<b>Organic/Compost</b>	5,158.40
<b>E-waste, Light Bulbs, Scrap Metal, Batteries</b>	322.40
<b>Non-recyclable waste</b>	9,027.20
<b>Total Generation</b>	22,568.00



## 2.2 Waste Container Count & Equipment Footprint for Weekly Frequency

The following section contains our professional recommendations on the types of equipment to house each waste stream. These guidelines have been developed based on our extensive industry experience. It is believed that implementing these suggestions will greatly enhance the efficiency and success of the waste management plan on behalf of the operational team. **It is recommended that the waste room size suggested below is to be 1.5 - 2.0 times the footprint of the equipment for maneuverability and ease of use for all to use.**

Table 5: Residential Waste Room 1 Recommended Equipment

Residential Waste Room 1 indicates the size on the drawings as 107.05 m<sup>2</sup>

Streams	Equipment	Length (mt)	Width (mt)	Number of Totes	M2
Mixed Containers	3-yard Container	2.03	2.01	4	16.3212
Mixed Paper	3-yard Container	2.03	2.01	4	16.3212
Glass	95 gallon/360 L Totes	0.89	0.69	1	0.6141
Organics	3-yard Container	2.03	1.07	3	6.5163
Cardboard	3-yard Container	2.03	2.01	1	4.0803
E-waste	95 gallon/360 L Totes	0.89	0.69	1	0.6141
Waste	3-yard Container	2.03	2.01	3	12.2409
Compactor	Tri Sorter	2.71	0.933	1	2.52843
				TOTAL m2	59.23653

### Comments

The waste room drawings indicates that the room size is 107.05 m<sup>2</sup>. The footprint of the required equipment and containers should have 1.5-2 times the footprint for easy maneuverability which has been accomplished (see ratio below).

Ratio of floor space to equipment is (107.05 m<sup>2</sup>/59.23653 m<sup>2</sup> = **1.805**)

Table 6: Residential Waste Room 2 Recommended Equipment

Residential Waste Room 2 indicates the size on the drawings as 170.24 m<sup>2</sup>

Streams	Equipment	Length (mt)	Width (mt)	# of Equipment	M2
Mixed Containers	3-yard Container	2.03	2.01	4	16.3212
Mixed Paper	3-yard Container	2.03	2.01	4	16.3212
Glass	95 gallon/360 L Totes	0.89	0.69	1	0.6141
Organics	3-yard Container	2.03	1.07	3	6.5163
Cardboard	3-yard Container	2.03	2.01	1	4.0803
E-waste	95 gallon/360 L Totes	0.89	0.69	1	0.6141
Waste	3-yard Container	2.03	2.01	3	12.2409
Compactor	Tri Sorter	2.71	0.933	1	2.52843
				TOTAL m2	59.23653

#### Comments

The waste room indicates that the room size is 170.24 m<sup>2</sup>. The footprint of the required equipment and containers should have 1.5-2 times the footprint for easy maneuverability which has been accomplished (see ratio below).

Ratio of floor space to equipment is (170.24 m<sup>2</sup>/59.23653 m<sup>2</sup> = **2.87**)

Table 7: Townhomes Waste Storage Room Recommended Equipment

Townhome Waste Storage Room indicates the size on the drawings as 21.37 m<sup>2</sup>

Streams	Equipment	Length (mt)	Width (mt)	Number of Equipment	M2
Mixed Containers	95 gallon/360 L Totes	0.89	0.69	2	1.23
Mixed Paper	95 gallon/360 L Totes	0.89	0.69	2	1.23
Organics	64 gallon/240 L Totes	0.64	0.51	4	1.31
Waste	Cart	1.836	0.851	2	3.12
				TOTAL m2	6.89

The waste room indicates that the room size is 21.37 m<sup>2</sup>. The footprint of the required equipment and containers should have 1.5-2 times the footprint for easy maneuverability which has been accomplished (see ratio below).

Ratio of floor space to equipment is (21.37 m<sup>2</sup>/6.89 m<sup>2</sup> = **3.10**)

Table 8: Commercial Waste Room Recommended Equipment

Commercial Waste Room indicates the size on the drawings as 58.25 m2

Streams	Equipment	Length (mt)	Width (mt)	# of Equipment	M2
Mixed Containers	95 gallon/360 L Totes	0.89	0.69	3	1.8423
Mixed Paper	95 gallon/360 L Totes	0.89	0.69	3	1.8423
Glass	95 gallon/360 L Totes	0.89	0.69	1	0.6141
Organics	64 gallon/240 L Totes	0.64	0.51	8	2.6112
Cardboard	4-yard Container	2.03	2.01	3	12.2409
Cardboard Baler	Baler	1.99	1.71	1	3.4029
Used Cooking Oil System	Holding Tank	1.07	1.07	1	1.1449
Used Cooking Oil System	Collection Cart	0.965	0.305	2	0.58865
Waste	4-yard Container	2.03	2.01	3	12.2409
				TOTAL m2	36.52815

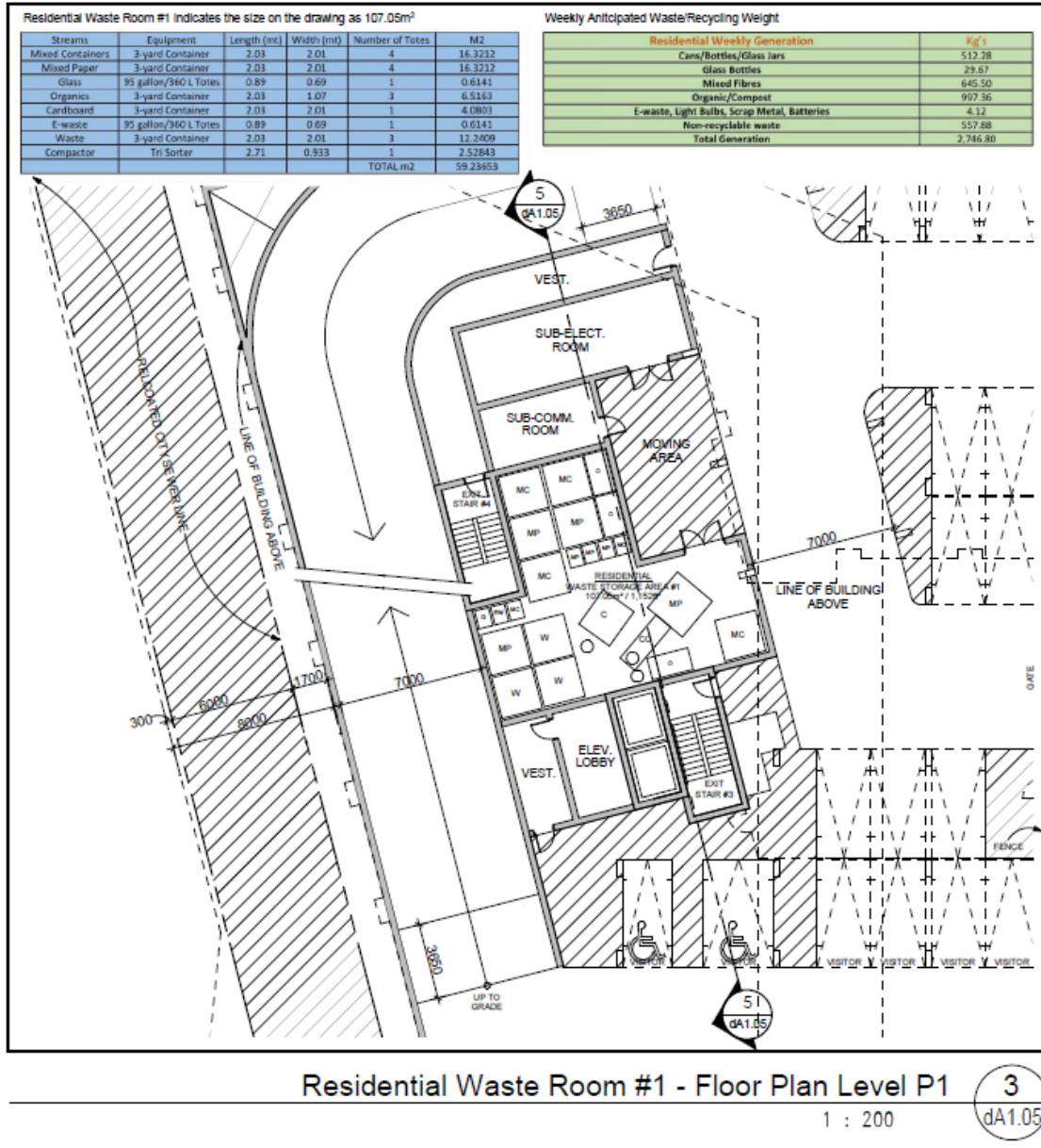
Note: at the time of this report retail tenant types have not been fully established therefore the chart represents retail such as convenience store, restaurant, mini mart, clothing store, gift shop etc. Other tenants such as medical, dental services require different calculations and additional waste streams.

