

A large, stylized green arrow that curves from the top right, down, and then left, pointing towards the bottom left. It is composed of two segments: a lighter green outer curve and a darker green inner arrowhead.

guiding  
our province  
to a greener  
future

Government of Newfoundland and Labrador  
Waste Audit Report

Presented by: MMSB

Presented to: The Office of Climate Change and Energy Efficiency

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# Introduction

In January 2015, the Government of Newfoundland and Labrador released the *Greening Government Action Plan*, with the goal of creating a culture of environmental sustainability within government’s core operations. The action plan outlines five strategic objectives to achieve this goal, one of which is to “increase the amount of waste diverted from landfills as a result of government’s operations.”

In support of this objective, the Provincial Government committed to complete waste audits of a sample of government buildings, representing a range of locations, sizes and departments.

A waste audit is a study relating to the solid waste generated through an organization’s day-to-day operations. Waste audits are the first step in a long-term process of understanding the volume and composition of waste generated by an organization. This information is critical to inform effective strategies for waste diversion.

This report presents the findings of six waste audits of government buildings. These audits were completed by MMSB throughout 2014-15, with support from the Office of Climate Change and Energy Efficiency (CCEE) and the Department of Transportation and Works. The six buildings for which waste audits were completed are:

- Confederation Building, West Block (St. John’s)
- Petten Building (St. John’s)
- Advanced Education and Skills Regional Office (Grand Falls – Windsor)
- Service Newfoundland and Labrador Building (Harbour Grace)
- Labrador West College of the North Atlantic Campus (Labrador City)
- Corner Brook Arts and Culture Centre (Corner Brook)

This report contains the results of those audits and will be used to benchmark the amount of waste generated in government buildings, establish a target for waste diversion within government buildings and inform strategies for waste diversion going forward.

# Methodology

Given available resources, it was determined that waste audits of six government buildings would be completed to understand the volume and composition of waste being generated. To ensure the collected data was representative of the operations of the Government of Newfoundland and Labrador at a broad level, it was determined that audited buildings must span a range of locations, sizes and departments.

## Selecting the Sample

As such, MMSB and CCEE sourced data on the size and function of all owned and leased government buildings through the Department of Transportation and Works, as well as Fire and Emergency Services. This data showed a total of 1,245 government-owned buildings and structures and 299 leased spaces. The list includes office buildings, as well as niche buildings and structures, such as tourist chalets, airport hangars, policing, penitentiary and correctional facilities, greenhouses, storage sheds, garages, weigh-scale buildings, highway depots and recreational camps.

To ensure sufficient waste was available for auditing, the potential sample size was filtered to remove buildings and structures less than 40m<sup>2</sup> and buildings with fewer than three employees. Additionally, many leased spaces house multiple tenants and include a mix of government and non-government waste. As such, only buildings whose spaces were leased solely to government entities were included in the potential sample size.

Using these filters, the majority of remaining buildings were found to contain office functions. Given this, four of the six audits were allocated to office buildings based on size, number of employees and location, as shown in Table 1. Additionally, two niche public sector functions were identified from which it was anticipated reasonable waste audit data could be collected. In both cases, the Provincial Government owns multiple locations which, at a broad level, have operational similarities.

<b>Size Bracket (m<sup>2</sup>)</b>	<b>Building Type</b>	<b>Building Name</b>	<b>Location</b>	<b>Owned or Leased</b>
< 1000	Office	Service Newfoundland and Labrador Building	Harbour Grace	Leased
1,000-1,999	Office	Advanced Education and Skills Regional Office	Grand Falls-Windsor	Leased
3,000-3,999	Arts and Culture Centre	Corner Brook Arts and Culture Centre	Corner Brook	Owned
3,000-3,999	Office	Petten Building	St. John's	Owned
4,000-4,999	Post - Secondary	Labrador West College of the North Atlantic	Labrador City	Owned
> 10,000	Office	Confederation Building, West Block	St. John's	Owned

## *Completing the Waste Audits*

Audits were carried out separately at each location from March to December 2014. Waste generated at each location was gathered over a three to four day period, generally from the start of business on Monday to the close of business on Wednesday. Employees within the audited locations were not informed about the audit until after the samples were taken to ensure consistency in waste practices. Cleaning staff at each location were provided with instructions to keep waste from the audit days separate and to label it by day. Bags were opened by auditors on covered tables and the entire contents, including the bags themselves, were sorted into buckets representing 50 categories. These categories can be broadly grouped into organics, fibers, containers (deposit bearing and non-deposit bearing), garbage and other.

In anticipation of this research, MMSB worked with the Department of Transportation and Works to require that site-specific data be provided from waste hauling contractors servicing government buildings. This data was collected by the contractor from the West Block of the Confederation Building and the Petten Building during 2014 and provided to MMSB in February and March of 2015. Site-specific waste data was also provided to MMSB in March 2015 by the waste hauler for the Advanced Education and Skills Building.

Information from the waste audits, as well as waste hauler data, was used to determine the volume and composition of waste generated in each building, as well as to develop a waste generation multiplier in each case, which is a metric that can be used to estimate waste generation in like-buildings.

