

# Bin Materials Audit (BMA)



## Post-Audit Learning Experiences

### Post-Audit Reflections

1) Were you surprised by anything you saw when the bin materials were collected and sorted?

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2) What did you find interesting, and what would you like to find out more about?

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3) Did you enjoy the bin materials audit? Why?

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4) Was there anything you didn't enjoy about the audit? If so, please describe.

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## Presenting the audit data and interpreting results

### Weight and Volume

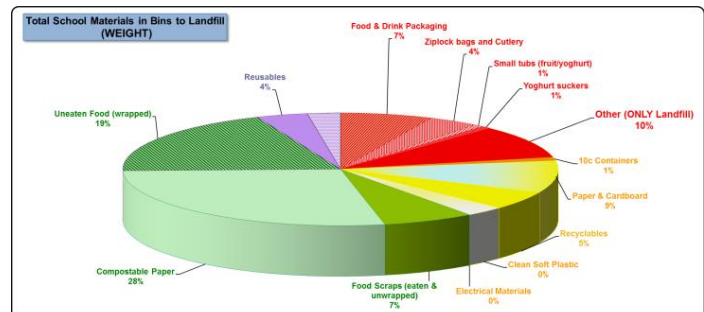
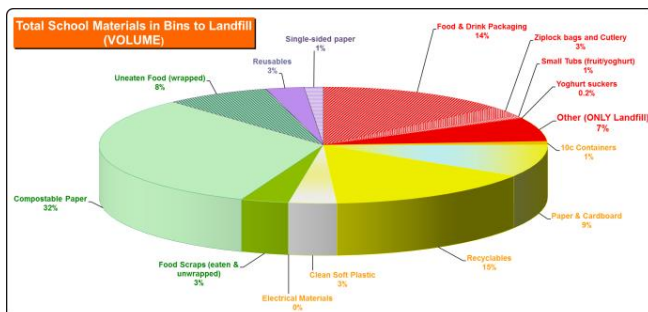
A great way to show the audit results is to put the information gathered into tables and graphs. This makes it easier for people to understand the results and make comparisons between the data.

- Using Microsoft Excel, create tables that show:
  - **Volume** data for all sorted materials collected from indoor and outdoor bins
  - **Weight** data for all sorted materials collected from indoor and outdoor bins
  - **Percentage** each category represents of the total sorted materials
 Produce a pie chart or graph for each table.

(Label each table and chart/graph, and check that the values in the tables and graphs are the same.)

Example:

Landfill Items	Volume Litres		Weight Kg	
	Indoor bins	O/door bins	Indoor bins	Outdoor bins
Food and Drink packaging	15.00	5.00	0.78	0.20
Ziplock bags and cutlery	2.00	2.00	0.18	0.35
Small tubs (fruit/yogurt/custard)	0.00	1.00	0.00	0.10
Yoghurt Suckers	0.30	0.00	0.11	0.00
Other	9.00	0.50	1.16	0.20
<b>RECYCLABLES</b>				
10c Containers	0.40	1.00	0.07	0.07
Paper and Cardboard	12.00	1.00	1.20	0.10
Recyclables	20.00	2.00	0.74	0.02
Clean Soft Plastic	5.00	0.00	0.41	0.00
Electrical Materials	0.00	0.00	0.00	0.00
<b>COMPOSTABLES</b>				
Food Scraps (unwrapped)	1.50	3.50	0.42	0.55
Compostable Paper	17.00	30.00	1.63	2.33
Garden Materials	0.00	0.00	0.00	0.00
Uneaten Food (wrapped)	3.00	8.00	0.92	1.82
<b>REUSABLES</b>				
Reusables	4.00	0.00	0.54	0.00
Single-sided Paper	2.00	0.00	0.35	0.00





Identify **two** categories where the volume % and weight % are very different  
 (eg category *x* is only 8% of the total volume, but is 19% of total weight)  
 and fill in the table below:

Category Name	% of Total Volume	% of Total Weight	Possible reasons for the difference

3) Suggest reasons as to why both **volume** and **weight** data are collected.  
 Consider what these two units of measurement tell us and how this is linked to bins and landfill.