The waste room drawings indicates that the room size is 58.25 m2. The footprint of the required equipment and containers should have 1.5-2 times the footprint for easy maneuverability which has been accomplished (see ratio below). The room is just within the lower segment of our recommendations of just over 1.5m2, which makes the room tight. The commercial waste/recycling will most likely have to have twice a week service, this will be determined once the types of retail tenants are confirmed.

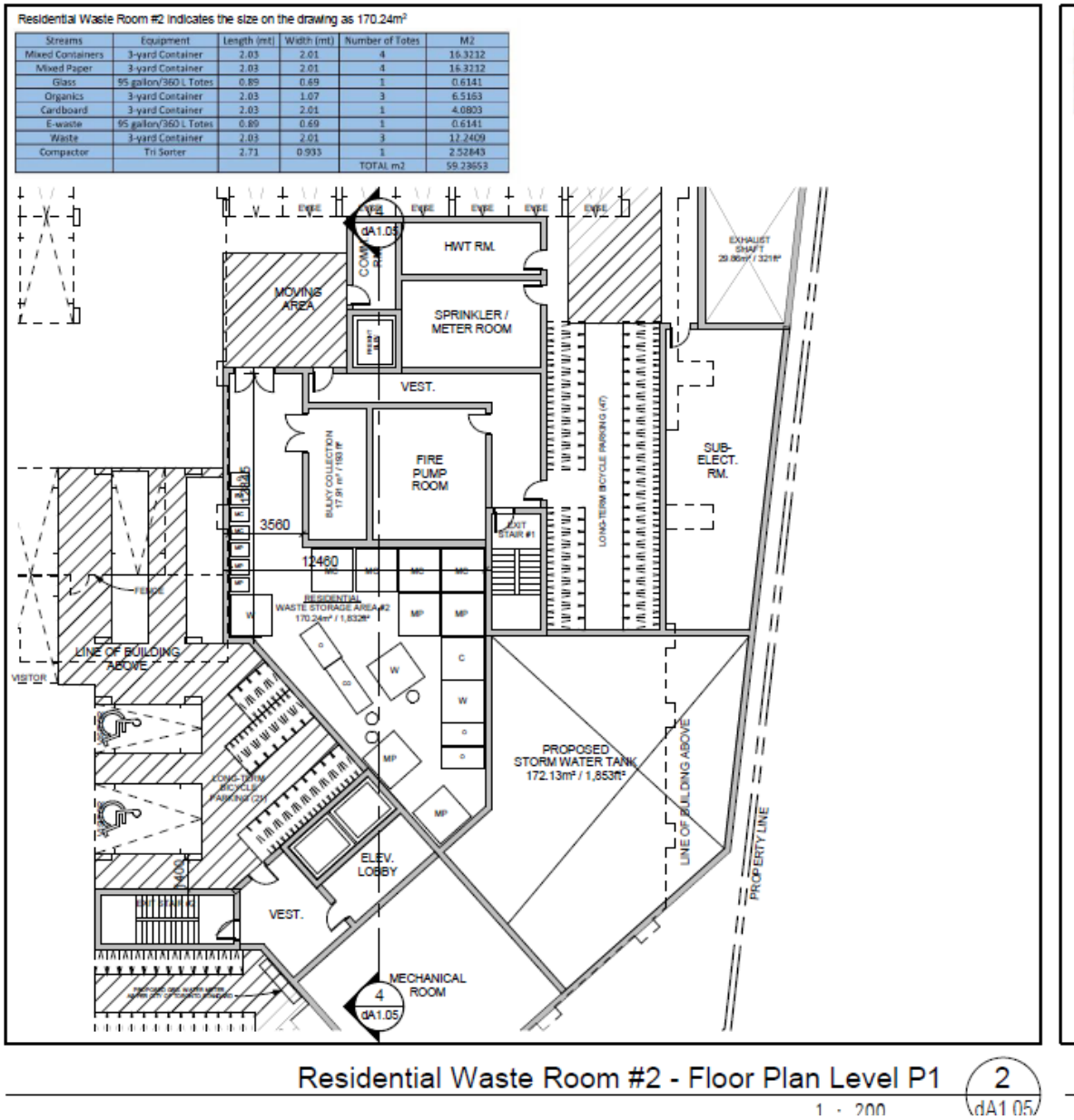
Ratio of floor space to equipment is (58.25 m2/36.52815 m2 = 1.59)

### 2.3 Residential Waste Rooms

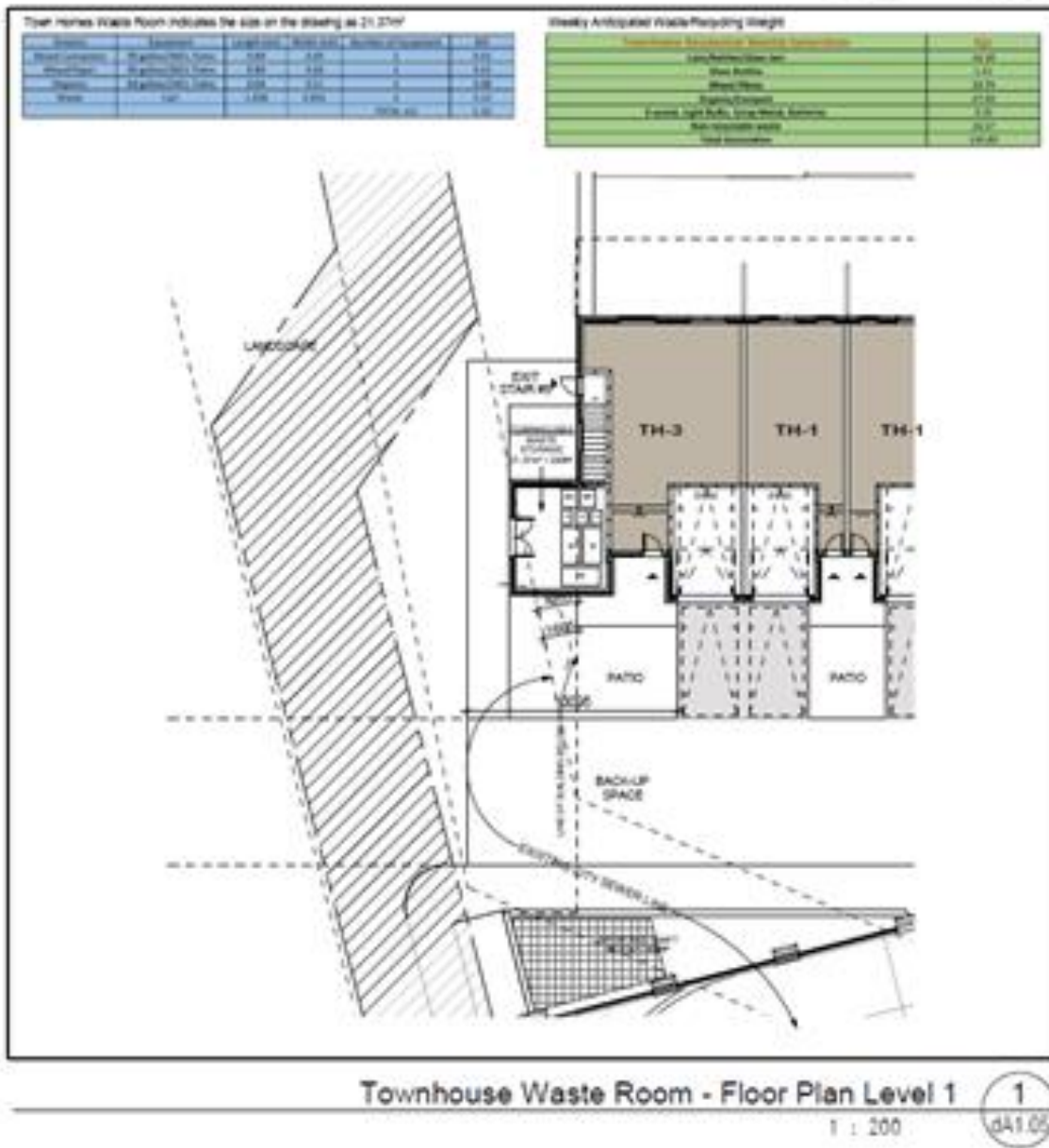
Residential Waste Room 1 indicates the size on the drawings as 107.05m<sup>2</sup>