### **A Note on Calculating Waste Generation Multipliers**

In the case of office buildings, given waste hauler data was only available for three of the four audited buildings, two methodologies were used to determine waste generation multipliers.

In instances where annual data was provided by the waste hauler, the waste generation multiplier was calculated by dividing the annual waste for each category by the number of working days in a year (247) and then dividing by the number of employees that are expected to be in a building on any given day (90 per cent of estimated employee positions).

In the instances where annual data was not provided by the waste hauler, the waste generation multiplier was determined by dividing the audited waste by the number of days over which the waste was generated, and then dividing by either: (a) the number of people known to be in the building during the audit, or (b) an estimate of the number of people in the building during the audit (90 per cent of estimated employee positions).

The second methodology was also used for the College of the North Atlantic campus. However, instead of dividing by the number of employees, in this instance the waste generation multiplier was determined by dividing the audited waste by the number of students and staff on campus.

In the case of the Corner Brook Arts and Culture Centre, the audited waste data was divided by the total number of tickets sold over the audit period.

## *Limitations*

There are five key limitations with this approach:

- The findings of the four waste audits of office buildings may not be reflective of waste generation at the various niche buildings and structures or buildings that offer significantly different services, as waste will differ depending on the function or services provided. For example, the Service Newfoundland and Labrador Building in Harbour Grace generated a significant number of discontinued metal license plates.
- For some buildings, waste is collected by external contractors and the findings in this report are dependent on the quality and level of detail provided by waste collection contractors.
- In the case of buildings where waste and recycling data were not available from waste haulers, annual estimates were extrapolated based upon the amount of material generated during the audit period.
- The audits show waste generation at a particular point in time. It is important to note, for example, that audits completed during peak vacation time may result in an under-estimation of waste. The waste audits in this report considered these factors to the extent possible. The completion of further audits over various seasons would serve to address this issue.
- There is a margin of error associated with completing a waste audit for buildings with multiple waste disposal areas or means, such as receiving areas, lunchrooms and so on, which may result in an under-estimation of waste. The waste audits in this report considered these factors to the extent possible.

## Audit Results

The results of the six individual audits are presented on the following pages. Definitions for all waste categories are in Annex A.



## Confederation Building, West Block — St. John's

The West Block is the largest building housing government services in Newfoundland and Labrador. It is the newer of the two buildings comprising the Confederation Building campus, with the older being the East Block.

There is a large cafeteria located on the ground floor of the West Block. A composting program for the cafeteria's pre-consumer food waste has been implemented by the Department of Environment and Conservation. Lester's Farm comes weekly to collect vegetable/fruit trimmings and coffee grounds generated in the cafeteria.

The audit of the West Block included waste generated from Tuesday, December 16 to Thursday, December 18, 2014. Over 480 kilograms of disposed waste was audited to understand the composition of the waste being sent to landfill. According to the Human Resources Secretariat, the number of employees in this building at any given time throughout the year is roughly 90 per cent of total employee positions. This is due to job vacancies, employees on leave and employees working in the field.

Additionally, the mass of waste generated at the West Block was provided by the waste hauler and tonnages for paper fiber, shredding and cardboard recycling were also reported to MMSB.

It is important to note that there are three primary characteristics that make it difficult to compare waste audit findings of the West Block to other government buildings. These are:

- The building houses a variety of services that cater to both the West Block and the East Block, including a private sector cafeteria, conference centre, gymnasium and wood workshop;
- The building serves as a corporate headquarters, responsible for province-wide procurement, training functions and other functions not generally performed in regional locations; and
- Many departments housed within the building have voluntary waste diversion initiatives such as beverage container recycling. These initiatives vary by department and weight data is not available.

The waste profile for the West Block is provided in Table 2.

<b>Table 2: Confederation Building, West Block - Waste Profile</b>						
	<b>Category</b>	<b>Audited Waste (kg)</b>	<b>Percent of Disposed Waste</b>	<b>Annual Waste Generated<sup>5</sup> (kg)</b>	<b>Percent of Total Waste</b>	<b>Waste Generation Multipliers<sup>6</sup> (kg/employee/day)</b>
<b>Disposal</b>	Organics	269.6	55.7%	57,268.6	12.6%	0.192
	Paper	53.1	11.0%	11,282.6	2.5%	0.038
	Trash	122.6	25.4%	26,045.9	5.8%	0.087
	Non-Beverage Containers	26.6	5.5%	5,649.0	1.2%	0.019
	Other Waste	8.4	1.7%	1,775.1	0.4%	0.006
	Beverage Containers	3.3	0.7%	711.2	0.2%	0.002
	<b>Disposal Total</b>	<b>483.6</b>	<b>100.0%</b>	<b>102,732.3</b>	<b>22.7%</b>	<b>0.344</b>
<b>Diversion</b>	Composting <sup>1</sup>	46.9	-	3,859.7	0.9%	0.010
	Recycling - Office Paper Fibre <sup>2</sup>	0.0	-	231,061.7	51.0%	0.773
	Recycling - Confidential Shredding <sup>3</sup>	0.0	-	104,643.8	23.1%	0.350
	Recycling - Cardboard <sup>4</sup>	0.0	-	10,466.6	2.3%	0.035
	<b>Diversion Total</b>	<b>46.9</b>	<b>-</b>	<b>350,031.8</b>	<b>77.3%</b>	<b>1.168</b>
<b>Combined Total</b>		<b>530.4</b>	<b>-</b>	<b>452,764.1</b>	<b>100.00%</b>	<b>1.512</b>