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4) Looking at the **volume** chart/graph, answer the following questions and fill in the table below:

- Identify the **three** categories which contributed most to the total **volume** of materials collected.
- List the percentage (%) of total volume for that category.
- Suggest reasons why that category had a high percentage (%).
- Suggest strategies to reduce the amount of this material.

Categories	% of total volume	Possible reasons for large %	Strategies to reduce
Category 1			
Category 2			
Category 3			

## Per person, per day

Audit data is useful for telling us what types of materials are in our landfill bins, and how much of each type of material. Data can be compared with data collected by other schools, or with data collected by your school on a different day, term or year.

However, we cannot use the data as it is to make these comparisons, because different schools have different amounts of people. It would not be fair or useful to compare the total amount of waste generated by a school of 100 people with a school of 700 people, as the school of 700 people is likely to have more material.

To be able to use our data to make comparisons, we can calculate the amount of material generated **per person, per day**.

To calculate this number, we can do the following:

- (Step 1) Divide the amount of total material audited by the number of days over which the material was collected.
- (Step 2) Divide the amount of material audited by the number of people present on the day that the material was collected for auditing (you can use volume and weight data).

*Example:*

(Step 1) *total amount of material audited: 447.2 (L for example)*

*number of days: 1*

$$\frac{447.2L}{1 \text{ day}} = 447.2L/\text{day}$$

(Step 2) *number of people present on collection day: 470*

$$\frac{\text{material/day}}{\text{no. of people}} = \frac{447.2}{470} = 0.95L/\text{person/day}$$

- 1) Create a new table, showing materials collected per person, per day. Include the following information (ensure you are using data for 1 days' worth of materials in the table):
  - a. Category name
  - b. Total volume
  - c. Volume for 1 day (if more than 1 day, divide materials by number of days)
  - d. Volume per person per day (L of material divided by number of people)
  - e. Total weight
  - f. Weight for 1 day (if more than 1 day, divide materials by number of days)
  - g. Weight per person per day (kg of material divided by number of people)
  - h. Total of all materials audited (add up all category totals)
  - i. Total per person per day for all materials (total of materials, L or kg, divided by number of people)

Example:

		Volume (L)		Indoor 1 day	Outdoor 1 day	Total 1 Day	per person/day	% of Category	% of Total
		Indoor bins	Outdoor bins				Litres		
<b>LANDFILL</b>									
	Description								
	Food & Drink Packaging	15	5	15.00	5.00	20.00	0.077	57	13.77
	Ziplock bags and Cutlery	2	2	2.00	2.00	4.00	0.015	11	2.75
	Small Tubs (fruit/yoghurt)	0	1	0.00	1.00	1.00	0.004	3	0.69
	Yoghurt suckers	0.3	0	0.30	0.00	0.30	0.001	1	0.21
	Other (ONLY Landfill)	9	0.5	9.00	0.50	9.50	0.037	27	6.54
	<b>Landfill stream</b>	<b>Subtotal</b>	<b>26.3</b>	<b>8.5</b>	<b>26.30</b>	<b>8.50</b>	<b>0.134</b>	<b>100.0</b>	<b>23.97</b>
<b>RECYCLABLES</b>									
	Description								
	10c Containers	0.4	1	0.40	1.00	1.40	0.005	3.4	0.96
	Paper & Cardboard	12	1	12.00	1.00	13.00	0.050	31.4	8.95
	Recyclables	20	2	20.00	2.00	22.00	0.085	53.1	15.15
	Clean Soft Plastic	5	0	5.00	0.00	5.00	0.019	12.1	3.44
	Electrical Materials	0	0	0.00	0.00	0.00	0.000	0.0	0.00
	<b>Recyclables stream</b>	<b>Subtotal</b>	<b>37.4</b>	<b>4</b>	<b>37.40</b>	<b>4.00</b>	<b>0.159</b>	<b>100.0</b>	<b>28.51</b>
<b>COMPOSTABLES</b>									
	Description								
	Food Scraps (eaten & unwrapped)	1.5	3.5	1.50	3.50	5.00	0.019	8	3.44
	Compostable Paper	17	30	17.00	30.00	47.00	0.181	75	32.37
	Garden Material	0	0	0.00	0.00	0.00	0.000	0	0.00
	Uneaten Food (wrapped)	3	8	3.00	8.00	11.00	0.042	17	7.58
	<b>Compostables stream</b>	<b>Subtotal</b>	<b>21.5</b>	<b>41.5</b>	<b>21.50</b>	<b>41.50</b>	<b>0.242</b>	<b>100.0</b>	<b>43.39</b>
<b>REUSABLES</b>									
	Reusables	4	0.00	4.00	0.00	4.00	0.015	67	2.75
	Single-sided paper	2	0.00	2.00	0.00	2.00	0.008	33	1.38
	<b>Reusables stream</b>	<b>Subtotal</b>	<b>6</b>	<b>0</b>	<b>6.00</b>	<b>0.00</b>	<b>0.023</b>	<b>100.0</b>	<b>4.13</b>
<b>Total Material Audited</b>		<b>91.2</b>	<b>54</b>	<b>91.20</b>	<b>54.00</b>	<b>145.20</b>	<b>0.558</b>	<b>0.002</b>	<b>100</b>