Residential Waste Room 2 indicates the size on the drawings as 170.24m<sup>2</sup>

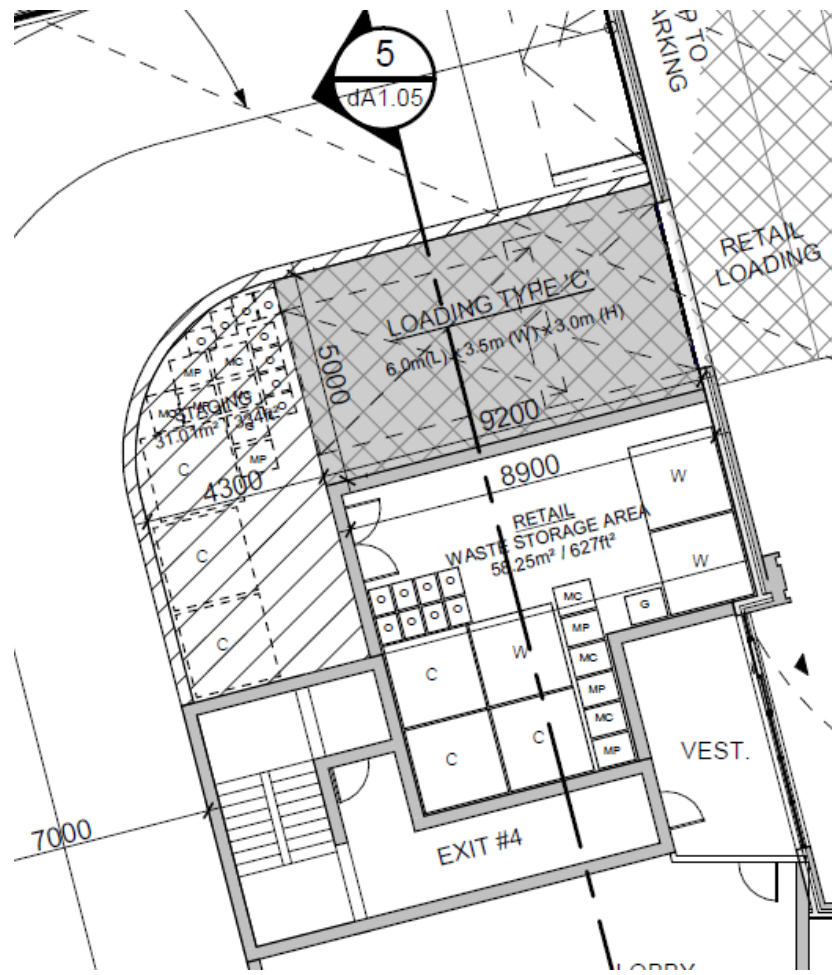


Townhome Waste Storage Room indicates the size on the drawings as 21.37m<sup>2</sup>



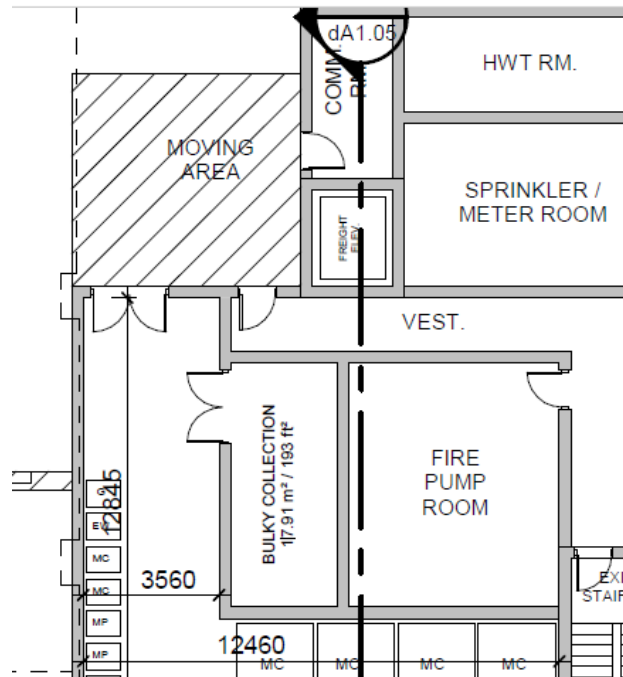
## 2.4 Retail Commercial Waste Rooms

Commercial Waste Room indicates the size on the drawings as 58.25m<sup>2</sup>



## 2.3 Bulk Storage Waste Room

The city requires 10 square metres for Bulk Storage. The room indicates 17.91 m<sup>2</sup>

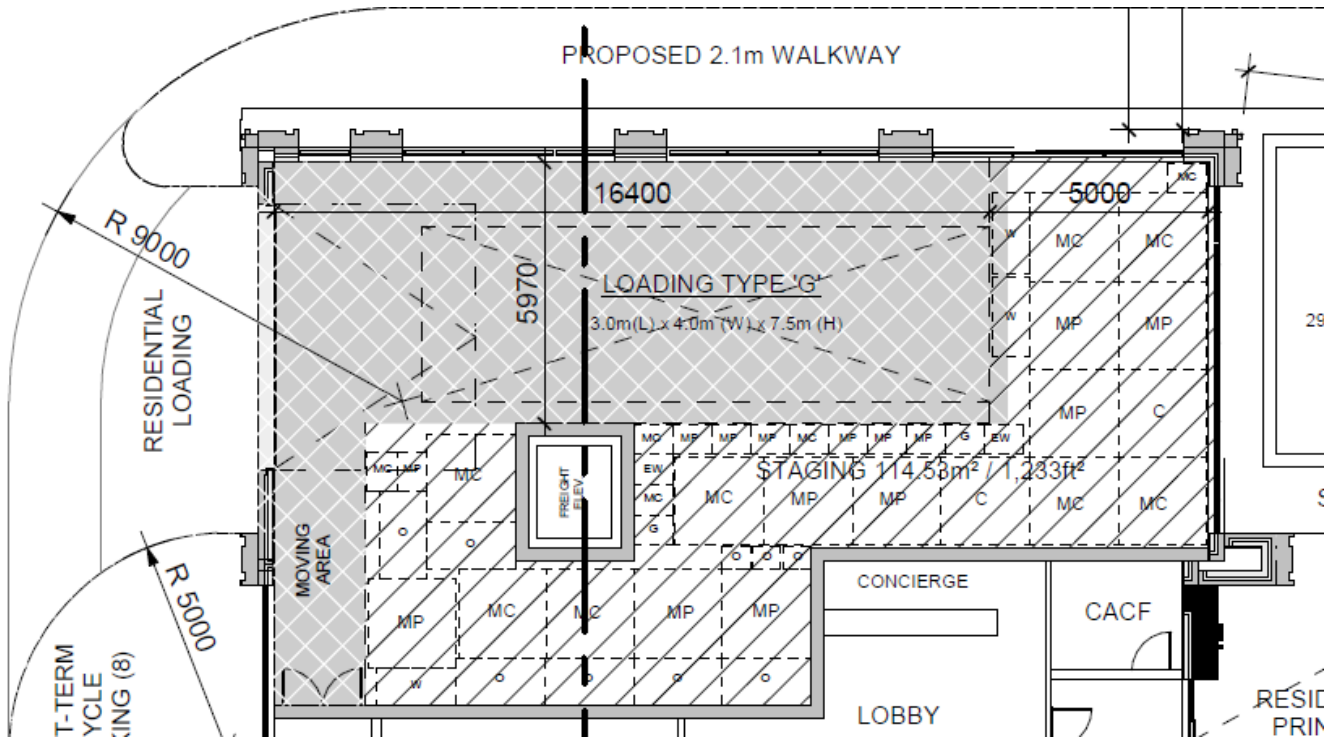


Equipment plotting on submission plans for each waste room will be supplied by architects with drawings indicating equipment for all streams of waste/recycling.