<sup>1</sup> **Composting:** Organic waste for composting was audited on two of the three days. The number in the table represents an adjusted three-day amount. This was confirmed with the contractor as an appropriate estimation of the annual organic waste they manage. The composted organic waste comes from the cafeterias in both the East Block and West Block. Therefore, the waste generation multiplier uses estimates of employees in both of these buildings at the time of the audit for this category.

<sup>2</sup> **Recycling - Office Paper Fibre:** A total of 170,256 kilograms of office paper fibre was collected and measured by the waste contractor for 182 working days. This information has been adjusted to reflect the mass of paper fibre generated annually.

<sup>3</sup> **Recycling - Confidential Shredding:** Based upon estimates provided by two of the service providers for the West Block, a total of 104,644 kilograms of paper is confidentially shredded and recycled at this site annually.

<sup>4</sup> **Recycling-Cardboard:** A total of 6,780 kilograms of cardboard was collected from the West Block over a 160 working day period. This information has been adjusted to reflect the mass of recycled cardboard generated annually.

<sup>5</sup> **Annual Waste Generation:** A contractor collects waste from this site in a dedicated truck. A total of 83,600 kilograms of waste from this site was disposed in landfill over a 201 working day period. This information has been adjusted to reflect the mass of waste generated annually. Audited black bag percentages were applied to the annual total to determine the waste generated for those materials that were not diverted.

<sup>6</sup> **Waste Generation Multipliers:** An estimate of the number of employees present in the West Block during the time of the waste audit was determined to be 1,210, which is based upon 90 per cent of the estimated total employee positions in that building (1,344).





## Petten Building – St. John’s

The government-owned Petten Building, located on Strawberry Marsh Road, is composed of four wings, each of which has a kitchenette. Three of these wings were occupied at the time of the audit. There is a large eating area, but no onsite food service.

The building currently has receptacles available for recycling all paper, beverage containers and cardboard. Beverage containers are removed by different employees in each wing, who then donate the refunds to various charities.

Double-sided printing and copying is encouraged, but is not a default setting. There is no dishwasher in the building, so disposable cups and cutlery are available. Brewed coffee is made in the large boardroom, while single-serve is used in other boardrooms and snack areas. There is a garbage bin in every office and cubicle.

The audit included waste generated from Monday, July 7 to Wednesday, July 9, 2014. A total of 71.3 kilograms of disposed waste was audited to understand the composition of waste being sent to landfill at the Petten Building. According to the Human Resources Secretariat, the number of employees in this building at any given time throughout the year is roughly 90 per cent of total employee positions. This is due to job vacancies, employees on leave and employees working in the field.

Data on the total mass of waste generated at this location was provided by the waste hauler and separate contractors reported tonnages of paper fiber, shredding and cardboard.

The waste profile of the Petten Building can be seen in Table 3.

**Table 3: Petten Building - Waste Profile**

	Category	Audited Waste (kg)	Percent of Disposed Waste	Annual Waste Generated <sup>4</sup> (kg)	Percent of Total Waste	Waste Generation Multipliers <sup>5</sup> (kg/employee/day)
<b>Disposal</b>	Organics	28.7	40.2%	3,859.7	19.9%	0.193
	Paper	13.1	18.3%	1,759.4	9.1%	0.088
	Trash	19.4	27.1%	2,606.1	13.4%	0.130
	Non-Beverage Containers	4.2	5.9%	570.6	2.9%	0.029
	Other Waste	5.4	7.6%	728.2	3.8%	0.036
	Beverage Containers	0.6	0.8%	80.6	0.4%	0.004
	<b>Disposal Total</b>		<b>71.3</b>	<b>100.0%</b>	<b>9,604.7</b>	<b>49.5%</b>
<b>Diversion</b>	Recycling - Office Paper Fibre <sup>1</sup>	0.0	-	6,631.4	34.2%	0.331
	Recycling -Confidential Shredding <sup>2</sup>	0.0	-	685.8	3.5%	0.034
	Recycling - Cardboard <sup>3</sup>	0.0	-	2,470.0	12.7%	0.123
	<b>Diversion Total</b>	<b>0.0</b>	<b>-</b>	<b>9,787.2</b>	<b>50.5%</b>	<b>0.489</b>
<b>Combined Total</b>		<b>71.3</b>	<b>-</b>	<b>19,392.0</b>	<b>100.0%</b>	<b>0.969</b>

<sup>1</sup> **Recycling - Office Paper Fibre:** A total of 4,940 kilograms of paper fibre was collected over 184 working days by a separate waste contractor. This information has been adjusted to reflect the mass of paper fibre generated annually.