- 2) Which category had the **highest** per person per day value for:

volume \_\_\_\_\_, weight \_\_\_\_\_

Which category had the **lowest** per person per day value for:

volume \_\_\_\_\_, weight \_\_\_\_\_

Why might the categories or values be different when comparing volume and weight data?

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### Overarching audit categories

The individual categories on the audit data entry sheet are grouped into four overarching category names:

- Landfill (Reduce)
- Reusables (Reuse)
- Compostables (Compost)
- Recyclables (Recycle)

Create a table for these four categories, showing:

- Volume per person per day data
- Volume data
- Weight per person per day data
- Weight data

Example:

	Volume (L) per person per day	Total Volume (L)	Weight (kg) per person per day	Total Weight (kg)
<b>Recyclables stream</b>	0.16		0.01	
<b>Compostables stream</b>	0.24		0.03	
<b>Reusables stream</b>	0.02		0.00	
<b>Landfill stream</b>	0.13		0.56	
<b>Total Material Audited</b>	<b>0.56</b>		<b>0.05</b>	

Answer the following:

Which of the categories has the highest value? \_\_\_\_\_

Why do you think this is the case?

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What changes could we make that would improve these results?

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Who would need to be involved?

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**Conclusion/Presentation task (Group or individual)**

Based on the information gathered, choose one category you would like to improve and analyse it carefully.

Prepare a presentation that makes a proposal for improving on one aspect of the results. Decide where to make improvements:

- Is it in education? Do people need to better understand which items go where?
- Is it the system? Could bins/containers be better located, or easier to use?
- Is it the people/culture? Do people feel responsible for their actions? Are people involved with the systems?

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How can you check if you are successful?

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Will success need to be assessed regularly and changes made if required?

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*Example: 10c container category. There are many in the landfill bins and we can make money for the school.*

- *Demonstrate how much money is being lost over a year and what it might be spent on.*
- *Survey staff and students to find why the current system is not as successful as you would like.*
- *Ensure that 10c container collections are conveniently located.*
- *Target a group at your school who are willing to collect and cash in the containers for their own fundraising.*
- *Have signs near bins to encourage and thank people for contributing.*
- *Publicise the locations and reasons for 10c container collection at assemblies, newsletters etc.*
- *Re-audit bins to see if you are collecting more than before the changes were made. Share the results with the school community to keep them motivated and invite regular feedback on the system via SRC or Student Voice.*