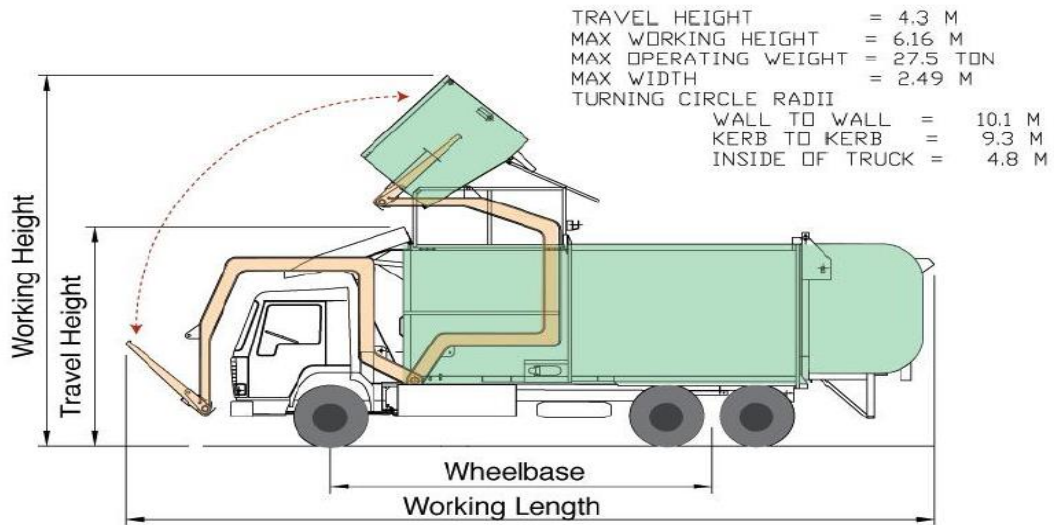
## 3.0 Waste/Recycling Staging Area for Collection

- Internal roadways must be constructed of a hard surface material, such as asphalt, concrete, or lock-stone, and designed to support a minimum of 35 tonnes, the weights of the fully loaded waste collection vehicle.
- Road layouts shall be designed to permit a waste collection vehicle to drive forward without reversing for waste collection. Where the requirement for a road layout permitting forward movement of a waste collection vehicle cannot be met, a cul-de-sac or a T-turnabout shall be provided in accordance with the specifications shown in Appendices 2 and 3, respectively.
- All roads shall be designed to have a minimum width of 6 meters.
- The turning radius from the center line must be a minimum of 13 meters on all turns.
- The maximum grade permitted along the waste collection vehicle access route is 8 per cent.
- In a situation where a waste collection vehicle must reverse, the maximum back-up distance is 15 meters.
- The waste collection vehicle shall not be permitted to back-up onto a municipal road allowance.
- All dwelling units in a development must receive the same method of waste collection.





Please note: Official drawings to be supplied by traffic consultant



Generic Front-End Truck (Example only)

## 4.0 Equipment Recommendations

The following section contains our professional recommendations on the types of equipment to house each waste stream, considerations for space and waste flow for each garbage room have been expressed throughout the report. These recommendations have been developed based on our extensive industry experience. It is believed that implementing these suggestions will greatly enhance the efficiency and success of the waste management plan on behalf of the operational team.

### 4.1 Waste Equipment Specs

#### 4.1.1 Tri-sorter Compactor (generic specs. compactor not sourced)

Tri-sorter chute system will enable the property to comply with source separation requirements, including the segregation of organic and compostable materials, particularly when considering the impending regulations banning the disposal of organic materials from landfill. The tri-sorter chute system will satisfy the disposal needs of three main waste streams:

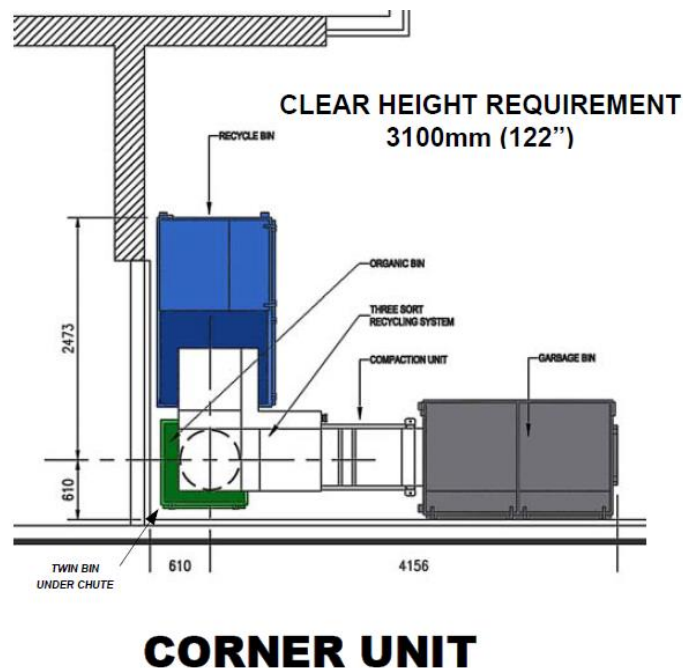
1. Non-Recyclable Waste (Garbage)
2. Single Stream Recycling: Mixed Containers & Mixed Fibres (Blue Bin)
3. Organics and Compost Materials (Green Cart)

Tri-Sorter Equipment Specifications:

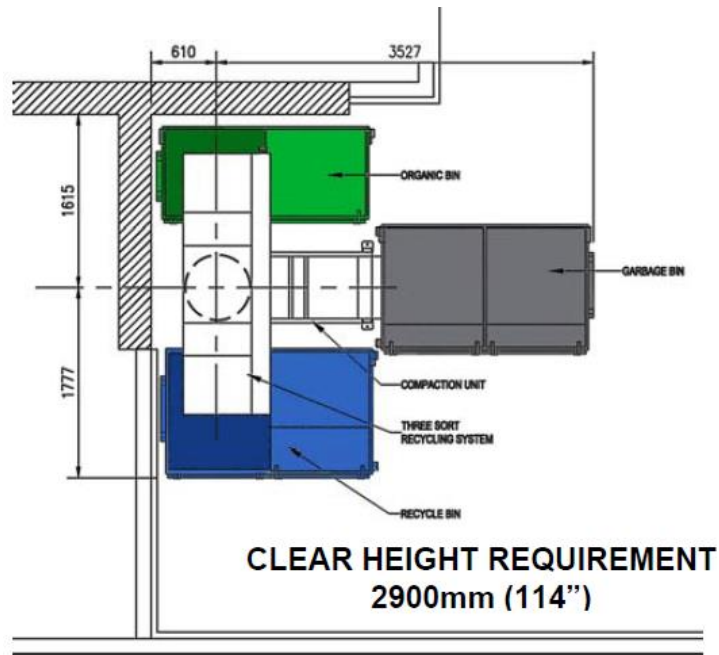
- Height Clearance of 2900mm (114") to 3200mm (126") – dependent if the system is a center unit, end unit or corner unit. (Potential plan layouts attached).
- Designated Layout Space Requirements: up to 4100mm (161.5") by 4800mm (189")

Electrical: Main power supply of 208/575V, 3 Phase 60 Hz. Control Panel – 110 AC & 24 VDC. Chute Door control voltage if 24 VDC.