<sup>2</sup> **Recycling - Confidential Shredding:** The contractor could not provide exact per-load weights to associate with collection as their loads were mixed with other clients' materials at the time of weighing. Instead, an estimate was provided by the contractor and included here.

<sup>3</sup> **Recycling-Cardboard:** At the request of MMSB, the cardboard contractor directed a dedicated truck to collect and weigh the cardboard generated at this location over 10 working days. This information has been adjusted to reflect the mass of recycled cardboard generated annually.

<sup>4</sup> **Annual Waste Generated:** At the request of MMSB, the waste contractor reported that 10,188 kilograms of total waste from this site was collected and sent for disposal at landfill within a 385 day period. This information has been adjusted to reflect the mass of waste generated annually. Audited black bag percentages were applied to the annual total to determine the waste generated for those materials that were not diverted.

<sup>5</sup> **Waste Generation Multipliers:** An estimate of the number of employees present in the Petten Building during the time of the waste audit was determined to be 81, which is based upon 90 per cent of the estimated total employee positions in that building (90).



## Advanced Education and Skills Regional Office – Grand Falls - Windsor

Located at 42 Hardy Avenue, the Advanced Education and Skills Regional Office in Grand Falls - Windsor is a leased space that is home to 48 staff.

The building has receptacles for paper recycling and beverage containers. One staff member places a compost catcher in the kitchen for coffee grounds, tea bags and vegetable/fruit waste, which is taken home to a backyard composter.

The audit included waste generated from Monday, August 11 to Wednesday August 13, 2014. A total of 38.6 kilograms of waste was audited over this period. During the audit, there were 42 staff in the office on Monday, 43 on Tuesday and 44 on Wednesday. This information was used when calculating the waste generation multiplier when using the data collected during the three-day waste audit. For calculations completed using annual data, it was assumed that the number of employees in this building at any given time throughout the year is roughly 90 per cent of total employee positions. This is due to job vacancies, employees on leave and employees working in the field.

Data on the total mass of waste generated at this location was provided by the waste hauler and a separate contractor reported tonnages of confidential shredding.

Results of the audit and annual estimations can be seen in Table 4.

**Table 4: Advanced Education and Skills Regional Office Grand Falls Windsor - Waste Profile**

	Category	Audited Waste (kg)	Percent of Disposed Waste	Annual Waste Generated <sup>2</sup> (kg)	Percent of Total Waste	Waste Generation Multipliers <sup>3</sup> (kg/employee/day)
<b>Disposal</b>	Organics	18.4	50.5%	1,716.5	19.8%	0.161
	Paper	9.3	25.5%	865.8	10.0%	0.081
	Trash	6.8	18.5%	629.3	7.2%	0.059
	Non-Beverage Containers	1.3	3.4%	116.6	1.3%	0.011
	Other Waste	0.7	1.8%	60.8	0.7%	0.006
	Beverage Containers	0.1	0.3%	11.0	0.1%	0.001
	<b>Disposal Total</b>		<b>36.5</b>	<b>100.0%</b>	<b>3,400.0</b>	<b>39.1%</b>
<b>Diversion</b>	Composting	2.1	-	171.8	2.0%	0.016
	Recycling -Confidential Shredding <sup>1</sup>	0.0	-	5,118.5	58.9%	0.480
	<b>Diversion Total</b>	<b>2.1</b>	<b>-</b>	<b>5,290.3</b>	<b>60.9%</b>	<b>0.496</b>
<b>Combined Total</b>		<b>38.6</b>	<b>-</b>	<b>8,690.3</b>	<b>100.0%</b>	<b>0.815</b>

<sup>1</sup> **Recycling- Confidential Shredding:** At the request of MMSB, the waste contractor reported an annual total of 5,119 kilograms of confidential shredding was collected from July 2013 to July 2014.

<sup>2</sup> **Annual Waste Generated:** At the request of MMSB, the waste contractor reported that 3,400 kilograms of total waste from this site was collected and sent for disposal at landfill within a 365 day period. Audited black bag percentages were applied to the annual total to determine the waste generated for those materials that were not diverted.

<sup>3</sup> **Waste Generation Multipliers:** An estimate of the number of employees present in the building during the time of the waste audit was 43. Additionally, at any given time during the year, it is expected that 90 per cent of the estimated total employee positions (48) would be present in the building (43).



## Service Newfoundland and Labrador Building – Harbour Grace

The Service Newfoundland and Labrador building in Harbour Grace is a leased space housing employees in various divisions, from environmental protection officers to motor vehicle registrar staff.

There are receptacles available for paper and beverage container recycling. There is a kitchen with a sink and reusable dishes and cutlery are available. One staff member brings some materials home for backyard composting and curbside recycling.

The audit included waste generated from Monday, March 24 to Thursday, March 27, 2014. A total of 13.15 kilograms of waste was audited from this building. Employees at this location travel frequently. During the audit there were 13 employees in the office.