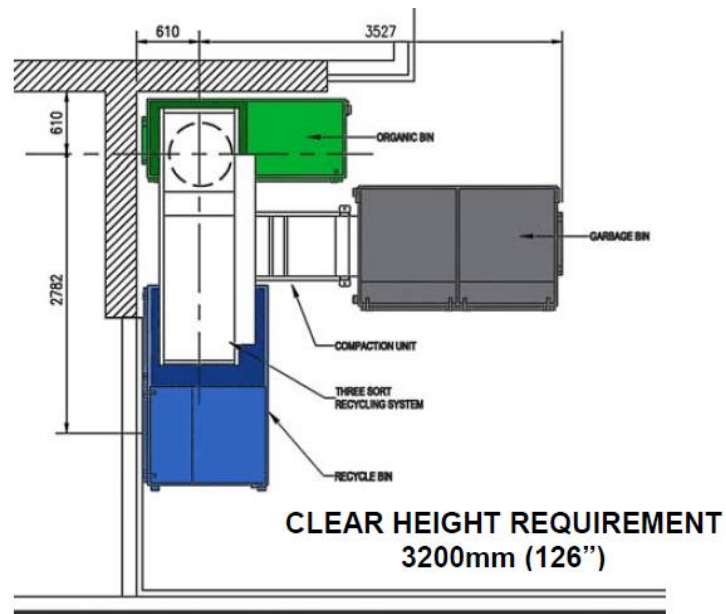
**Figure 1.** Tri-sorter Compactor Layouts (Typical)



**ABOVE IS THE PREFERED SCENERIO WITH ORGANIC 64-GALLON TOTES AND 2X 3-YARD CONTAINERS**



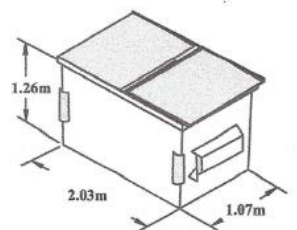
## CENTER UNIT



## END UNIT

#### 4.1.2 Garbage Equipment – 3-yard Open top containers

It is our recommendation to use 3-yard open top containers for garbage. Please see section 2.2 for an exact number of bins recommended.

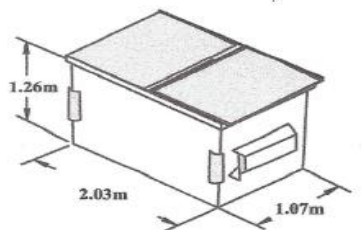


3-yard inside storage area bin  
1.26 m high, 2.03 m wide, 1.07 m deep

3-Yard Open top Container

#### 4.1.3 Recycling Equipment – Recycling totes and open top

It is our recommendation to use 3-yard open top containers to collect cans/bottles/plastics and mixed fibre materials and to use 95-gallon totes for glass bottles and jars and misc. recycling like light bulbs, electronics, and scrap metals. We also recommend that all tenants are given a blue bin for recycling collection. Please see section 2.2 for an exact number of bins recommended for each garbage room.



3-yard inside storage area bin  
1.26 m high, 2.03 m wide, 1.07 m deep

3-Yard Open top Container



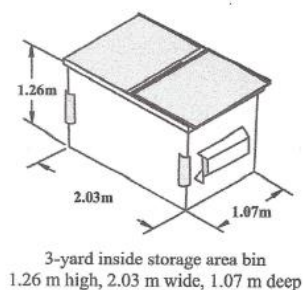
95-gallon recycling tote



Depending on type of retail a cardboard baler is a consideration as it will lower the haulage of cardboard and possibly create a revenue stream depending on volume

#### 4.1.4 Organics Equipment Specifications

It is our recommendation to use 64-Gallon totes to collect organic and compost materials. Please see section 2.2 for an exact number of bins recommended.



3-Yard Open top Container



64- Gallon Organic Totes



Tenant Kitchen Catcher

**Considerations:** During the initial move-in ensure all residents are given a kitchen catcher bin to collect their organic and compost materials, this should also come with a list of accepted materials in this program. The City of Mississauga does supply this information.

In any garbage room, waste will start to decompose. There is a positive correlation between decomposition rate and temperature; as temperature increases, so will the decomposition rate. Climate control is a great way to reduce odours, insects, and pests that can persist in waste rooms that are susceptible to temperature variation. Therefore, consider including a climate-controlled organics room as part of the design. This room would house full totes of organic waste until pickup day.

Another option is to design the space so that the entire garbage room is climate-controlled to reduce odours and pests associated with all waste types (e.g., non-recyclable waste and recycling).

## 4.2 Other Waste Equipment Considerations (if applicable)

### 4.2.1 Used Cooking Oil Specs – if there are any restaurants in the retail/commercial spaces

Below is an example of a used cooking oil storage tank.

**Figure 4.** Used cooking oil storage and caddy



### Tank capacity 1100Lb/150Gal (499kg/567.8 l)

- 24 in. (609 mm) Square x 78 in. (1981 mm) height
- Slide-me-in-the-corner square configuration
- Stainless steel tank bottom and legs. 6 in. (152 mm) high stainless-steel legs and floor clearance
- UL, UL Sanitation Listed (US and Canada)
- Suitable for Direct-Plumbed®, pump station or caddy systems

### 4.2.2 Biomedical Waste Consideration and Equipment

#### Biomedical Waste

A “biomedical waste generating facility” refers to any facility where biomedical waste is likely to be generated, including, (a) a human health care and residential facility.

“Sharps waste” refers to blades, needles, syringes (including safety engineered needles), laboratory glass, and other materials capable of causing punctures or cuts and which have come into contact with human blood waste, animal blood waste, or other human and/or animal bodily fluids.

#### Disposing of Biomedical Waste

- Every facility should have a clear and accurate list of items that fall under the category of biomedical waste. This will make it easy for staff to identify waste and properly dispose of it in the appropriate red or yellow bag/container. Most facilities create a booklet or poster for this purpose.
- Note that urine, feces, and diapers are not considered biomedical waste unless they are visibly contaminated with blood, in which case they must be handled with care. Otherwise, they can be disposed of with regular waste.



Biomedical Containers



Sharps Container

### 4.2.3 Common Area Waste and Recycling Containers (suggested)

#### Waste and Recycling Considerations

##### Exterior

Several areas throughout the property will require three or four-stream disposal receptacles for both interior and exterior common areas to accommodate the disposal of non-recyclable waste (garbage) and single stream recycling (blue bin). The specific areas that will require a multi-stream disposal receptacle are:

- Outside the main lobby and entrances
- Underground Parking at elevator entrances (if applicable)



### Interior

- All amenity spaces
- Screening room

The receptacles can be located within the general vicinity of the above-mentioned areas to avoid obstructing or conflicting with other potential design elements and/or furniture design layouts. Interior lobby area receptacles are not warranted, as the exterior receptacles located at the lobby entrance negate the need for interior receptacles, thereby maintaining the aesthetics of the lobby. The use of external receptacles only has proven successful in many applications and helps maintain a clean and odourless interior lobby.



Placing exterior organic/compost disposal receptacles for use by the general public is not recommended and should be avoided due to potential pest issues.

Preferred locations for organic/compost bins are any areas where food is prepared and/or served, such as:

- BBQ Areas (if present)
- Amenity Areas/Rooms containing kitchens (e.g., Party Rooms)



The mail rooms (if any) will require a single stream “Paper Recycling Only” bin, as these areas will generate a considerable amount of paper recycling from mail/newspapers/flyers. The absence of a non-recyclable waste (garbage) bin will ensure that no recyclable paper material will enter the waste stream.



### **Pet Waste Disposal Considerations**

Pet waste is considered non-recyclable waste in Halton Region and is required to enter into the non-recyclable waste stream (garbage). However, pet waste can cause odour issues when placed into common area non-recyclable waste bins, so a self-contained disposal bin specifically for pet waste is recommended.



### Cigarette Disposal Considerations

Cigarette waste is considered non-recyclable waste in Halton Region and is required to enter the non-recyclable waste stream (garbage). Providing designated bins to capture cigarette butts will help to reduce the amount of litter on the grounds, lessening the need for constant property maintenance. Cigarette specific disposal bins also ensure that the contents are safely secured, minimizing the risk of fire that could occur using other standard disposal bins that may contain potentially flammable materials.



#### 4.2.4 Additional Equipment Recommendations and Considerations (optional)

**Consider additional space** in the waste area to house a tractor/bin tugging that is used to move the garbage and recycling containers from the indoor storage area to the outdoor collection area for pickup. Waste and organic containers can be very heavy for personnel to move. An example of equipment is provided below. **These are recommended to move bins from the waste storage area to the loading dock staging area, especially the 3-yard open top containers.**



Bin Tugger



Tractor

Average Size: L: 1905 mm (75") x W: 1270 mm (50")

Small tractors are very useful for moving bins around a property. They reduce the need to manually push bins, which can be difficult for site staff to handle safely. Bins can be attached to the back of the tractor and can be easily pulled to the Collection Area for pickup. A custom constructed hitch and tow bar will be required to attach to the containers, which will require a pull plate to be installed.

**Tote Cleaning System** is designed to wash and rinse the interior of totes and containers. The custodian staff can performed in-house cleaning of totes in less than half the time, with the ToteBlaster LT Station. This high impact cleaning technology ensures the entire tote interior is thoroughly cleaned in the most efficient manner, utilizing the least number of resources, including time, labor, energy, cleaning chemicals and water. A floor basin needs to be installed to contain the water while using the tote washer. Approximate cost for machine is \$4,500.00 USD





## 5.0 Room Considerations

It is important to consider the functionality of the space for tenant needs. An area dedicated to large bulky items must be included in the design. This room should have proper lighting that is bright enough for all tenants to use the space safely. The space must not have access to the compactor by individuals who are not properly trained to use a compactor.

Signage that includes pictures and instructions on proper disposal and “what goes where” information should be strategically placed on the walls of this drop off room. Signage with pictures and directions will help to alleviate contamination rates and common communication issues, such as language barriers, terminology, and font size that may prevent tenants from understanding how to properly use the source-separation programs.

### **Waste/Recycling Building Considerations**

In any garbage area, waste will start to decompose. The decomposition rate will increase as the temperatures increases. Ensure organics are picked up on a regular basis to decrease odors and animal intervention.

This area should have the following features(these are recommendations if applicable):

- Door opening to allow 3 to 6-yard bins to be easily maneuvered through
- Proper ventilation and possible climate control
- Proper signage and sufficient lighting with motion sensors that is bright enough for all tenants and staff to use the space safely
- Water supply and Floor drain
- Electrical connections (for bug zapper, deodorizer, power washer etc.)

## 6.0 Tenant Welcome Package

It is highly recommended that each tenant be provided with a welcome package upon moving into their new space. The welcome package should include the reusable blue recycling bin, organic bags and kitchen catcher for each unit along with instructions on how to properly use these bins.

The package should also include the recycling guide that indicates which materials should be recycled, as well as instructions on proper usage of the chute system and the most up-do-date by-law showing the responsibilities of tenants living in the specific area. The more information that is provided, the easier it will be for tenants to participate in recycling and organics programs, thereby reducing non-recyclable waste generation and contamination rates. An example is provided below of information that should be included in the package: the City of Mississauga will supply something similar with their acceptance criteria.

# Green Cart

## Kitchen Catcher liners

You can line your Kitchen Catcher with:

- Paper towels
- Newspaper/flyers
- Cardboard
- Paper bags
- Paper food waste bags
- Certified compostable bags with the BPI logo

If you line your Kitchen Catcher with a bag, make sure it is an acceptable Green Cart liner.

Not all liners sold are accepted in Halton's Green Cart program.

If purchasing liners, ensure you only select paper or certified compostable liners with the Biodegradable Products Institute (BPI) logo on the box.

These bags are made from plant-based materials so they compost easily.

For a list of Green Cart acceptable liners and where they can be purchased, visit [halton.ca/GreenCart](http://halton.ca/GreenCart).

Purchased liners must carry the BPI logo.



## ✘ Unacceptable bags



Plastic shopping bags      Oxo-biodegradable or degradable bags



Garbage bags      Plastic green or blue recycling bags

Halton Region does not accept plastic products or plastic liners in the Kitchen Catcher or Green Cart.

Green Carts lined with unacceptable bags will not be collected.

Once the tenants move in, a welcome brief on recycling best practices can be completed in the lobby or common areas during peak times (usually between 4pm to 7pm). These meetings can include draws that people can enter to win various prizes, which is a proven method to encourage and engage people to pop by, listen to the information, and ask questions.

## 7.0 Signage Considerations

Developing signage for all waste stream equipment and receptacles that clearly identifies which materials can be deposited into the designated equipment and bins can greatly assist with reducing contamination and increasing diversion rates.

Signage should depict both images and words explaining the specific materials to be deposited into the equipment and bins so that all users are able to clearly understand program requirements. Use common terms that are easily recognizable to the public and colour-coded by program, both of which are very useful ways to help people easily identify different programs and the materials they accept. For example, the colour green is commonly used to depict organics and compost, whereas blue is often used for recycling (e.g., cans and bottles, etc.).



## 8.0 Waste Management Regulations

805 Dundas St. E. Mississauga, Ontario is located in Peel Region and must abide by the regional and provincial regulations for a multi-residential complex containing more than six dwellings.

### 8.1 By-Law 35-2015 Regional Municipality of Peel

By-law 35-2015 regulates the collection of waste in Peel Region. The following link describes the materials that are accepted into the source separated recycling programs in this region.

<http://www.peelregion.ca/scripts/waste/how-to-sort-your-waste.pl?action=category&query=Recycle>

#### **Recyclable Materials allowed in the Region's Recycling Program**

The following items shall be emptied, rinsed and separated from Waste to be collected as Recyclable Materials as stipulated by *O. Reg. 101/94*, as amended:

- (i) aluminum foil trays and pie plates (flattened and folded in quarters);
- (ii) boxboard, including cereal, cookie, frozen food (liners removed), tissue boxes, shoe boxes, egg cartons, detergent boxes (emptied and flattened);
- (iii) cardboard (flattened and placed in the Recycling Receptacle with the lid closed);
- (iv) empty paint and aerosol cans (paint lids removed and placed in Recycling Receptacle; aerosol can caps removed and placed in the Garbage);
- (v) glass bottles and jars (lids removed and placed in the Garbage);
- (vi) metal food and beverage cans;
- (vii) milk and juice cartons and boxes;
- (viii) paper, including newspapers, catalogues, magazines, telephone and paperback books, household paper, junk mail, envelopes, non-metallic gift wrap and cards;
- (ix) polyethylene plastic bags (i.e. grocery bags tied in one plastic bag), plastic film and overwrap;
- (x) plastic bottles, jugs, jars and containers (caps and lids removed and placed in the Garbage); and
- (xi) polystyrene foam blocks, egg cartons and take-out food containers;
- (xii) spiral wound containers; and
- (xiii) mixed rigid plastic containers including clamshell packaging used for fruits, vegetables and bakery products; large clear plastic tubs, lids and trays used for salads, cakes, delicatessen and cooked chicken; clear plastic egg cartons; take-out containers and microwavable trays; garden nursery pots, cells, trays and flats; plastic vitamin and prescription bottles.