No data was available from the waste hauler for this site. As such, the total annual mass of waste sent from this site for landfill disposal is not known. Therefore, the mass of waste audited was adjusted from a four day period to a 247 working day period to estimate annual waste generation at this site.

The waste profile for the Service Newfoundland and Labrador building is provided in Table 5.

**Table 5: Service Newfoundland and Labrador Building Harbour Grace - Waste Profile**

	<b>Category</b>	<b>Audited Waste (kg)</b>	<b>Percent of Disposed Waste</b>	<b>Annual Waste Generated<sup>3</sup> (kg)</b>	<b>Percent of Total Waste</b>	<b>Waste Generation Multipliers<sup>2</sup> (kg/employee/day)</b>
<b>Disposal</b>	Organics	3.7	28.3%	286.2	9.8%	0.072
	Paper	1.4	10.3%	104.0	3.5%	0.026
	Trash	6.8	52.1%	527.0	18.0%	0.132
	Non-Beverage Containers	0.7	5.7%	57.2	2.0%	0.014
	Other Waste	0.0	0.0%	0.0	0.0%	0.000
	Beverage Containers	0.5	3.7%	37.7	1.3%	0.009
	<b>Disposal Total</b>		<b>13.2</b>	<b>100.0%</b>	<b>1,012.2</b>	<b>34.5%</b>
Diversion	Recycling -Confidential Shredding <sup>1</sup>	0.0	-	1,919.4	65.5%	0.480
	<b>Diversion Total</b>	<b>0.0</b>	<b>-</b>	<b>1,919.4</b>	<b>65.5%</b>	<b>0.480</b>
<b>Combined Total</b>		<b>13.2</b>	<b>-</b>	<b>2,931.7</b>	<b>100.0%</b>	<b>0.733</b>

<sup>1</sup> **Recycling - Confidential Shredding:** As there was no ability to audit or collect data on confidential shredding at this site, the confidential shredding generation from the Advanced Education and Skills audit was adjusted and used to estimate the mass of confidential shredding generated at this location.

<sup>2</sup> **Waste Generation Multipliers:** The number of employees present in the building during the time of the waste audit was 13. Additionally, at any given time during the year, it is expected that 90 per cent of the estimated total employee positions (18) would be present in the building (16).

<sup>3</sup> **Annual Waste Generated:** The annual waste generated was calculated by applying the waste generation multiplier to the estimated occupancy of the building at any given time and then by the number of working days (247).



## Labrador West College of the North Atlantic – Labrador City

Located in Labrador City, the Labrador West campus of the College of the North Atlantic enrolls 150 full-time students per semester in an assortment of academic, trades and business programs. Specializing in advanced apprenticeship training for industries in the area, the college features eight regular programs, most of which involve a mix of classroom and workshop experience. In addition to the 150 full time student spaces, the campus also has 30 staff.

This campus currently offers recycling receptacles for beverage containers, cellular telephones, toner, waste oil and metals.

The college houses a cafeteria with hot breakfast and lunch service until 2:00pm. The kitchen has an industrial-sized dishwasher, but, with the exception of soup, food is served on disposable plates, mugs and cutlery. There are reusable dishes and utensils in the staff kitchenette, which is equipped with a sink and employees typically bring their dishes from home.

The audited waste was generated over various periods of time, which were known to the audit team. For the purposes of comparability, all audited waste has been adjusted to show the mass of waste generated over the typical three day period.

No data was available from the waste contractor for this site. As such, the total annual mass of waste sent from this site for landfill disposal is not known. This campus is in operation for 150 days of classes during the fall and winter semesters. Therefore, the mass of waste audited was adjusted to represent a 150 day period to estimate two semesters of waste generation at this site.

Table 6 shows the waste profile for the Labrador West College of the North Atlantic.

**Table 6: Labrador West College of the North Atlantic - Waste Profile<sup>1</sup>**

	Category	Audited Waste (kg)	Percent of Disposed Waste	Annual Waste Generated (kg) <sup>2</sup>	Percent of Total Waste	Waste Generation Multipliers <sup>3</sup> (kg/person/day)
<b>Disposal</b>	Organics	25.7	21.5%	1,266.4	17.3%	0.047
	Paper	21.9	18.3%	1,079.8	14.8%	0.040
	Trash	60.2	50.3%	2,381.5	32.6%	0.088
	Non-Beverage Containers	4.0	3.3%	195.3	2.7%	0.007
	Other Waste	6.0	5.0%	298.1	4.1%	0.011
	Beverage Containers	1.8	1.5%	86.6	1.2%	0.003
	<b>Disposal Total</b>		<b>119.6</b>	<b>100.0%</b>	<b>5,307.6</b>	<b>72.6%</b>
<b>Diversion</b>	Recycling -Beverage Containers <sup>4</sup>	0.4	-	18.8	0.3%	0.001
	Recycling -Steel Offcuts	46.2	-	1,988.7	27.2%	0.074
	<b>Diversion Total</b>	<b>46.6</b>	<b>-</b>	<b>2,007.5</b>	<b>27.4%</b>	<b>0.074</b>
<b>Combined Total</b>		<b>166.2</b>	<b>-</b>	<b>7,315.2</b>	<b>100.0%</b>	<b>0.271</b>

<sup>1</sup> **Waste Profile:** The waste profile for this building include waste generated over various timeframes due to collection dates as well as program scheduling. For all common areas, the audited waste was adjusted for the number of class days during the two semesters (150). For the welding program, data was collected over a one-month period for steel data and over a four-day period for all other waste. This program runs for a total of 129 class days over the two semesters. For the millwright program, all data was collected over a three-day period. This program runs for 106 class days over the two semesters. For the electrician program, all data was collected over a one-month period. This program runs for 88 class days over the two semesters.