#### **Recyclable Materials do not include:**

- (i) automotive parts;
- (ii) window blinds;
- (iii) dishes and cookware including pots and pans, plastic cups, drinking glasses, ceramics, plastic and metal utensils, food wrapping and reusable containers;
- (iv) foam / "popcorn" packaging;
- (v) hard plastic toys, large plastic pails, plastic and metal coat hangers, compact and DVD discs and, cassette and VHS tapes;
- (vi) lamps;
- (vii) Municipal Hazardous and Special Waste, including propane tanks or fireworks (active, used or duds);
- (viii) Home Health Care Waste;
- (ix) household electronics and small appliances;

- (x) paper and plastic take-out beverage cups, lids and stir sticks;
- (xi) take-out containers, cookie and chip bags and crinkly bags;
- (xii) pool covers or liners or inflatable pools;
- (xiii) shoes and textiles;
- (xiv) shredded paper;
- (xv) sporting equipment;
- (xvi) storage containers or laundry baskets;
- (xvii) tarps;
- (xviii) window glass and mirrors; and
- (xix) wood.

## 9.0 Design Recommendations from Peel Region

Peel Region has requirements for new developments that must be considered if the development will require city pick up. The developer must demonstrate compliance with the requirements set out in this section in the site plan submission. The design of a development must include features that allow materials to be set out for recycling as conveniently for all occupants as it is to set out garbage.

The Regional Municipality of Peel's Waste Collection Design Standards Manual is to be followed if the dwelling will be utilizing the Region's Waste Management services. The manual is attached at the end of this report in Appendix A. The dwelling must provide the front-end garbage bins and Peel Region will provide the recycling carts or front-end bins.

*Please note that the link located in Appendix A includes all subsequent Appendices mentioned throughout this report.*

### 9.1 General Design Requirements

- Internal roadways must be constructed of a hard surface material, such as asphalt, concrete or lock-stone, and designed to support a minimum of 35 tonnes, the weights of the fully loaded waste collection vehicle.
- Road layouts shall be designed to permit a waste collection vehicle to drive forward without reversing for waste collection. Where the requirement for a road layout permitting forward movement of a waste collection vehicle cannot be met, a cul-de-sac or a T-turnabout shall be provided in accordance with the specifications shown in Appendices 2 and 3, respectively.
- All roads shall be designed to have a minimum width of 6 meters.
- The turning radius from the center line must be a minimum of 13 meters on all turns.
- The maximum grade permitted along the waste collection vehicle access route is 8 per cent.
- In a situation where a waste collection vehicle must reverse, the maximum back-up distance is 15 meters.
- The waste collection vehicle shall not be permitted to back-up onto a municipal road allowance.
- All dwelling units in a development must receive the same method of waste collection.

### 9.2 Design Requirements

- Recycling materials must **NOT** be compacted
- If a chute system is used, then separate chutes must be provided for garbage and recycling or MUST be equipped with an automated mechanical separation system to direct garbage and recycling into separate front-end bins

- A concealed collection point on private property must be provided. The concealed collection point must have direct and safe access that does not require waste collection vehicles to back onto a municipal road following collection.
- A minimum of 18 meter straight head-on approach to the collection point is required. This approach is to be level and solid (maximum of 2% slope) and the same width as the collection point.
- A minimum clear height of 7.5 meters from the concrete pad must be provided at the collection point. The clear height of 7.5 meters must be free of obstructions such as sprinkler systems, ducts, balconies, wires and trees.
- Outside the collection point, a clear height of 4.4 meters from the top off the access road must be provided along the waste collection vehicle access and egress route. The clear height of 4.4 meters must be free of obstructions such as sprinkler systems, ducts, balconies, wires and trees.
- The minimum width of the collection point must be 3 meters for each front-end bin. The minimum depth of the collection point must be 2 meters for a 3-cubic yard front-end bin and 3 meters for a 4 and 6 cubic yard front-end bin. Please refer to Appendix A Design Manual and Appendix 7 for the bin dimensions. However, where these requirements cannot be met, reliance on the property management staff to facilitate waste collection will be considered at the commissioners' discretion, subject to the following conditions:
  - I. The driver is not required to exit the waste collection vehicle to facilitate collection;
  - II. Property management staff is responsible for jockeying of front-end bins during collections;
  - III. The Region will not be responsible for emptying bins that are inaccessible to the waste collection vehicle; and
  - IV. Property management staff must be visible to waste collection vehicle on approach to the site, otherwise the waste collection vehicle will not enter the site.
- The collection point including the number and size of front-end bins to be used for garbage and the number, size and type of recycling receptacles (front-end or cart) are to be clearly shown and labelled on drawings (e.g. site plan, ground floor plan etc.). The drawings must also show the waste collection vehicle's route through the development and the radius of every turn must be labelled. (Please refer to Appendix A Design Manual - Appendices 14 and 15 for sample drawings)

### 9.3 Concealed Collection Point Requirements

The concealed collection point must be of enough area to accommodate the number of front-end bins and carts (if applicable) required for the development and to accommodate the set-out and storage of bulky items. It must be accessible to occupants and the waste collection vehicle. The design requirements for the concealed collection points include:

- A permanent three-sided structure without a roof
- A concealed collection point for a single front-end bin requires 3-metre opening
- A concealed collection point for two front-end bins with two gates requires a 6-metre opening
- A concealed collection point for two front-end bins with four gates requires an 8-metre opening
- A concealed collection point requires a lockable gate. Hinged gates on a concealed collection point must swing open to a minimum 135 degrees. Sliding gates are also permitted. Gates must be capable of being secured in an open position.
- A concealed collection point requires a minimum of 10 square meters for the set-out of **bulky items**. The concealed collection point for bulky items can be separated from the concealed collection point for front-end.

- A solid, level (maximum of 2% slope) and reinforced concrete pad must be provided. The concrete pad must be of sufficient strength to prevent differential settlement and/or cracking that would affect waste collection.
- Bollards or a concrete curb must also be installed at the rear of the concealed collection point to protect the structural wall from damage when front-end bins are picked up or returned in place by waste collection vehicles.

#### 9.4 Waste Storage Room Requirements

A waste storage room must be of sufficient size to accommodate the required number of front-end bins and/or carts required for the development. In addition, a minimum of 10 square meters must be provided for the storage of bulky items. Please refer to Appendix A Design Manual for more information.

#### 9.5 Indoor Collection Point Requirements

The requirements for an indoor collection point (if applicable) are as follows:

- A solid, level (maximum of 2% slope) and reinforced concrete pad. The concrete pad must be of necessary strength to prevent differential settlement and/or cracking that would affect waste collections
- A minimum width of 6 meters for the storage of multiple front-end bins; and
- An unobstructed distance of a minimum of 18 meters must be provided to enable the waste collection vehicle to wholly enter the indoor collection point. Please refer to Appendix A Design Manual - Appendix 15.

## 10.2 Waste Landscape in Ontario

Ontario is shifting to a circular economy framework with a new waste management approach, where waste is treated as a resource that can be recovered, reused, and reintegrated into the economy and production stream. This framework will support the health of both Ontario's environment and communities by minimizing unnecessary disposal. The new approach will:

- reduce litter and waste in communities
- protect the environment
- drive innovation, performance, and competitiveness
- stimulate economic growth and development

Ontario's circular economy framework includes updated legislation and a strategy to guide progress specific to each sector. The following section outlines some of the most recent changes to Ontario's legislation with respect to waste and recycling management.

*Bill 151, the Waste-Free Ontario Act, 2016* was passed on June 1, 2016, and enacts the Resource Recovery and Circular Economy Act 2016 and the Waste Diversion Transition Act 2016. Once fully implemented, the Bill, along with the Resource Recovery and Circular Economy Act, will replace the existing waste diversion program requirements operating under the Waste Diversion Act (2002).

*The Strategy for a Waste-Free Ontario: Building the Circular Economy* will serve as the roadmap to divert more waste from landfills, create jobs, reduce greenhouse gas emissions responsible for climate change, protect scarce resources, and create a system where all resources, including organic/non-organic

materials are recovered, reused, and re-integrated into the economy. This is meant to ensure that nothing is wasted, and valuable materials destined for landfill maintain economic value without having negative effects on the environment.