<sup>2</sup> **Annual Waste Generated (kg):** In this case, annual waste was assumed to be two semesters of waste (fall and winter). It is assumed there was a full complement of students and staff during each semester. However, the area used for the electrician program is only in use for part of the fall and winter semesters, for a total of five months of operation. Annual waste generation figures were adjusted to reflect this.

<sup>3</sup> **Waste Generation Multipliers:** Waste generation multipliers were generated by dividing the total annual mass of waste generated by the total number of full-time spaces and staff in the building (180) and then divided by the number of days that the building is in operation (150).

<sup>4</sup> **Recycling -Beverage Containers:** Data for beverage container recycling was collected for a five day period and was adjusted to reflect the audit period.





## Corner Brook Arts and Culture Centre – Corner Brook

The Government of Newfoundland and Labrador owns and operates six Arts and Culture Centres across the province (Stephenville, Corner Brook, Gander, Labrador West, Grand Falls – Windsor and St. John's). The Corner Brook Arts and Culture Centre is the second largest in terms of seating, featuring four full time staff, a 380-seat proscenium theatre and an art exhibition area. While the building also houses a public swimming pool, the waste generated in this area was not audited as it is not representative of the other Arts and Culture Centres.

There is no food service in the centre; cash bar service is available during each show. The centre is busy most of the year, with between one and five sold-out or near sold-out shows per week for roughly nine months of the year (summers are slower). A total of 23,506 tickets were purchased for shows at this centre in 2014.

The Corner Brook Arts and Culture Centre offers beverage container recycling bins for patrons, but there is currently no commercial collection of paper fiber on the west coast of the province. The offices located within the facility collect some office paper for shredding and office staff take it to the composter at the university.

The audit of this building included waste generated from three sold-out shows on October 12, 14 and 15 of 2014. Three days of paper shredding were also gathered, as well as four days of beverage recycling, which is averaged to three days in Table 7.

No data was available from the waste contractor for this site. As such, the total annual mass of waste sent from this site for landfill disposal is not known.

To calculate the annual waste profile for the Arts and Culture Centre in Corner Brook, a kilogram/ticket sold waste generation rate was calculated by dividing the total waste audited by the number of tickets

sold for the events that were held during the audit period. This number was then used to estimate overall waste generation by multiplying this rate by the total annual ticket sales, as shown in Table 7.

**Table 7: Corner Brook Arts and Culture Centre - Waste Profile**

	<b>Category</b>	<b>Audited Waste (kg)</b>	<b>Percent of Disposed Waste</b>	<b>Annual Waste Generated<sup>2</sup> (kg)</b>	<b>Percent of Total Waste</b>	<b>Waste Generation Multipliers<sup>1</sup> (kg/ticket sold)</b>
<b>Disposal</b>	Organics	6.7	32.9%	138.8	26.2%	0.006
	Paper	6.8	33.1%	139.5	26.3%	0.006
	Trash	3.4	16.7%	70.5	13.3%	0.003
	Non-Beverage Containers	0.3	1.3%	5.6	1.1%	0.000
	Other Waste	2.7	13.4%	56.3	10.6%	0.002
	Beverage Containers	0.5	2.6%	10.8	2.0%	0.000
	<b>Disposal Total</b>	<b>20.4</b>	<b>100.0%</b>	<b>421.6</b>	<b>79.5%</b>	<b>0.018</b>
<b>Diversion</b>	Composting	0.7	-	14.2	2.7%	0.001
	Recycling -Beverage Containers	4.6	-	94.6	17.8%	0.004
	<b>Diversion Total</b>	<b>5.3</b>	<b>-</b>	<b>108.8</b>	<b>20.5%</b>	<b>0.005</b>
<b>Combined Total</b>		<b>25.7</b>	<b>-</b>	<b>530.4</b>	<b>100.0%</b>	<b>0.023</b>

<sup>1</sup>**Waste Generation Multipliers:** The waste audited was generated throughout the course of three sold-out shows at this site. Seating capacity of this site is 380 seats. Therefore, over 1,140 tickets were sold during the waste audit period. Waste multipliers were generated by dividing the amount of waste audited by the number of tickets sold over the audit period.

<sup>2</sup>**Annual Waste Generated:** The annual waste generation for this building was estimated by applying the waste generation multiplier to the number of tickets sold during 2014 (23,506).