*The Food and Organic Waste Framework*, released on April 30<sup>th</sup>, 2018, outlines actions for the province and municipalities to take and provides direction to the waste management industry and the IC&I sector to prevent and reduce food waste, rescue surplus food, recover food and organic waste from disposal, and support beneficial uses of end products such as compost, digestate, and biogas.

Disposal bans for specific materials are currently being reviewed by the province and are included in public consultations. The primary materials considered for disposal bans include:

- food waste
- materials designated under existing waste diversion programs
- beverage containers
- corrugated cardboard and some paper materials
- fluorescent bulbs and tubes

The proposed Food and Organic Waste Framework, Strategy for a Waste-Free Ontario, and the 5-year Climate Change Action Plan were developed to work together to help fight climate change by reducing greenhouse gas emissions from landfilled materials that could otherwise be reduced, reused, recycled, composted, and re-integrated into the economy.

### 10.3 5 Year Implementation Plan – Strategy for a Waste-Free Ontario

**2020** – Interim goal of 30% diversion achieved. Complete the transition of existing waste diversion programs (except Blue Box) and designate additional materials under producer responsibility regulations (e.g., mattresses, carpets, furniture)

**2021** – Begin implementing disposal bans on material under existing waste diversion programs

**2022** – Implement a possible food waste disposal ban and release a progress report on the Waste-Free Ontario Strategy

**2023** – Complete transition of the Blue Box program and designate additional materials under the producer responsibility regulation

**2024** – Develop and consult on additional policy statements

**2025** – Begin review of the Waste-Free Ontario Strategy and designate additional materials under the producer responsibility regulation

### 10.4 Source Separation Programs – Ontario Regulation 103/94

Recycling at multi-residential buildings is mandatory in the province of Ontario. *Ontario Regulation 103/94* is the provincial legislation that requires property owners to implement a building recycling program if the building has six or more units and it is located in a municipality with a population of at least 5,000.

The legislation also requires the implementation of a source separation program to capture recyclable materials within multi-unit residential buildings. A source separation program includes activities to

separate recyclables from other waste at the source (point of generation). Activities must include the provision of facilities for the collection, handling and storage of recyclables, including suitable containers available for tenants to use to dispose of their recyclables. These containers must be conveniently located, properly sized, and adequately contain the recyclable materials. Reasonable effort must be made to ensure that full use of the source separation program is made. The program must be communicated to all employees and tenants to ensure that source separation procedures, responsibilities, and equipment use are properly understood and followed. New employees should be informed of the program and trained in its operation upon hire, with subsequent training sessions as required.

The Ministry of the Environment is responsible for enforcing *O. Reg. 103/94*. Inspections of multi-residential buildings are conducted by the Ministry's Compliance Branch, which has authority to issue fines to property owners for non-compliance.

For more information, please visit: <https://www.ontario.ca/page/waste-management>

## 10.5 Ontario Regulation 102/94 – Part IV – Large Construction Projects

The following section outlines the requirements governing large construction projects with respect to Waste Audits and Waste Reduction Work Plans under *O. Reg. 102/94*. The proposed building is subject to the following section from <https://www.ontario.ca/laws/regulation/940102>.

**Please review this section carefully.**

**Please Note:** *PragmaTech specializes in conducting Waste Audits and preparing Waste Reduction Work Plans in accordance with Ontario legislation, and would be happy to provide this service to ensure the project meets its provincial compliance obligations.*

### PART IV LARGE CONSTRUCTION PROJECTS

**19.** (1) This Part applies to a person who undertakes, on their own behalf or on behalf of another person, a construction project consisting of the construction of one or more buildings with a total floor area of at least 2,000 square meters.

(2) In this Part,

“builder” means a person described in subsection (1). *O. Reg. 102/94, s. 19.*

**20.** (1) The builder shall conduct a waste audit covering the waste that will be generated in the construction project. The audit shall also address the extent to which materials or products used consist of recycled or reused materials or products.

(2) After conducting the waste audit, the builder shall prepare a written report of the audit. *O. Reg. 102/94, s. 20.*

**21.** The builder shall prepare a written waste reduction work plan, based on the waste audit, to reduce, reuse and recycle waste generated in the construction project. *O. Reg. 102/94, s. 21.*

**22.** The builder shall implement the waste reduction work plan. *O. Reg. 102/94, s. 22.*

**23.** The waste reduction work plan shall include measures for communicating the plan to the workers at the construction site and, as a minimum, those measures shall require,

- (a) that the plan or a summary be posted at the construction site in a place where most of the workers will see it; and



(b) if a summary is posted, that any worker who requests to look at the plan be allowed to do so.

*O. Reg. 102/94, s. 23.*

**24. (1)** The report of the waste audit and the waste reduction work plan required under this Part shall be prepared before construction work begins at the site.

(2) If construction work has begun at the site before this Regulation comes into force, the following transitional rules apply with respect to the waste audit, the report and the plan:

1. The report and plan shall be prepared within six months after this Regulation comes into force.
2. The report and plan need not be prepared if all work is finished within six months after this Regulation comes into force.
3. The waste audit need not cover any waste generated within six months after this Regulation comes into force.
4. The plan need not address any waste generated within six months after this Regulation comes into force. *O. Reg. 102/94, s. 24.*

## 10.6 Environmental Sustainability & Circular Economy Framework

Effective resource management practices that consider the full life-cycle of materials are critical to achieving environmental sustainability. The movement towards a circular economy is putting resource recovery and waste reduction at the forefront of effective waste management practices.

We recommend that you regularly review and revise your Waste Management and Procurement Policies and Practices to ensure that every effort is made to create integrated systems where nothing is wasted, and waste (destined for landfill or incineration) is treated as a valuable resource for recovery and reuse and put back into the economy with minimal negative impacts on the environment.

In addition to environmental and social responsibility, companies have a legal obligation to demonstrate due diligence for waste management and resource recovery. To ensure compliance with these obligations, we recommend using continuous quality improvement and employee/tenant engagement best practices to develop innovative waste management programs and practices. We also recommend that you partake in regular monitoring and reporting of program performance indicators. For programs using contractors with alternative policies and practices, we recommend carefully monitoring all contracted services to ensure that transparency and integrity are maintained in their waste management practices.

### **Reduce, Reuse and Recycle**

Continue to explore innovative ways to reduce or eliminate waste. There is a common misconception that recycling is the easiest, most cost-effective, and most convenient form of waste diversion. In fact, REDUCTION is the most efficient waste management and environmental stewardship practice. Reducing waste production can lead to conserving natural resources, decreasing toxicity of wastes, and reducing the cost impact on communities, businesses, and consumers. Most waste reduction strategies fail because of using the 3Rs (REDUCE, REUSE and RECYCLE) in the reverse order.

Some of the costs associated with recycling could be reduced or eliminated by reducing the types and/or volume of materials generated. Some potential cost savings may be associated with material handling, equipment costs, disposal and contamination fees, floor space and storage areas, employee training, recycling program promotions, and sourcing available end-markets.

### **Disposal**

Environmental Sustainability and Stewardship legislation changes continue to target specific materials for reduction/removal from landfill disposal. In addition, landfill costs are increasing due to the shrinking availability of space. These costs and conditions are key drivers for companies to develop innovative solutions and alternatives to dispose of their waste.

In Canada, incineration or “waste to energy” is considered a *disposal alternative*, NOT a method of *waste diversion*. Incineration does not promote the 3Rs. An important distinction is that burning waste destroys resources; it does not reduce waste. In addition, burying or burning waste may discharge toxins or pollutants into land, water or air that could prove to have negative human and/or environmental consequences. It is therefore important to consider both the human and environmental impacts associated with all waste disposal methods.

## Appendix A: Regional Municipality of Peel Waste Collection Design Manual

*Please Note: The following link includes the Peel Region Waste Collection Design Manual, along with all the aforementioned Appendices. Document has been added as an attachment with the report.*

<https://www.peelregion.ca/public-works/design-standards/pdf/waste-collection-design-standards-manual.pdf>