# Summary of Findings

## Overall Waste Generation and Diversion

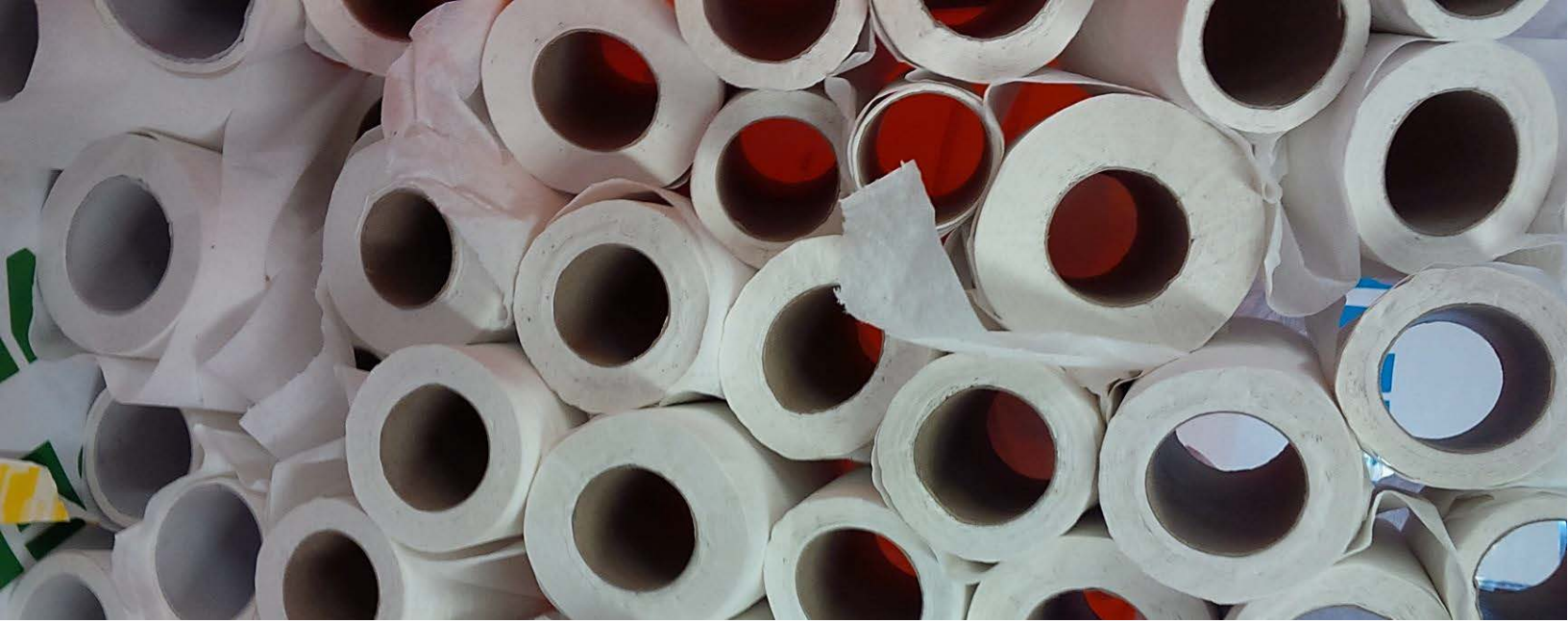
Table 8 provides an overview, in kilograms, of the estimated annual waste generated in each building. This information is broken down by disposed waste and diverted waste. For each building, a waste generation multiplier is provided, which estimates the amount of waste generated on a per capita basis.

Waste Category		Confederation Building West Block - St. John's	Petten Building - St. John's	Advanced Education and Skills Regional Office - Grand Falls-Windsor	Service Newfoundland and Labrador - Harbour Grace	Corner Brook Arts and Culture Centre – Corner Brook	Labrador West College of the North Atlantic – Labrador City
<b>Disposal (kg)</b>	Organics	57,268.6	3,859.7	1,716.5	286.2	138.8	1,311.4
	Paper	11,282.6	1,759.4	865.8	104.0	139.5	1,116.9
	Trash	26,045.9	2,606.1	629.3	527.0	70.5	3,061.6
	Non-Beverage Containers	5,649.0	570.6	116.6	57.2	5.6	202.1
	Other Waste	1,775.1	728.2	60.8	0.0	56.3	305.3
	Beverage Containers	711.2	80.6	11.0	37.7	10.8	92.8
	<b>Disposal Total</b>	<b>102,732.3</b>	<b>9,604.7</b>	<b>3,400.0</b>	<b>1,012.2</b>	<b>421.6</b>	<b>6,090.2</b>
<b>Diversion(kg)</b>	Composting	3,859.7	-	171.8	-	14.2	-
	Recycling - Office Paper Fibre	231,061.7	6,631.4	-	-	-	-
	Recycling -Confidential Shredding	104,643.8	685.8	5,118.5	1,919.4	-	-
	Recycling - Cardboard	10,466.6	2,470.0	-	-	-	-
	Recycling -Beverage Containers	-	-	-	-	94.6	19.2
	Recycling - Steel Offcuts	-	-	-	-	-	2,234.6
	<b>Diversion Total</b>	<b>350,031.8</b>	<b>9,787.2</b>	<b>5,290.3</b>	<b>1,919.4</b>	<b>108.8</b>	<b>2,253.7</b>
<b>Total Annual Waste Estimates (kg)</b>		<b>452,764.1</b>	<b>19,392.0</b>	<b>8,690.3</b>	<b>2,931.7</b>	<b>530.4</b>	<b>8,344.0</b>
<b>Waste Generation Multipliers</b>	kg/employee/day	<b>1.512</b>	<b>0.969</b>	<b>0.815</b>	<b>0.733</b>	-	-
	kg/ticket sold	-	-	-	-	<b>0.023</b>	-
	kg/person/day	-	-	-	-	-	<b>0.303</b>

## Waste Content

Table 9 provides an overview, on a percentage basis, of the estimated annual waste generated in each building. This information is broken down by disposed waste and diverted waste.

Table 9: Summary of Estimated Annual Volumes (% of total)							
Waste Category		Confederation Building West Block - St. John's	Petten Building - St. John's	Advanced Education and Skills Regional Office - Grand Falls- Windsor	Service Newfoundland and Labrador - Harbour Grace	Corner Brook Arts and Culture Centre - Corner Brook	Labrador West College of the North Atlantic - Labrador City
<b>Disposal</b>	Organics	12.6%	19.9%	19.8%	9.8%	26.2%	15.7%
	Paper	2.5%	9.1%	10.0%	3.5%	26.3%	13.4%
	Trash	5.8%	13.4%	7.2%	18.0%	13.3%	36.7%
	Non-Beverage Containers	1.2%	2.9%	1.3%	2.0%	1.1%	2.4%
	Other Waste	0.4%	3.8%	0.7%	0.0%	10.6%	3.7%
	Beverage Containers	0.2%	0.4%	0.1%	1.3%	2.0%	1.1%
	<b>Disposal % Total</b>	<b>22.7%</b>	<b>49.5%</b>	<b>39.1%</b>	<b>34.5%</b>	<b>79.5%</b>	<b>73.0%</b>
<b>Diversion</b>	Composting	0.9%	-	2.0%	-	2.7%	-
	Recycling - Office Paper Fibre	51.0%	34.2%	-	-	-	-
	Recycling -Confidential Shredding	23.1%	3.5%	58.9%	65.5%	-	-
	Recycling - Cardboard	2.3%	12.7%	-	-	-	-
	Recycling -Beverage Containers	-	-	-	-	17.8%	0.2%
	Recycling - Steel Offcuts	-	-	-	-	-	26.8%
	<b>Diversion % Total</b>	<b>77.3%</b>	<b>50.5%</b>	<b>60.9%</b>	<b>65.5%</b>	<b>20.5%</b>	<b>27.0%</b>



## Next Steps

These waste audits of government buildings were commissioned as a first step in an ongoing series of actions outlined in the *Greening Government Action Plan* to meet the objective of increasing the amount of government's waste being diverted from landfills.

As a key partner in the implementation of the action plan, MMSB will continue to work with CCEE to oversee implementation and to monitor progress.



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# Annex A

Annex A: Waste Category Definitions	
Beverage Containers	Deposit bearing containers that can be returned to a green depot for recycling and a consumer refund, but were not diverted (includes PET, HDPE, steel/tin, aluminum, glass, tetra, gable, and other beverage containers)
Non-Beverage Containers	Non-deposit bearing containers that can be recycled in select regions, but were not diverted (including metal tins and rigid plastic containers marked 1-3 or 5-7 - includes PET, HDPE, steel/tin, aluminum, tetra, gable and other non-beverage containers)
Organics	All food waste and paper towels, toilet tissue and napkins that were not diverted
Other Waste	Liquids, hazardous wastes (aerosols, batteries, oils, solvents) and electronic waste that was not diverted (includes electronic products that are currently regulated and those that are not)
Paper	All paper fibre that was not diverted (includes all recyclable paper fibre such as corrugated cardboard, newsprint, office paper, glossy paper, colored paper, boxboard and molded pulp, as well as non-recyclable paper fibre which includes fibre that is greasy/soiled such as take-out boxes)
Trash	Non-recyclable items (includes items such as disposable cups, cutlery, and dishes, plastic bags, styrofoam, non-beverage glass, and non-rigid packaging)
Composting	Food waste and/or paper waste being recycled via some form of composting
Recycling – Office Paper Fibre	Office Paper fibre placed in a recycling bin such as white paper, newsprint and envelopes
Recycling – Confidential Shredding	Paper fibre placed in a confidential recycling bin such as white paper and envelopes
Recycling – Cardboard	Paper fibre, specifically corrugated cardboard, placed in a recycling bin
Recycling – Beverage Containers	Deposit bearing containers placed in a recycling bin
Recycling – Steel Offcuts	Steel placed in a metals recycling bin
Waste Generation Multipliers	A unit of waste measure that estimates the amount of waste generated in a building on a per capita basis